

ALIGNING EDUCATION AND TRAINING WITH CAREER OPPORTUNITIES: CAN DATA LEAD THE WAY?

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ABOUT THIS BRIEF

Aligning Education and Training with Career Opportunities: Can Data Lead the Way identifies approaches to creating systems that align education and training programs with high-value career opportunities. The brief describes first what an aligned system actually looks like then demonstrates how improved data infrastructure is a key part of— but not the sole solution to — an aligned system.

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ABOUT DATA FOR THE AMERICAN DREAM

Data for the American Dream (D4AD) is a consortium bringing together Schmidt Futures, Lumina Foundation, Walmart Foundation, and the Walton Family Foundation. D4AD currently funds pilot initiatives in three states (Colorado, Michigan, and New Jersey) that will help provide low-income, lower-skilled, underemployed, and unemployed workers access current and actionable data, enlisting local case managers from public and private agencies to counsel job seekers, help them access needed services, and reach the most underserved populations.

The National Center for Higher Education Management Systems (NCHEMS) is the implementation partner of D4AD. NCHEMS is a private nonprofit organization whose mission is to improve strategic decision making in postsecondary education for states, systems, institutions, and workforce development organizations in the United States and abroad.



INTRODUCTION

Efforts to align education and training programs with career opportunities often aim to use rich administrative data maintained by state agencies to show potential students and trainees how different pathways may lead to certain levels of earnings. The advent of linked education and employment data, primarily through state longitudinal data systems (SLDSs), gives states and others the potential to provide meaningful outcome information to students and trainees making life-changing decisions. Indeed, many examples already exist (with more emerging on a regular basis). More recently, private organizations focused on improving the data landscape have made substantial efforts to combine publicly available data to tell clear and compelling stories about education and training opportunities, career pathways, and the linkages between them.

Efforts to align education and career pathways are ubiquitous, but a necessary first step is consensus on what that alignment looks like and how to evaluate interventions and tools designed to bring it about. With millions of Americans now out of work due to COVID-19 and the associated economic downturn, it will be crucial to the recovery to ensure that education and training programs are well-aligned with meaningful career opportunities. Although the current economic crisis has different causes than previous recessions – and may ultimately have different impacts on the long-term economy, data generally show increases in enrollment in career-focused education and training programs during economic disruptions.¹ In short, these programs may have a heavy demand as out-of-work individuals look to re-skill or up-skill to find new employment as the economy begins to rebound, although enrollment at community colleges has declined substantially in the initial months of the pandemic downturn.² COVID-19 may reshape the American economy and the occupations it contains by accelerating growth in certain industries and contraction in others – such as leisure and hospitality.³ If so, there will likely be a large number of Americans whose future job prospects will be dependent on their ability to re-skill.

Education and training opportunities will be plentiful in the recovery. Beyond the traditional providers in institutions of higher education offering degrees and certificates, and workforce-training providers that have operated through the workforce-training system, alternative private providers have emerged in recent years offering a wide range of training programs, certifications, and other non-degree credentials. These new providers add to a complex ecosystem and raise new questions about what alignment looks like and how best to achieve it. Additionally, their efforts bring questions and concerns about quality — and how to measure it — to the forefront of discussions again.

Data for the American Dream is an ambitious initiative aiming to accelerate the effective use of information about education and training opportunities, employment outcomes, and labor markets to give low-income, unemployed, and underemployed individuals better career opportunities. The theory behind this effort is that these individuals will be better able to make life-changing decisions about which education and training opportunities to pursue or what career pathway to follow if they — and those administering career-focused education and training programs — have better data and information about job openings available and the outcomes of related education and training programs.

In this brief, I begin with a discussion of what the core principles of an aligned education and workforce system might be before discussing some of the potential tools and efforts to reach this alignment. I then turn to efforts focused on improving the “consumer information” — i.e. data and information available to potential students and trainees about education and training opportunities and the careers they lead to — and the research on their effectiveness. Above all, improved data — for policymakers, advisors, and potential students and trainees — are necessary for alignment between training and education programs and career opportunities. However, that better data infrastructure without broad support and advising will fall short of the need. Additionally, policymakers and practitioners must articulate exactly what an aligned education-to-career system looks like, develop metrics to measure and assess alignment, and test policies and practices beyond just improving the data landscape to reach that goal.



