Executive Summary

New technology, a changing economy, declining labor force participation, and stagnant blue-collar earnings all put new emphasis on middle-skill jobs—those that require more than a high school diploma but less than a four-year degree. Many changes are needed to meet demand and create opportunity for workers. But among the most important questions about the training of tomorrow is who: Which training providers can supply workforce education on the scale that’s needed to close the skills gap?

Among the most plausible candidates are community colleges—arguably the only institution with the reach and scale to make the difference that’s needed. Community colleges bring many advantages to the task of workforce education. They also face many challenges and have a mixed record. But they are the institution we have—the most likely and potentially adaptable training infrastructure in most cities and states. The challenge for policy: to create incentives for these widely varied and uneven schools to put skills and skills training more at the center of their missions.

This paper explores five broad policy tools—levers state policymakers can use to create new incentives for educators.

Funding

Workforce education is expensive to offer and needs to be funded accordingly, with a dedicated spending stream tied to different yardsticks than conventional college funding. One potentially crucial tool: performance-based funding. But it is only as good as the metrics and data it’s based on, and currently, both fall short. What’s needed: better and more available information about job placements and wages, better and more accurate measures of student employability, and yardsticks to assess the quality of cooperation between educators and employers.

Data

Data are an essential tool for policymakers seeking to rebalance the mission of community colleges—a means to redefine success, drive institutional change, and help students make better choices about college and careers. Better, more available data about employment outcomes will benefit all students but could be particularly helpful for workforce education—a way to level the playing field between academic offerings and occupational programs.

Lifelong Learning

Among the biggest challenges for those seeking to expand workforce training: making sure it’s not a dead end—that the promise of lifelong learning is a reality for more people. What’s needed: mechanisms that permit students to move seamlessly from institution to institution and return to school later in life to refresh their skills. Even traditional academic institutions often fall short, and it’s harder still for
vocational programs, in which nontraditional students enroll in credit-bearing and noncredit courses, often earning industry-approved credentials along with or instead of degrees.

**Engaging Employers**

There can be no effective workforce education without employers—robust working partnerships between employers and educators to ensure that students are learning skills in demand in the workplace. The challenge for policymakers: how to encourage and incentivize this collaboration.
Rethinking the Mission

COMMUNITY COLLEGES AND WORKFORCE EDUCATION

Tamar Jacoby

New technology, a changing economy, declining labor force participation, and stagnant blue-collar earnings all put new emphasis on middle-skill jobs—those that require more than a high school diploma but less than a four-year college degree. Statistical definitions and estimates vary, but one calculation suggests that middle-skill positions account for 37 percent of all jobs, another analysis suggests the share is 53 percent, and a third finds 30 million jobs that do not require a bachelor’s degree and pay more than $35,000 a year—45 percent of all jobs above that threshold.¹ Yet according to many employers, the supply of middle-skill workers is not keeping up.² What can be done to close this gap? Few questions are more urgent today for employers or job seekers. How do we prepare workers for the jobs of the future, particularly workers without bachelor’s degrees struggling to find or keep their place in the middle class?

Many changes will be needed: better information about what skills are in demand in the workplace, more efficient labor markets that work better to match supply and demand, more cooperation between employers and educators, and new, more flexible funding streams—to name just a few. But arguably the most important question about the training of tomorrow is who: Which training providers can supply workforce education on the scale that’s needed to close the skills gap confronting America in years ahead?

No institution can do it alone. But among the most plausible candidates are community colleges—arguably the only institution with the reach and scale that’s needed to make a difference, addressing existing skills gaps and those projected in the future.

Community colleges bring a number of advantages to the challenge of workforce education. They have experience teaching adults. They have worked hard to stay affordable: In 2016–17, the average cost for a full-time student was $3,520.³ Many have a long history of providing technical training. And while many—perhaps the majority—have shifted focus in recent decades, putting priority on preparing students for transfer to four-year colleges, most still offer an array of occupational programs leading to certificates and associate in applied science degrees in subjects such as allied health, automotive technology, public safety, and accounting.

Two-year public colleges face many challenges, and they have a mixed record at best. Too few students graduate. It often takes longer than it should. Schools lack resources and focus and often do a poor job preparing students for the world of work. Community colleges as they exist today are far from the ideal training provider. But they are the institution we have—the most likely and potentially adaptable training infrastructure in most cities and states. The challenge for policy: to create incentives for these widely varied and uneven schools to step up to the plate, putting skills and skills training more at the center of their missions.
The Challenge: Elevating Workforce Education

Two-year colleges have a long history in America, but growth took off in earnest in the decades after World War II. Today, they serve virtually every city and county nationwide: some 1,100 institutions from coast to coast. Four out of 10 American undergraduates attend a community college. Students tend to be slightly older than those at four-year colleges and universities: The average age is 28. Almost half identify with a racial or ethnic minority. More than 60 percent attend school part time—usually because they are also holding down a job, part time or full time. Six in 10 use federal financial aid to pay for classes and other expenses. Most programs are open admissions—obligated to enroll any high school graduate who wishes to attend. And all this takes a toll: stubbornly poor completion rates. Four out of 10 community college students drop out their first year. Fewer than 40 percent earn a degree, associate or bachelor’s, in six years.4

By definition, public two-year colleges juggle many missions: preparing students for transfer to four-year colleges, remedial education, workforce training, and recreational courses, among others. It would be unrealistic—and inadvisable—to expect that they drop all the rest to focus solely on preparing students for jobs. Both academic and vocational programs can open doors to opportunity. But labor market demand and facts on the ground argue strongly for giving more emphasis to workforce education, putting it on a par at least with academic preparation. Some 80 percent of students enter community college hoping to transfer eventually to a four-year institution, but only 12 percent succeed.5 There is a striking gap in the return to associate degrees. Students in some fields do very well, but those who major in subjects such as liberal arts and general studies fare only marginally better than their peers with high school diplomas.6 By far the best return is to associate degrees and short-term certificates in technical fields.7 Yet community colleges persist in funneled students into academic transfer programs. Surely there is a better way. As a rule, noncredit students are ineligible for federal financial aid. But at many colleges, the noncredit division is a hidden asset—instructors and administrators with deep expertise in what works to prepare students for the labor market.12

Along with a history of technical training and long experience educating nontraditional students, community colleges bring two core strengths to the challenge of workforce education.