BACKGROUND

Data for the American Dream has funded projects in Colorado, Michigan, and New Jersey to improve the information available to low-income, underemployed, and unemployed individuals as they consider decisions about career options and the education and training options that can help them reach such goals. These efforts will draw on myriad data sources, but one key foundation will be using information about the employment outcomes of education and training programs to present information to the target population about how different options may pay off. Given changing demands for talent in a fast-evolving economy, these relationships also need to be about more than just the next job, but also about a viable career trajectory.

One broader goal of Data for the American Dream is to improve the alignment between career paths and education and training programs. A useful starting point is to consider what, exactly, an aligned system would look like. Indeed, large-scale efforts to improve this alignment have been a regular feature of the American education system for more than a century.⁴

Fast forward from the 1900s to today and the broad outlines remain the same: policymakers and educational leaders are working to drive participation in education and training programs that provide relevant career opportunities for participants that meet the needs of the economy and provide reasonable individual benefit in the form of sustaining wages, employment stability, and non-wage compensation such as health insurance.

Today, two high-profile sets of workforce and postsecondary education reform efforts fall under the umbrella terms 'career pathways' and 'guided pathways.' These efforts have many different components, and implementations can vary from state to state (or site to site). Broadly speaking, they "are intended to encourage and expand the number of students, jobseekers, and workers who earn industry-recognized, postsecondary credentials that correspond to the skill needs of employers in high-demand industry sectors."⁵

Guided pathways programs are being implemented nationwide at hundreds of community colleges and involve four key components: clear maps for students to understand which courses are needed to complete a credential or transfer; assistance for students in choosing programs and paths; interventions to maintain student progress; and a coherent set of learning outcomes.⁶

Career pathways, a set of programs prevalent in workforce development, focuses on identifying skills and credentials needed in high-demand occupations and providing students with work-based learning opportunities and clear roadmaps to these careers.⁷ These programs use a broad range of program designs, incentives, and nudges to guide participants successfully through education and training and into meaningful careers.

Both of these broad programs show the considerable evolution of education-career alignment efforts since the Smith-Hughes Act was passed in 1917, novel and revolutionary legislation which established career-focused education as a key priority of both federal and state governments and developed a shared process of supporting such education through state grants.⁸ Along with programmatic development has come a vastly improved ability to understand how these programs work to provide benefits to participants and meet broader regional, state, and national aims as well. Together, the federal government and states have invested substantial resources to develop an impressive data infrastructure that has the potential to address key policy questions, provide detailed consumer information, and support extensive research.

As state agencies continue to develop these resources by linking key administrative data from the education and training sectors with employment outcomes information, the potential return on investment becomes clearer. Adding in public and private labor market information about local and regional high-value career paths, and the skills necessary to access those opportunities, can further bolster these data resources. In an ideal world, a potential student or trainee could assess how different education or training programs have benefited similar individuals, what careers are likely to be in demand going forward, and which skills should be developed to fully take advantage of those careers.

The reality, though, is less clean and neat. The data infrastructure, while impressive, still has notable gaps and some of the important linkages are still in development. This idealized model also rests on a specific theory of change — namely that putting timely, detailed, and accurate information in the hands of individuals will lead them to make optimal choices about education and training programs. A secondary theory of change, which often ends up being more relevant, is that improved information about education and training programs can help policymakers better steer scarce resources to effective programs and away from less-promising ones. The remainder of this brief examines research related to these theories of change and how they have played out in different sectors and domains.

ALIGNING EDUCATION, TRAINING, AND CAREER OPPORTUNITIES

Systems of education and training that are aligned with career opportunities should have clear information about what career opportunities exist in a local or regional economy; link those career opportunities to the necessary skills to enter and thrive in those careers; and ensure that students, trainees, and providers understand how successfully — and at what cost — education and training programs deliver those skills. In a sense, these three components of an aligned system operate interdependently, as three legs of a stool. Presumably, in an aligned system with clear information about career opportunities and the skills necessary to access those, the information available about education and training opportunities can show two things: 1) how those systems prepare individuals for careers with information about skills and 2) how those skills pay off for individuals who complete the relevant credentials.

Linking Career Opportunities to Education and Training Programs.

This section addresses the first areas of alignment — namely understanding which career opportunities offer paths to sustainable employment. Online job-search tools have been around since the early days of the internet, but tools that seek to provide meta-information about promising career opportunities within regional or local economies are more complex. These tools can help providers offer opportunities that are more likely to lead to successful employment and give potential students and trainees guidance about paths that will provide substantial benefit.

State Labor Market Information (LMI) and workforce offices strive to provide accurate and timely information about occupations and careers that are in-demand, with local workforce offices required by the Workforce Innovation and Opportunity Act (WIOA), passed in 2014.⁹ Although this is a requirement of recent legislation, LMI and workforce offices have worked toward this end for decades.

States face limitations in developing highly detailed information about the effectiveness of education and training programs and how completers move into high-demand occupations because of limitations in Unemployment Insurance (UI) records. In the vast majority of states, UI records lack information about occupations, instead, collecting only higher-level data about industry of occupation.¹⁰ This leads to difficulties in understanding which skills and credentials may pay off, as the individual with an IT-related credential working in a hospital is classified in the health industry. Additionally, UI records generally provide the location of the employer, not the work location, making it difficult to identify local and regional economic trends. Indeed, recommendations calling for improvement in UI records abound.¹¹

Enhanced UI data would certainly provide better information for determining linkages between employment and education and training, but there are other sources of information available to education and training providers. These include federal occupation-level estimates that are available for state and metropolitan areas and private providers.¹²

Private efforts to provide clearer information about career demand have grown in recent years and take advantage of data scraped from job boards, resume sites, and other information to produce detailed data about career opportunities and payoffs. Organizations like Emsi and Burning Glass produce information drawn from traditional government labor market sources as well as job and resume postings to produce highly detailed information about local, regional, and state economies. Reports and information from these two organizations can provide usable information about in-demand occupations that have been used in both workforce development circles and by community colleges to align training and education programs.¹³

These data resources are becoming more popular and have the potential to help state agencies and others provide strong opportunities to build the first leg of alignment — understanding the career opportunities available in a local or regional economy.

JOB SEEKING SHOULDN'T FEEL LIKE NAVIGATING UNCHARTED WATERS

Undesired Destinations

Low-wage Island Credentials that lead to low-wage jobs.

Dead-end credentials Cove Credentials that aren't portable or meaningful in other contexts.

One-job Caye Credentials that lead to non-resilient careers (i.e. the first to go in the downturn).

Isle of Wasted Opportunities Education and training opportunities that don't provide needed skills/competencies.