The first is reach and scale. The number of subbaccalaureate awards—associate degrees and certificates—granted each year by community colleges (1.4 million) now exceeds the number of bachelor’s degrees conferred by public four-year institutions (1.2 million).8 Community colleges serve far more people and are better resourced than the nation’s official job-training network, the federally funded public workforce system, which is designed primarily to serve disadvantaged and dislocated workers. Some 12 million students pass through community colleges each year,9 and even if only half are enrolled in occupationally focused courses—there are no reliable counts of credit or noncredit students preparing to go directly into the world of work—their number dwarfs the 161,000 trained annually by the workforce system (Figure 1).10 According to one estimate, community colleges train 80 percent of America’s law enforcement officers, firefighters, and emergency medical technicians—and 60 percent of new nurses and other health care workers.11

Second, equally important and largely uncounted in official education statistics, most community colleges maintain robust noncredit divisions. Parallel but distinct from the departments that offer credit-bearing courses, these divisions specialize in short, occupationally focused offerings for part-time students with no interest in earning degrees—they’ve come back to school to learn a narrowly defined skill they believe will help them on the job. Different states use different terms for noncredit offerings: continuing education, clock-hour programs, and occupational extension courses, among others. Frequently looked down on by academic faculty and administrators, they are uneven in quality—offerings include remedial education and recreational courses as well as technical training. And as a rule, noncredit students are ineligible for federal financial aid. But at many colleges, the noncredit division is a hidden asset—instructors and administrators with deep expertise in what works to prepare students for the labor market.12
Noncredit divisions tend to be more flexible and adaptable than their counterparts on the credit side of the college. Most maintain working relationships with a range of local companies, providing “customized” contract training for existing or incoming employees. They’re used to collaborating with employers to develop courses that meet business needs—often rapidly changing needs driven by new technology or shifting demand. They can often stand up courses more quickly than the credit division—they don’t need approval from accreditors or faculty governance committees. And while there are no reliable national data on noncredit students—many colleges don’t keep count, only some states track them—researchers believe the number is growing, perhaps approaching parity with credit students.13

Still, for all these advantages, many community colleges are ill-equipped to face the workforce challenge ahead, and most existing policy creates more obstacles than incentives. Community colleges vary dramatically: large, small, urban, rural, some are on the cutting edge of educational innovation, while others struggle simply to stay open. Their multiple missions—academic, vocational, remedial, and...
recreational—often conflict. Stretched thin and pulled in too many directions, some labor to do anything well. Many if not most find it hard to reconcile their academic and vocational sides—what one scholar calls “two cultures in one bottle.” And virtually all the incentives they face—state and federal metrics, pressures from accreditors, institutional funding, and student aspirations—favor an academic mission: degree completion and transfer, often at the expense of workforce training.

The tension between academic and vocational goals is apparent on almost every campus. Funding tied to enrollments—Pell Grants, tuition, and full-time-equivalent state funding—puts students in the driver’s seat. Colleges can’t afford to see enrollments shrink. But students’ course preferences don’t always match what’s in demand in the labor market. That’s why, for example, many colleges overproduce veterinary technicians.

Still other factors that favor an academic mission: Occupational programs often cost more to offer than academic courses. Faculty want to teach what they know, not the new skill or new technology in demand this cycle among local employers. Administrators making decisions about course offerings often neglect labor market information. On many campuses, the credit and noncredit divisions rarely speak or share expertise, let alone coordinate programs. Perhaps worst, according to one educator, “Very few college instructors see it as their job to help students get a job. In their eyes, their responsibility ends when the student walks across the stage on graduation day.”

The question for policy: What can be done to drive community colleges to offer more and more effective workforce education? The hallmarks of a better approach:

- **More Balance.** Robust and varied workforce course offerings, with more students enrolled in occupational programs and fewer in general education or liberal arts courses.

- **Market Focus.** Programs designed to meet the needs of the regional labor market—preparing students with up-to-date skills for high-wage, high-demand jobs in growing industries.

- **Employer Engagement.** Well-developed ties between employers and educators in both credit and noncredit divisions, with ample opportunities for students to pursue work-based learning.

- **A Level Playing Field.** More parity between credit and noncredit divisions, freeing institutions to offer courses in whatever way, on whatever schedule works best for students and employers.

- **Lifelong Learning.** Mechanisms that permit students to move from program to program—noncredit to credit, certificate to associate degree, and associate to bachelor’s and beyond—or refresh their skills later in life without having to start over or retrace their steps.

What can be done to achieve these outcomes? Federal policy can help, encouraging colleges to do a better job preparing students for the workplace: Many students use federal financial aid to pay for community college. Business and industry can provide incentives; so can private philanthropy. And there’s a role for disruptive innovators, whose competition as training providers should challenge colleges to do better. But ultimately, most community colleges answer to state government, and state policymakers are best equipped to offer the carrots and sticks that can incentivize better outcomes.

**Policy Levers**

How can state policy encourage community colleges to put workforce education more at the center of their missions? This section explores five broad policy tools—levers that policymakers can use to create new incentives for educators—and profiles one or more state initiatives using each tool to effect change. These examples do not exhaust the many exciting experiments under way in states across the
Some are well-entrenched programs with proven results, widely recognized as the best in their class. Others are new and just taking off—illustrative because they are experiments.

**A State Mandate.** Community college educators eager to see the mission shift toward workforce education have few illusions: It won’t happen by itself. Too many existing incentives—state and federal metrics, pressures from accreditors, institutional funding, and student aspirations—point in the wrong direction. Robust state action—a strong corrective—is needed to reorient schools to heed labor market signals and give priority to preparing students for the workplace.

The problem: At the state level too, policymakers are often uncertain or divided about the role of community colleges, and in many states, especially where the college system is decentralized, they lack the authority to effect statewide change.

The challenge where the culture favors a narrowly academic focus: how to bring educators to see the value of career education. “How do you get us to care about workforce development?” one college administrator asked—especially if the shift requires colleges to change the way they do things, giving up old privileges and prerogatives in the service of a new priority.

Different states have different tools at their disposal. In those with centralized community college systems, a statewide board or chief executive is empowered to make decisions about far-flung institutions, including in some states, decisions about hiring, firing, and budgets. In North Carolina, a statewide body collects student tuition and disperses the revenue to colleges. In Florida, the legislature plays an active role in managing college governance, and curriculum, among other functions, is standardized statewide—Mechatronics 101 is the same at every college, with some but not too much leeway for individual instructors. In other states—Pennsylvania is a classic example—every school is on its own, making its own decisions and answering to a local governing board.