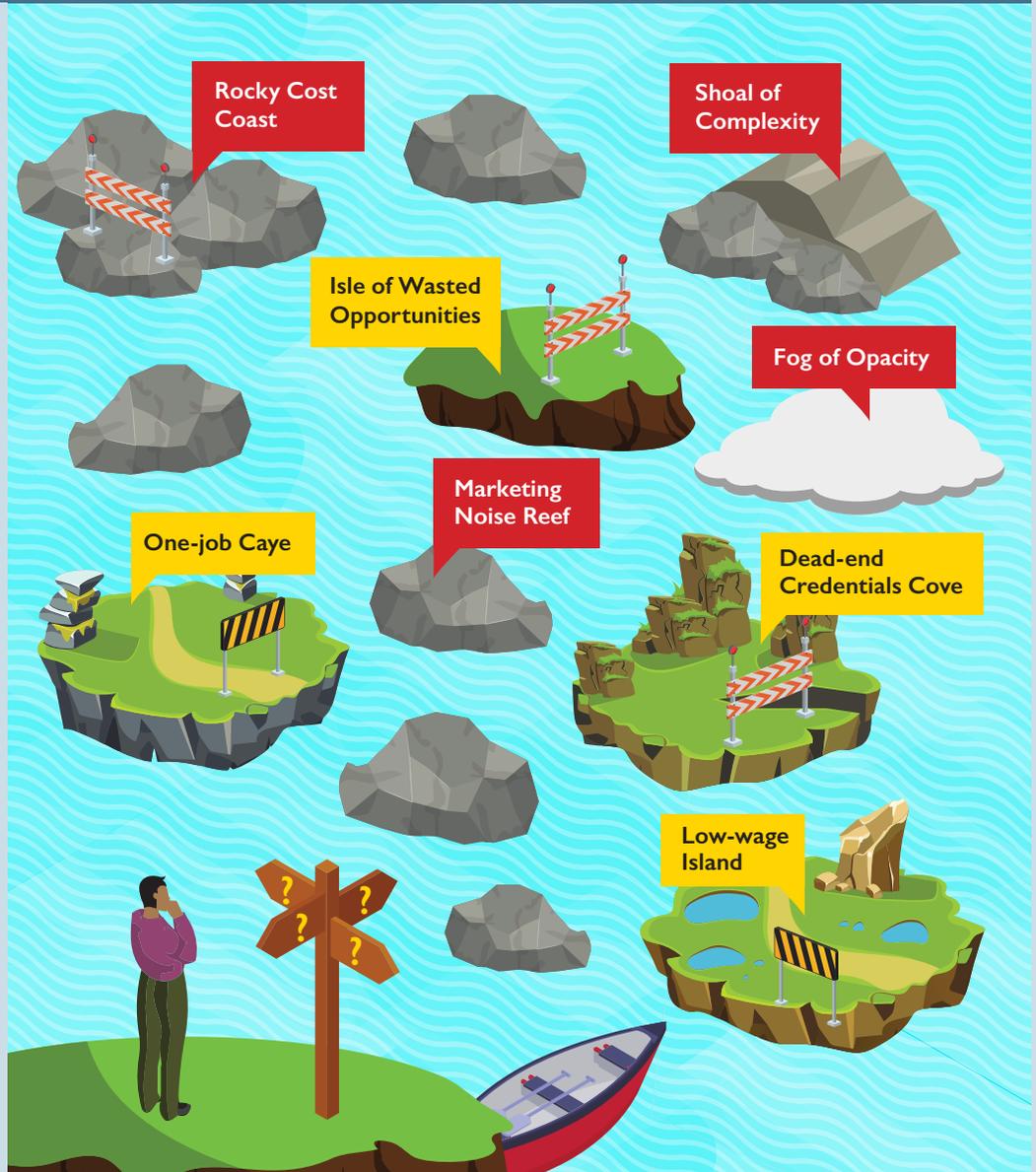
Navigational Barriers

Rocky Cost Coast Education and training opportunities that are expensive without good return on investment.

Shoal of Complexity Uncertainty about job opportunities, how to find them and determine if they are a match.

Fog of Opacity Lack of clarity about connection between skills/competencies and meaningful employment.

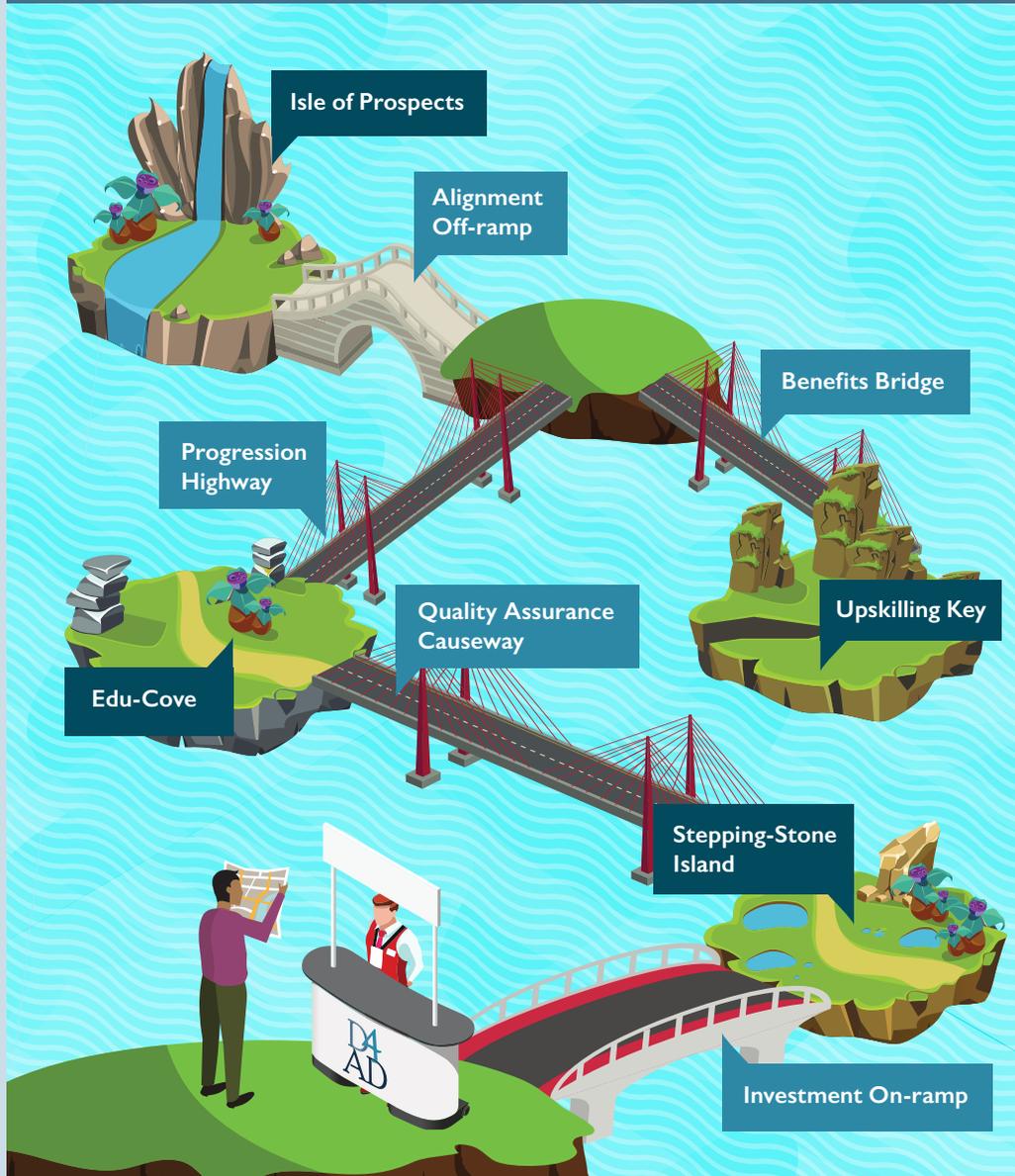
Marketing Noise Reef Jobseekers overwhelmed by marketing lead generators and targeted advertising not focused on individual needs.



Skills and Skill Development: The link between employment and education and training opportunities.

Understanding the linkages between skills and career opportunities is at once straightforward (for some career pathways) and difficult. For career paths requiring specific credentials—such as licenses or industry-recognized certifications, there can be some relatively easy inferences about the skills required. But even in these fields, as well as in a vast range of other opportunities, there are specific skills that may not have a formal certificate or degree and it can be difficult for education and workforce policymakers, let alone individuals seeking these opportunities, to understand these linkages. Moreover, the skill demands of a career differ from those in an initial job, and data will be increasingly valuable in identifying common pathways through multiple positions and the evolving skill requirements linked to them.¹⁴

D4AD INITIATIVES HELP JOBSEEKERS CHART A SUCCESSFUL PATH



Pathway Destinations

Stepping-Stone Island Efficient and effective training opportunities.

Upskilling Key Meaning skill development.

Edu-Cove High value postsecondary credentials.

Isle of Prospects High demand careers with resilient outlooks.

Pathways

Investment On-ramp Ways to understand the complete cost of education and training opportunities.

Quality Assurance Overpass Information about high- and low-quality education and training providers.

Progression Highway Ways to “cycle” through education and training to get progressively better opportunities that build on one another.

Benefits Bridge Ways to understand the true benefits of education and training opportunities.

Alignment Off-ramp Aligned information and education and training opportunities leading to successful careers.

Both Burning Glass and Emsi have also collected skills and grouped them in ways that aim to help improve linkages between job postings and resume information.¹⁵ Both of these resources, albeit with slightly different approaches, provide tools to education and training providers to help link curricula with skills that are in-demand in the workforce.

SkillsEngine, developed by the Texas State Technical College Center for Employability Outcomes, is a third tool in the marketplace that aims to use resumes and job postings to align curricula with in-demand skills that are also validated by industry and business.¹⁶ Additionally, numerous other organizations have developed credentials that show skill mastery through newer micro-credentialing programs, badges, and other efforts which move away from the traditional diploma or certificate as a key signal of competency.¹⁷ These tools are attempts to modernize efforts to align employment with education and training systems by ensuring that providers are developing skills necessary for their graduates to succeed in the workforce.