Both approaches have advantages and disadvantages. A decentralized system allows colleges more autonomy—more room for innovation, more versatility to meet local needs, more flexibility to partner with employers. And a centralized system is only as good as the people at the top. But policymakers seeking to incentivize change—elevating workforce development or some other reform—are at an advantage if the state is centralized.

Among relatively centralized states that have had the most success over the years in moving toward a workforce focus, Washington pioneered the collection of data on student employment outcomes...
college. Florida standardized curricula and streamlined state articulation policy—regulations that allow students to move seamlessly from one kind of educational institution to another. North Carolina upended a traditional approach to funding based on the hours students spend in class, allocating more money for programs better aligned with labor market needs. And Virginia introduced pay-for-performance funding for noncredit programs that culminate in occupational certifications valued by employers. Craig Herndon, Virginia’s vice chancellor for workforce development, is blunt: “There’s no way we could have accomplished what we did without centralized governance—or centralized technical assistance with things like validating credentials and reporting data.”

It’s not easy to move in this direction. Massachusetts found out the hard way in 2012. The problem surfaced first at some Boston teaching hospitals: administrators complaining about disparities among local community colleges and the graduates they were sending, some much better prepared than others. Then-Gov. Deval Patrick seized on the issue and proposed a bold plan to centralize and standardize the community college system so it would serve employers better. The proposal was widely criticized—by educators fighting to protect their autonomy and taxpayers deploring the shift toward vocational education. A legislative battle ensued. And in the end, the governor got perhaps two-thirds of what he wanted: no statewide curriculum standards and no power to hire or fire college presidents, but some say in hiring, some leverage over local governing boards, and a funding formula, including some performance-based funding, designed to help the state incentivize change across the system.

Centralization can go too far. Even advocates for a stronger state role often draw a distinction between the functions the state should assume and those that are better left to colleges. After all, most economies are regional. Labor needs often differ from one part of the state to another. Faculty in different places need different salaries to meet the cost of living. One size rarely fits all, and state efforts to prescribe college practices have a way of ending badly. A potential happy medium: The state sets goals—metrics, standards, priorities, and a direction—but leaves it to individual colleges to find their own ways to meet these targets.

Still another option: States with relatively decentralized systems can use soft power—carrots instead of sticks—to achieve similar ends. California is a classic case, with 114 community colleges and virtually no central power to mandate what happens on the ground. Yet Gov. Jerry Brown is pursuing a sweeping, multiyear reform—one of the most ambitious efforts nationwide to reinvigorate and refocus community colleges.

Among California’s primary tools are financial incentives for convening and collaboration. Generous funding rewards regional councils—companies, colleges, high schools, workforce board officials, and others—that come together to plan and coordinate career education. Still another new funding stream pays grantees called “sector navigators” to connect employers and educators and mediate the match of supply and demand for skilled workers. A new metric, developed by the state, is helping redefine college success, highlighting students who don’t complete or transfer but use what they learn at community college to move up on the job—California calls them “skills builders.” And a renewed push to centralize data on employment outcomes allows the state to track progress on the sprawling, many-pronged reform effort.

Bottom line: Hard or soft, what matters is state leadership—advocates of shifting the mission of community colleges say it can’t be overestimated. Effective change starts with a vision and the will to implement it, with whatever tools are available. Among the means at a state’s disposal: standardized statewide curricula, statewide metrics and definitions, guaranteed statewide articulation agreements, and money to drive collaboration between educators and employers. And it isn’t all about process. The most successful states use these tools in the service of a plan for regional economic development, with the state sometimes picking winners and losers among industries. “Imagine what could happen,” Macomb Community College President Emeritus James Jacobs suggested, “if the governor went on TV and declared that
## Governance of Community Colleges by State

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the state was facing an economic crisis—that we need all hands on deck to produce a new generation of tool and die makers, or the state standard of living will be at risk. There are some things colleges just can’t do. The state needs to lead.”31

**Funding.** Of all the tools at the states’ disposal, few are more potent than funding, and there are several ways policymakers can use the power of the purse to drive community colleges to focus on skills.

As is, in most states, community college workforce education is drastically underfunded—both in comparison to other postsecondary programs and relative to the cost of delivery. It almost always costs more to offer skills training than academic classes. Equipment is expensive—a state-of-the-art robotic welder, for example, is a six-figure purchase. Instructors hired out of industry are a must if the program is to stay current, but they usually expect higher salaries than typical community college faculty. And then there’s the ratio of students to instructors. It’s hard to teach hands-on technical skills in a big lecture course. All in all, according to one estimate, technical programs cost on average three or four times as much as liberal arts classes.32

Even so, despite the added expense, workforce programs have traditionally been funded at the same rate or lower than academic divisions. Noncredit programs get especially short shrift. Many states don’t fund them at all or fund them much less generously than credit-bearing courses. As recently as 2008—the last time all 50 states were surveyed—close to half provided no funding for noncredit workforce education, and in states where the amount was based on the time students spent in class, career programs were almost always funded at a lower rate than academic courses.33 Federal financial aid—Pell Grants and loans—can be used only for credit-bearing courses, not noncredit instruction: It’s one of three core criteria, along with accreditation and semester length. And many states have cut back sharply on higher education funding, with community colleges often particularly hard hit, shrinking the pie for everyone—academic and workforce programs.

It was the Great Recession that prompted North Carolina to act: the prospect that campuses facing budget cuts would drop courses such as machining that prepare students for high-wage, high-demand jobs and use the money they saved for liberal arts

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Note: Based on responses to a survey of state education officials distributed at the 2015 annual meeting of the National Council of State Directors of Community Colleges. The response rate was 90 percent—45 of 50 state officials.

classes or cheaper vocational programs such as cosmetology—even though there’s scant demand for cosmetology graduates. System President Scott Ralls knew it would be a bloody battle, but he persevered in a change of course that ended up playing out over many years. His vision: a tiered funding formula.34

**Between 2011–12 and 2016–17, enrollment in tier one courses jumped from 29 percent to 41 percent.**

At first blush, the new policy looks fairly conventional. Unlike many new, performance-based funding formulas—including North Carolina’s, a separate initiative—the tiered approach is based on full-time equivalents: Colleges receive funding for student enrollments and hours spent in class. But the tiered model transforms this old idea with two radical new twists. The first: that the state should spend more to fund programs that cost more to operate and produce workers for in-demand industries. The second, if anything, more subversive: that it shouldn’t matter whether the classes are offered by the college’s credit or noncredit divisions.

What’s in place now is a four-tiered formula, with each tier receiving some 15 percent more funding per student than the tier below. The top rank is credit courses that train workers for immediate employment in high-paying, high-demand fields—and noncredit courses that prepare students to earn industry credentials in the same occupations. Lower on the list are high-cost courses in fields with less-pressing demand. Lower still are credit-bearing academic courses and noncredit courses that do not lead to industry certifications. The state has been using a tiered approach for five years, and the results are striking, if a little muddied by other changes in state education policy.

Between 2011–12 and 2016–17, enrollment in tier one courses jumped from 29 percent to 41 percent.35

The next step for many states seeking to spur a change of direction at community colleges: performance-based funding—formulas that reward institutions for meeting goals specified by the state, usually some combination of enrollments, completion, transfer, degrees, and in some states, employment outcomes. It’s a relatively new tool, possible only in recent decades with the advent of much more extensive and revealing data about what’s happening at institutions of higher learning. The idea has spread rapidly: several waves of experimentation and innovation, with more than 30 states now using performance criteria in some form for some percentage of higher education funding—it ranges from 1 percent in Illinois to as much as 80–90 percent in Ohio and Tennessee.36

Critics are as fierce as proponents. Their main arguments: There’s little evidence that performance-based funding works—strikingly few instances of improved performance—and it creates incentives for “creaming,” admitting only high-performing students to programs to which the formula applies. Still, despite the debate, many educators see the trend as irreversible. The question for the future is less *if* than *how*: what metrics, how much money, and what percentage of overall higher education funding.37

The challenges are particularly acute when it comes to workforce education. Most states lack adequate data on employment outcomes such as job placements and earnings. What they have is often inconsistent. To date, just a few state formulas include workforce metrics—and it’s often a voluntary element in a mix where the other yardsticks are mandatory. Even North Carolina has struggled, settling for including licensure pass rates in a package of eight measures, all the rest focused on academic outcomes.38

An exception: Texas State Technical College (TSTC). A 50-year-old institution with 10 campuses, TSTC is entirely separate from the state’s large traditional community college system, and it has always been focused on career education, offering primarily certificates and associate of applied science degrees. But things changed dramatically in 2013, when the
state legislature enacted a law making the funding stream that sustains the college entirely dependent on employment outcomes. It’s a bold experiment, not likely to work at every community college—but it makes sense at TSTC, where the sole mission is workforce education. The formula was developed by state authorities, then adopted by the legislature with input from TSTC faculty and administrators. The case they made to lawmakers: Workforce education is a good investment. Students who get high-demand, high-paying jobs more than reimburse the state in future tax revenue. And that’s just what the formula measures—graduates’ salaries and tax revenue.39

By all accounts, internal and external, the formula is transforming TSTC campuses. Curricula have been standardized. Administrative functions have been streamlined and consolidated. Decisions about launching new programs, keeping or killing existing courses, and even student advising are all made now with an eye to the new bottom line: What kinds of jobs will students get, and what will they earn? Administrators report a new focus and new sense of urgency, with no detail too small to matter, including the number of students who switch majors. “That’s now on our dime,” says one college official.40

Arguably the most important effect: closer, more focused, and more intentional relationships with employers in line to hire graduating students. Companies range from global corporations to local mom-and-pop shops. The relationships aren’t new. Like most colleges with a workforce focus, TSTC has long maintained an array of employer advisory boards and other ties. But it’s all different now, according to administrators—there’s suddenly much more at stake. “They really listen now,” says one employer. The college is revamping curricula to match what employers say they need. Administrators have developed a digital tool to make sure faculty and hiring managers aren’t talking past each other. And the college has higher expectations of the companies it partners with. “If they’re not hiring, we’re not interested,” says Vice Chancellor Michael Bettersworth. “And it has to be for good jobs—well-paying and permanent, with opportunities for advancement.”41

Progress has been dramatic: 15 percent more graduates in the first year, 18 percent more confirmed job placements, and a 21 percent increase in the combined earnings of the first graduating cohort. According to the formula, this should have earned the college a whopping 22 percent increase in funding in the last state budget cycle. The legislature didn’t come through. Declining oil prices had reduced state revenue, and the allocation for TSTC declined by 3.5 percent. College administrators were disappointed but undeterred. “The new goals have transformed our campuses,” Bettersworth says. “They’ve transformed our culture. There’s no going back to the old ways now.”42

Data. Of all the tools at hand for policymakers seeking to rebalance the mission of community colleges, few are more powerful than data: data that can be used in at least three different ways—to redefine success, drive institutional change, and help students make better choices about college and careers.

“What gets measured gets done,” the old saw says—so it’s hardly surprising that many community colleges see their principal mission as academic success. Most metrics and the most widely available data shed light on inputs and academic outcomes—enrollment, completion, transfer, and degrees. This is changing. A new generation of education researchers and reformers is working to draw attention to information about employment outcomes—job placements and wages. It’s a radical new lens and one that could have dramatic consequences for workforce education, leveling the playing field for academic and occupational divisions as students learn and act on the higher returns to many technical and career-focused programs. But a variety of obstacles—some technical, others driven by concerns about privacy—are slowing change in the short term.

The obstacles start with what data are available. Most researchers agree about what’s needed: information about employment outcomes, program by program—not just how a given college’s graduates fare, but also, say, its English and engineering majors. And many states have begun down this road, linking information about what students study to wage data for those same individuals collected five or even 10 years...
## Some States Using Performance Funding to Reward Employment-Related Outcomes