Cementing Alignment with Consumer Information. There are numerous local, state, and national efforts to complete the circle of alignment between high-value careers and education and training opportunities by providing consumer information. In a previous brief, D4AD examined existing research on work to improve the consumer information about education and training opportunities. But questions remain about whether providing such information actually reaches potential students and trainees and, when it does, whether it leads to changes in individual behavior. Put another way, the research and evidence clearly show that there is water, but there is an open question whether the horse has been led there and, if so, whether she is drinking.

One of the largest efforts in recent years has been the College Scorecard, which aims to provide potential students with information about the costs of attending different postsecondary institutions and the earnings median graduates receive, along with a handful of other metrics about the institution, including completion rates, programs of study, and median loan debt of completers. Although the Scorecard has numerous data gaps and limitations,¹⁸ it is an example of an attempt by the government to influence student choices through consumer information.

Essentially, this web resource attempts to align student choices with high-value careers by providing better information about program completers. Quoting from the initial press release, the Scorecard “provides students and families the critical information they need to make smart decisions about where to enroll for higher education.”¹⁹ Further, the goal of the effort is “to help students choose a school that is well-suited to meet their needs, priced affordably, and is consistent with their educational and career goals.”²⁰

While the U.S. Department of Education continues to tout the tool, citing its impact on research and prevalence in media stories and postsecondary rankings, as well as new data availability, little information is available about the impact specifically on student choices.²¹ In a recent press release, an official is quoted as saying, “I look forward to seeing how students, parents, and researchers alike use this new data to inform decision-making.”²² Although there is limited research into the impact of the Scorecard, those efforts that have examined the question suggest that the official quoted above may be waiting for some time.

Research examining whether the earnings data in the Scorecard influences student decisions showed the earnings data had minimal effect on student choices, particularly for lower income students.²³ Although institutions reporting higher median earnings saw a small increase in the number of applications, it was primarily driven by upper income students.²⁴ Further research developed a tool based on data from the Scorecard to test it directly with high school students and found no evidence that the additional information changed student behavior.²⁵

Other research focused on using information to affect college-going choices and behavior also found that information alone is unlikely to make substantial differences for low-income students, but when combined with additional supports and guidance, it makes a difference.²⁶

Workforce training programs, including those offered by postsecondary institutions through continuing education or non-credit programs, face similar questions about whether massive amounts of performance data can change participant behavior. Programs funded through the Workforce Innovation and Opportunity Act, and the Workforce Investment Act before it, have developed substantial program-level data products about the “success” or not of participants in finding employment, but these data are not being used by individuals to choose between different programs. Research on workforce training programs shows similar results as the education sector, with findings that individuals often choose programs that they are either unlikely to complete or that do not improve their career prospects upon completion.²⁷

The research suggests that pairing improved information available to trainees along with guidance and counseling may improve alignment with career opportunities.²⁸ This final component of a well-aligned system of career opportunities and education and training provision may be the most difficult. The first two steps are fairly technical and can take advantage of existing and developing data resources, but this last step involves helping those participating in the job and education market truly understand how different opportunities may prepare them for successful career paths. Further, even if individuals access and understand the available data, their decision-making processes may operate outside of strict and rational cost-benefit analyses (see box.)

This model also assumes that individuals interested in further training or education will rely only on reputable and authoritative consumer information tools when reality is significantly more complicated. Targeted marketing and advertising for education and training programs bombard anyone using related internet search terms with information that can seem official and reputable, but can stretch the truth or promote outcomes data that are far from complete.²⁹ Fully aligned systems must have validated consumer information tools that have garnered the trust of users to counteract marketing. An analogue would be various consumer information tools rating restaurants that are an ubiquitous part of the search for a good meal. Individuals may spend less time now perusing advertisements and more time viewing aggregated ratings of complete strangers.

Even relatively straightforward tools — the College Scorecard or state-based dashboards, for example — that present earnings information for different programs and institutions appear to be having a limited impact so far. While these tools offer the promise of broad reach, they appear to be falling short of actually informing the intended audiences. Instead, it appears that more labor-intensive methods are, for now, the most promising approach. Still, future tools may develop that can successfully automate and engage individuals using these same underlying data.

ARE HUMANS RATIONAL DECISIONMAKERS?

Countless books, dissertations, and academic papers have been written on this topic. To attempt to grossly oversimplify this highly nuanced and multifaceted body of literature, the short answer is, “Not really.” Consumer information-driven theories of change rely to a large extent on the assumption that if humans are presented sufficient information, they will generally make a rational choice. If a website shows that one program costs less and leads to better outcomes, one would think that it would be more popular.