### Tier One: Metrics Include Job Placements and Wages

<table>
<thead>
<tr>
<th>State</th>
<th>Amount</th>
<th>Metrics</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas</td>
<td>5 percent in 2012–13, increasing by 5 percent increments until capped at 25 percent in 2017–18</td>
<td>Mandatory measures for two-year colleges include course completion, progression, and credential completion. Optional measures include STEM credentials, transfer, workforce training, and employment.</td>
<td>Two- and four-year institutions</td>
</tr>
<tr>
<td>Florida</td>
<td>$200 million allocated in FY2015, appropriated funds are matched by an equal amount reallocated from the institution’s base funding</td>
<td>Metrics for the state college system, which serves primarily community college students, include completion rates, retention rates, continuing education, job placement, and entry-level wages.</td>
<td>Two- and four-year institutions</td>
</tr>
<tr>
<td>Kansas</td>
<td>New state funds</td>
<td>Community and technical colleges choose at least three indicators from a list of eight, including retention rates, graduation rates, percentage of students employed or transferred, and wages of students hired.</td>
<td>Two- and four-year institutions</td>
</tr>
<tr>
<td>Louisiana</td>
<td>15 percent of base appropriations, institutions may also receive permission to raise tuition by 10 percent</td>
<td>Metrics include retention, completion, transfer, pass rates on licensure and certification exams, and employment of credential earners.</td>
<td>Two- and four-year institutions</td>
</tr>
<tr>
<td>Minnesota</td>
<td>5 percent of base funding is reserved until institutions meet three of five performance goals.</td>
<td>Goals include increased completion, increased graduation, more credentials granted, and a 4 percent increase in employment rates for graduates.</td>
<td>Two- and four-year institutions</td>
</tr>
<tr>
<td>New York</td>
<td>$4 million for State University of New York community colleges and $2 million for City University of New York community colleges in FY2016</td>
<td>Metrics include completion, transfer, students making progress toward completion and transfer, work-based learning while in college (including apprenticeship and co-op programs), students employed following completion, and wage gains.</td>
<td>Two-year institutions</td>
</tr>
<tr>
<td>Tennessee</td>
<td>Apart from a base amount set aside for operational support, funding is 100 percent performance based.</td>
<td>Community college metrics include degrees, transfers, remedial success, workforce training contact hours, and graduates placed in jobs.</td>
<td>Two- and four-year institutions</td>
</tr>
<tr>
<td>Texas</td>
<td>85 percent of funding received from the state, $94 million in 2015–17</td>
<td>Funding is based on the institution’s economic value to the state measured by the differential between graduates’ earnings and the minimum wage and the tax revenue this produces.</td>
<td>Technical college system</td>
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out by the agency that oversees the state’s unemployment insurance.43

Students and educators seeking information about outcomes for occupational programs face all the same hurdles as students and educators in academic fields—and then some. The standard problems:

State data are patchy, students often end up living and working in a state other than where they studied, state-to-state cooperation is uneven, and federal lawmakers concerned about privacy have been loath to make nationwide data—tax records or Census data—available.44
Still other issues are particularly vexing for workforce educators. Many noncredit programs track little if any information about students. Data on trainees who earn industry certifications generally belong to the associations issuing the credentials, and many are unwilling to share the information.45

Some of the most successful states combine data with counseling or streamlined college offerings that limit students’ choices to what educators hope are faster paths to success.49

Perhaps the biggest gap: Most unemployment insurance agencies track employment by industry but not occupation, often making it difficult to discern if technical students are working in the fields they studied. An information technology (IT) student employed in retail, for example, could be working in IT at corporate headquarters—or could have failed to find work in IT and ended up making ends meet with a part-time sales job. Louisiana is an exception, a dramatic step forward. Its unemployment wage reports include occupation codes.46

Still another challenge for reformers seeking to effect change with data: uptake by students and families. More than half the states now collect data on student employment outcomes and make them available on consumer-facing websites—in many states, several different websites geared to different kinds of consumers seeking different information in different forms. The federal government also maintains several well-publicized websites. What isn’t clear: Are students aware of the information available and using it to make better choices about where to go to college or what to study? Most researchers tracking student decisions have found only modest evidence that the new information is changing behavior;47 but one recent study of community college students showed a somewhat more robust effect—and it’s possible that decision-making is changing as families became more familiar with the new data that are available.48

Some of the most successful states combine data with counseling or streamlined college offerings that limit students’ choices to what educators hope are faster paths to success—so-called meta majors or guided pathways.49 But clearly more can be done to make more data available in simpler, more accessible ways—and as more students use this information, it could pay off big for occupational education.

Other changes are also afoot, perhaps most excitingly, new metrics that redefine how colleges can serve students seeking skills to succeed in the workplace.

Most college administrators are concerned about students who don’t finish their studies and leave school without getting a certificate or degree. And indeed, these are often students in trouble—inadequately prepared, distracted by job or family, confused by the options available at college, or strapped for cash at crucial moments along the path to finishing. But new research suggests that not all noncompleters are struggling. Some are older students, already launched and relatively successful on the job, who come back to community college to brush up or add to their skills and leave without earning a credential. Still another kind of successful noncompleter: In some lucrative fields—welding is the classic example—many students drop out before earning degrees. The opportunities for employment are just too tempting, and once they have acquired the skill in demand in the workplace, even the best students often can’t afford to wait. The problem for educators: On paper, these are still noncompleters—counted as failures for the college.50

A breakthrough came in California: A former state researcher who had himself come up through the
community college system tracked a cohort of non-completers back into the workplace—with astonishing results. California now calls them “skills builders.” Their average age is 37. Many appear to be already working in a technical field. They return to college briefly, usually for a semester or two, take a few highly specialized courses, and generally do well in class, but then leave without a credential—certificate or associate degree. What Peter Riley Bahr, now an associate professor at the University of Michigan, found when he followed them back into the job market: Their median wage gain was 14 percent, or $4,300 a year. In 2012–13, some 86,000 California community college students qualified as skills builders. Among the most common occupations: firefighters, law enforcement, and wastewater technicians.51

The challenge for California and other states where Bahr is tracking similar students: how to put these data to use to improve the workforce offerings at community colleges. Can colleges retool programs to better meet the needs of returning students? Can they identify and expand courses with the strongest employment outcomes? What do skills builders and their patterns teach a college about what’s in demand in the workplace, and what other changes can the school make to produce more graduates with these skills?

Ultimately, Bahr hopes, colleges will find ways to grant these students a credential—something they can build on later in life if they choose to come back to school again. He would also like to see funding changes. Colleges should be rewarded, not penalized financially, for this kind of noncompleter. The first step: identifying and counting them—sorting successful nondegree students from those who need help from the college, whether counseling, financial aid, or some other support. But even without funding, Bahr says, the metric is important. “We’re expanding the definition of success,” he says. “This gives institutions a way to communicate their success. You can’t overestimate the importance of measurement.”

Lifelong Learning. Teachers, students, parents, policymakers, and education reformers all share the same concern about workforce education: Is it tracking? Will students end up stuck on a road to nowhere, with no hope of earning an academic credential and no opportunities for advancement later in life? The risk creates an imperative for policymakers and others seeking to elevate workforce education: to make sure students come away with something in addition to new skills—some kind of recognition they can cash in at a later date if they go back to school or continue training, whether on the job or elsewhere.

Education reformers call this “stackability,” and it’s considered essential to any good postsecondary program, academic or vocational. The problem: According to many educators, it’s often more theoretical than real.

Articulation among academic institutions works better in some fields than others. Health care workers, for example, often start with certificates or associate degrees and move on to bachelor’s and beyond. But even students on academic tracks sometimes find a gap between promise and reality. Just because two schools have an articulation agreement doesn’t guarantee that an individual instructor will apply a student’s transfer credit. A 2017 Government Accountability Office study estimated that students who transferred between 2004 and 2009 lost on average 43 percent of their credits, often at significant financial cost.52

More troubling still, many students don’t take advantage of the options open to them to continue their studies or go back to school later and build on the credit they have already accrued. They don’t know what’s available. They get distracted by what happens on the job or at home. And the problem is many times worse for noncredit students and noncompleters.53

Many states are grappling with the challenge, and many are coming to the same conclusion. Among the best ways to track what students learn in noncredit programs and even credit-bearing occupational courses is with a third-party-validated external test—the kind of tests required for most industry-driven occupational credentials.

Industry certifications have emerged in recent years as a new educational currency. Employers come together in a trade association or other group and identify the skills in demand in their industry—usually several skill sets for several different occupations,
at different levels of proficiency. The association then develops a test or tests. High schools, colleges, and often independent training providers prepare students for these assessments, usually administered by a neutral third party. For schools and students, the test becomes a target to aim for—a way to know with some precision what skills employers need and what they’ll pay for in the workplace. For employers, it’s a hiring tool: a way to identify applicants who have been trained to industry standards—and more reliable than degrees, which often vary significantly from school to school.\textsuperscript{54}

The problem for policymakers starts with which certifications. The market is flooded—there are thousands in circulation. But by most accounts, only a few hundred, if that many, have currency with a critical mass of employers. One count, by the US Army, found 1,566 certifications in circulation nationwide but only

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433 validated by a third-party accrediting body. A recent study by Burning Glass examines online job postings and counts mentions of nearly 2,500 certifications—but 75 percent of posts ask for the same 100 credentials. The American National Standards Institute, a nonprofit accrediting body, estimates that there are 4,000 certifications in use nationwide, but only 10 percent of them are accredited.

Many states have tried to address this problem by establishing approved credential lists—with mixed results. In some states, educators and employers find the state list too restrictive. Other states have trouble narrowing the roster to credentials with proven value in the marketplace. Philanthropy and the private sector are stepping in with a variety of efforts to gather information on the new awards. But the landscape is still a Wild West, difficult to navigate for employers, educators, and students.

Three times as many Virginia students earned high-demand certifications this year as last year: 4,268 in total.

Interest in certification is growing, and the market will likely stabilize, perhaps sooner rather than later. But the questions facing policymakers do not end there. Among the hardest: Should the state offer extra funding for courses that prepare students for industry assessments? And should colleges award credit for certifications earned at other institutions, in noncredit programs or even outside of school, whether on the job or elsewhere?

Virginia has begun to address the issue with an innovative program, just over a year old. About a decade ago, policymakers who had viewed community college primarily as a stepping stone to further higher education began to grasp that the state also needed better answers for students preparing directly for the world of work. The problem these officials discovered: Credit-bearing occupational programs were at a distinct disadvantage compared to noncredit programs—so constrained by traditional academic scheduling and other norms, most importantly the need to please college accreditors, that they often weren’t nimble or flexible enough to keep up with employers, adapting to changing technology or meeting demand for new skills. The challenge for the state: how to identify effective noncredit programs and fund them, ideally with a performance-based metric of some kind.

The answer, passed by the legislature in mid-2016, is a “workforce credential grant,” maximum value $3,000 per person, that students use to pay for noncredit courses leading to industry certifications. Only a small subset of noncredit courses qualify and only a select list of credentials. They must be business endorsed and externally validated and must open doors to jobs in high-demand fields—fields identified by the state in consultation with employers.

How the credit works: Most noncredit workforce courses cost $4,500 or less, and the state commits to paying two-thirds of the total, matching the student two to one, if—he or she completes the course and passes the certification test. Students are on the hook. They must put up $1,500 at the start of the semester and are reimbursed only if they finish the coursework. But so is the college. The final state payment depends on students taking and passing the certification test—and when left to their own devices, many students do not bother.

The results have been surprising even to the program’s staunchest supporters. Three times as many Virginia students earned high-demand certifications this year as last year: 4,268 in total. College administrators say that many are a different type of student than those who earned certifications in the past: a little older and less well-heeled, many striving to escape lower-paying jobs in less-skilled fields, who now feel they can afford to take the risk of trying something new and training for it. Colleges also say
they are now offering more noncredit occupational courses—they can afford to—and marketing them more aggressively. Colleges are working more closely with employers and, as in Texas, having what one Virginia educator calls “more granular conversations” about what skills are in demand in their industries. As important for the long run: Virginia now has a way to track and count noncredit students and the industry credentials they earn—metrics that will be indispensable as the state takes further steps to encourage and reward workforce education.

The next step for Virginia: articulation. Policymakers are exploring ways to allow students who earn industry credentials to apply them as credit toward college certificates and degrees.

Florida is already there—a package that combines articulation and performance-based funding for industry certifications. Florida is a relatively centralized state with a long tradition of cooperation among colleges. Postsecondary curricula are standardized statewide. Every introductory machining course is based on the same curriculum framework as every other introductory machining course—a 15-page document with detailed standards and benchmarks. And colleges long ago agreed to a system of statewide articulation.

Unlike in most states, credit and noncredit students attend different institutions—Florida maintains an entirely separate system of postsecondary vocational centers. But as they and many state high schools began preparing students for industry certification tests, the state folded these credentials into the statewide articulation framework. And in 2013, the legislature added performance-based funding—in theory, $1,000 per certification, although in Florida as in Texas, the funding can vary depending on the state budget.

In theory, it is a perfect answer for an older, intermittent student seeking workforce education at community college. Perhaps she’s a woman from a low-income family, never particularly focused on schoolwork, who starts her working life in a fast-food restaurant. But then, in her late 20s, thanks to state funding, she’s able to go back to school, taking classes at night at the local vocational center and earning a certification as a licensed practical nurse. Next step is a job at an elderly care facility, and that’s good for a few years—a big step up. But she learns on the job that licensed practical nurses with associate degrees have more job opportunities and earn higher salaries—and registered nurses with bachelor’s degrees do better still. The beauty of the Florida system: If she goes back to school within a few years, she can pick up where she left off—earning credit for her noncredit schooling and moving forward without retracing her steps.

Florida colleges, once hesitant to accept noncredit students, are now using the new articulation agreements as a marketing tool, and the number of students earning state-approved industry certifications has grown more than fourfold—from 1,505 to 6,269—since performance-based funding became available in 2013.

Engaging Employers. There can be no effective workforce education without employers. Researchers differ widely on how much training companies provide. One 2015 analysis, by the Center on Education and the Workforce at Georgetown University, estimates that employers spend $590 billion a year on training—that’s out of a total of $1.1 trillion in private and public funding for postsecondary education—with another $47 billion going to certification and apprenticeship, usually paid for in part by employers. Another study, by the Association for Talent Development, calculates that in 2015 employers nationwide spent $1,252 per employee for formal and informal education and training. Other researchers argue that employer-provided training has declined precipitously in recent decades. And most programs are for managers and other educated employees, not the middle skilled. Still, employers and educators increasingly agree, employers are an essential part of the equation.

Company involvement in training takes many forms. Some employers offer instruction themselves. Others partner with colleges or other training entities. Some provide opportunities for work-based learning. And employer-educator partnerships come in all shapes and sizes. The instruction they offer
can range from a few hours of training to full-blown apprenticeship.

The common denominator—why employer involvement is indispensable—is to make sure trainees are learning skills in demand in the workplace. Labor market information helps keep training current. Colleges need data on economic trends and on the employment outcomes of their graduates. But many companies and colleges are finding that data are no substitute for close, working relationships. In the most successful partnerships, employers explain the skills they need, educators listen and tailor curricula accordingly, and in return employers hire program graduates, not because it’s mandated—that doesn’t work—but because the students are prepared to do the job. Without this input, educators and employers argue, it’s all but impossible for colleges to avoid producing graduates in fields for which there is no demand.72

The challenge: Cooperation between companies and colleges doesn’t happen naturally, and it isn’t easy for state government to encourage or incentivize it. What matters isn’t the number of employers a college is in contact with or how many sit on its advisory boards. What’s important is the quality of the employer engagement. Are conversations precise enough to guide curriculum? Does the employer hire graduates—and give the college honest feedback about their skills? Does the college act on that information to revamp programs? Does the relationship deepen over time?73 The state can’t mandate any of this—or, in most cases, even measure it.74

What a state can do: bring employers and educators together and create the circumstances in which relationships can flourish. The most common stratagem is regional councils known as “sector partnerships”: usually several companies from a single industry and a variety of training providers, including one or more community colleges and representatives from the workforce system. Some studies of particular partnerships have shown strong results,75 but collaborations vary widely in sophistication and effectiveness.76 The key test: Do they lead to sustained engagement and relationships close enough to drive programs that meet employers’ workforce needs?77
Some states use funding to incentivize cooperation—in sector partnerships and beyond. California is experimenting with a grants program: subsidies for regional partnerships called “consortia.” New Jersey funds a cohort of workforce intermediaries—colleges, nonprofits, and business groups—that bring employers and educators together for regular consultation. Colorado reimburses companies that partner with high schools and colleges to provide internships. New York State’s performance-based funding formula includes a metric meant to capture work-based learning. And Kansas is experimenting with a kind of upside-down model that puts employers more in the driver’s seat. Instead of waiting for companies and colleges to find each other and apply for state training funds, Kansas is working with employers to determine what skills they need and then inviting colleges to apply to develop programs, in effect bidding on the contract.

Last year, 58 North Carolina colleges worked with more than 900 companies to train nearly 35,000 workers.

The jury is still out on many of these initiatives. Many are new or just getting going, and there are no telling or agreed on metrics to measure employer engagement—an urgent challenge for researchers.

But one old-fashioned model that works well and hasn’t been much copied hails from North Carolina: funding for customized contract training at community colleges. Virtually every state in the nation provides funding for customized training, usually grants paid directly to companies—money the firm then spends to hire a training provider, sometimes a college, sometimes a for-profit entity. Most states try to use this funding strategically to advance economic development, attracting companies to the state or encouraging them to stay. North Carolina’s insight: The state could dispense the money in a way that created incentives for companies and benefited community colleges—if companies that needed training were required to partner with the state’s two-year colleges and the funds went straight to the college rather than the company.

Firms that want to spend their own money on training—and many do—are free to partner with any provider they like, and there’s no dearth of disruptive innovators offering workplace education in North Carolina. But policymakers argue that the state program has paid off handsomely: scores of enduring partnerships between companies and colleges across the state.

The program has been in place since the 1960s, and it hasn’t changed much. It’s relatively inexpensive—between $10 million and $13 million a year. Participating companies must show they are creating jobs—by moving to North Carolina or growing—or in other ways enhancing state productivity. They tend to be manufacturing firms, large and small. Some funding is short term—just six months. But it can continue for up to 36 months if the company can show it’s still creating jobs or boosting productivity. Last year, 58 North Carolina colleges worked with more than 900 companies to train nearly 35,000 workers. But as important for the long haul—as significant as the workers trained—the extra funding often helps community colleges add training capacity, and it seeds relationships between companies and colleges.

Campuses buy machinery they might not otherwise have purchased. They hire and train instructors. They update curricula to the latest industry standards and often offer the new courses to other students—not just the company’s incumbent workers or people the firm intends to hire. More valuable still, in many cases, even after the state funding ends, the company and the college continue to build a relationship. “In the best cases, the college becomes the company’s training provider of choice,” says Maureen Little, vice president of economic development for the state community college system. “These are often close, long-term partnerships.”
A case in point: Spirit AeroSystems and Lenoir Community College. Lenoir is a small school, just 3,000 students, in a relatively undeveloped pocket of eastern North Carolina. Spirit opened a facility in Lenoir County in 2010: a $570 million investment that it promised would create 1,000 jobs, producing a fuselage for Airbus passenger planes. The state brokered the initial relationship, but it soon took on a life of its own. Lenoir faculty and administrators made several trips to an existing Spirit plant in Wichita and used what they learned there to tailor the program in North Carolina. The college secured additional funding to hire and train instructors. Spirit and Lenoir worked together to recruit and screen a first cohort of students. And company and college began meeting weekly to monitor the program and make improvements—most of them small, iterative, but essential changes of a kind no distant expert could have foreseen, such as giving Lenoir faculty access to the Spirit plant and shifting the training from pre-hire to post-hire so it could include propriety Airbus techniques.

State funding ended long ago, but the relationship is flourishing. Lenoir now offers credit and noncredit programs in aerospace manufacturing and repair. The college still collaborates closely with Spirit but also trains for other companies that have sprouted in the region. And much of the instruction takes place at Spirit—in a new, 3,000-square-foot composites training lab operated by Lenoir Community College. It’s the kind of partnership many colleges dream of but have no idea how to form. The state didn’t build it—no state could. But state policy created the conditions in which it could thrive, and the rest took care of itself.

**Next Steps for Policymakers**

Education reformers have been talking about the promise of community college for more than two decades—first the promise, then the unfulfilled promise, then the still unfulfilled promise. The question at the heart of this paper: Can community colleges be galvanized and refocused to emerge as the provider of choice for 21st-century workforce education, better positioned to help close the middle-skills gaps looming in industry after industry?

The good news: Experiments are under way in state capitals from coast to coast—in legislatures, governors’ mansions, and the state agencies that oversee community colleges. Like most experimentation, these efforts are scattered and uneven. But many are off to a promising start, others are bearing fruit—and it’s far too early for a top-down sorting. All these initiatives should be encouraged to run their course.

What can perhaps be distilled from the policies profiled in this paper: potential next steps, emerging challenges, and some risks to be avoided.

**A State Mandate.** State leadership is essential. Change on the scale that’s needed won’t happen by itself, and too many existing incentives point in the wrong direction, encouraging colleges to focus all but exclusively on an academic mission, at the expense of workforce education. Along with conventional policy tools, there’s a role for the bully pulpit—elevating skills, underscoring the urgency of workforce development, and chipping away at the stigma often attached to vocational education. Also critical: eliminating policy silos—bringing people together from across state government and aligning them around common goals and metrics. Where the state can go too far: overcentralizing, centralizing the wrong functions, or in other ways reducing the flexibility and agility that make community colleges so well suited to partner with employers to provide workforce education for a rapidly changing postindustrial economy.

**Funding.** Workforce education is expensive to offer and ought to be funded accordingly, with a dedicated funding stream. It also requires differential funding, tied to different yardsticks than conventional academic college spending. As for performance-based funding, the all-important question is what metric or metrics. Many educators feel that the appropriate measures aren’t in place yet—that existing yardsticks tell us little about workforce outcomes and available data aren’t good enough. What’s needed: more, better metrics tied to employability and employment outcomes, applied eventually—when we’re sure we have the right
benchmarks—to a robust share of overall college funding. Meanwhile, an intriguing idea being talked about in a number of states: a metric for economic mobility that draws on the work of economist Raj Chetty—perhaps earnings before and after community college.

Data. Better metrics are not only essential for funding but also valuable in themselves—among the most potent ways to redefine success for community colleges and their students. Better, more available data about employment outcomes will benefit all students, including those enrolled in conventional academic courses. But more information about placements and earnings can be particularly helpful for workforce education, among the most effective tools for leveling the playing field between academic offerings and occupational programs.

Ultimately, what’s needed are federal reforms, starting with the creation of a federal database that matches student records with IRS tax data. But there is plenty to do in the states as well, including adding occupation codes to student unit records and finding ways to encourage more young people to make education decisions based on data about employment outcomes.

Lifelong Learning. Among the biggest challenges for educators and policymakers seeking to expand workforce training: making sure it’s not a dead end—that the promise of lifelong learning is a reality for more people, not just the tiny share who take advantage of existing opportunities. What’s needed starts with conventional tools—statewide curriculum standards and articulation frameworks. The next step, more radical, is recognition for the kind of noncompleters California calls “skills builders” and, harder still, for noncredit students—recognition they can later cash in for credit, including at a different institution. The last frontier: credit and articulation for industry occupational credentials.

Engaging Employers. There can be no effective workforce education without robust employer engagement, including at the college level—not just on a state or regional council, but campus by campus and program by program, offering advice about workforce needs, helping craft curricula, providing opportunities for work-based learning, and ultimately hiring graduates. The challenge for policymakers: how to encourage and incentivize this kind of ground-level involvement. It can start with small inducements or even simply opportunities to work together. It’s often difficult for educators and employers to connect, but once they have some experience of collaboration, relationships often take on a life of their own.

Also needed from policymakers: metrics of meaningful employer involvement—bona fide cooperation as opposed to the all too common perfunctory ties. Still a next step: modeling workable options. Many employers facing middle-skills gaps are eager to play a role in workforce training, but they don’t know where to start or what to do. The state can help by holding up examples of employer engagement that work, including modest steps that are plausible for small- and medium-sized companies.

The last frontier: Many workforce educators would like to see states provide financial incentives for employer engagement. It’s an area where states should tread carefully: Employers should be expected to carry their fair share of the burden. But states can help by priming the pump, and several are experimenting with innovative tax credits and grant programs, often designed specifically to incentivize work-based learning, including internships and apprenticeship.

Conclusion

Can community colleges step up as the training provider of choice for 21st-century workforce education? It’s a big role for a modest institution. Most community colleges are small and locally rooted, focused more on service than on big ideas or cutting-edge trends. And yet, paradoxically, this may be an advantage—one of the principal strengths they bring to the skills challenges ahead. Workforce training is almost always a retail business. What’s needed varies case to case—job by job, employer to employer. There’s a role for coast-to-coast corporate initiatives, scalable nonprofit concepts, national standards, and federal funding—more robust federal funding. But in the end, it
often comes down to ground-level partnerships and specific skills—plus a flexible, adaptable approach that modest, locally rooted institutions may be uniquely well suited to provide. The challenge: incentivizing these local partnerships on a national scale. The federal government can play some part, but it’s primarily a job for the states. The good news: Many states are trying—and using an array of promising policy tools.

**About the Author**

**Tamar Jacoby** is president of Opportunity America.

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Notes


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19. Partridge, interview with author.

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75. See Richard Hendra et al., Encouraging Evidence on a Sector-Focused Advancement Strategy: Two-Year Impacts from the


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84. Ralls, interview with author; and Little, interview with author.