The truth is substantially more complicated. Experiments and research show that even “experts” can be swayed by how choices are framed (for example favoring treatments with an 80 percent survival rate over those with a 20 percent mortality rate, even though the outcomes are identical).³⁰ Understanding that this is true in a wide-range of human decision-making suggests the importance of wrap-around services to support job seekers and the limitations of consumer-information driven models.³¹

Policy and Program Improvement. An additional pathway through which data can improve the alignment of education and training systems is by giving policymakers the information necessary to improve programs and effectively allocate scarce resources. Relying solely on consumer choice to align education and training programs with employment opportunities ignores the important role in the process played by a host of workforce development and postsecondary education policymakers.

The actual positions held by these individuals may vary based on internal state governance structures, but, broadly speaking, they have significant influence over the type and content of education and training opportunities, as well as some responsibility to rely on data to ensure that the programs offered under their domains have reasonable connections to employment opportunities. The question then becomes whether putting effective data in the hands of these leaders can improve alignment by effectively limiting individuals’ choices to those programs that are effective and reflect significant need in the local economy.

Research on the California Community College System — by far the nation’s largest system — shows mixed results of institutions responding to labor market changes.³² This research finds that as occupations grew, the related degrees and certificates did not keep pace, growing roughly half as much; similarly, growth in the number of credentials in some areas significantly outpaced employment growth in related occupations.³³ For occupations that saw growth, the limited growth in the number of degrees and certificates appears to be mainly due to student-led demand rather than policy or practice changes (such as an increase in sections or instructors).³⁴

Through the workforce training system, providers eligible for federal training funds must provide training for occupations defined by local workforce boards as “in demand.”³⁵ The Workforce Innovation and Opportunity Act defines “in demand” as follows:

An industry sector that has a substantial current or potential impact (including through jobs that lead to economic self-sufficiency and opportunities for advancement) on the State, regional, or local economy, as appropriate, and that contributes to the growth or stability of other supporting businesses, or the growth of other industry sectors; or

An occupation that currently has or is projected to have a number of positions (including positions that lead to economic self-sufficiency and opportunities for advancement) in an industry sector so as to have a significant impact on the State, regional, or local economy, as appropriate.³⁶

States and local workforce areas have latitude on the specific metrics for meeting these definitions using labor market information. This provides a general level of alignment using labor market information. But data on whether specific programs are aligned may be more complicated. WIOA-required performance reporting has a much shorter-time horizon (generally program participant outcomes in the second quarter after completion of training) than is necessary to evaluate whether a specific program provides long-term benefits.

An additional issue is that data on the labor market outcomes of short-term credentials and certificates are generally not available through state longitudinal data systems. States generally are focusing more on this area, but significant work remains to be done to assess both how many of these credentials are granted and what their labor market payoff is.³⁷

Thus, at best, policymakers are providing a limited amount of oversight to promote alignment of the education and training systems they oversee. Additional data and more complete information could help, but states must first make a commitment to defining and assessing alignment to then be able to make adjustments to program offerings both in postsecondary education and the workforce training system.

CONCLUSION: RESEARCH, RECOMMENDATIONS, AND NEXT STEPS

One of the difficulties in writing about aligning education and training systems with career opportunities is the lack of consensus about what outcomes we would see in a well-aligned system. Certain metrics, such as employment rates of program completers and their wages seem like good starting points. After all, we assume that employees are being compensated based on some level of merit and the skills and abilities they develop in their education and training programs.

But what other evidence should be available showing us that a system is well-aligned? In recent years, polls of employers and education providers have revealed gaps in their respective perceptions about the preparation of college graduates, with employers generally believing recent graduates are not adequately prepared for success in the workplace and educators generally believing the opposite.³⁸ Additionally, surveys of postsecondary students show that just over one-third of students believe they will complete their credential with the tools necessary to succeed in the workforce.³⁹ The counterpoint to these data is evidence that the premium paid to credentials obtained after high school remains at historically high levels, suggesting that even though they may feel like graduates are unprepared, employers are paying more to hire them than to train their own workers without these credentials.⁴⁰

Similarly, the phenomenon known as the “skills gap” — where, generally speaking, there are not enough workers with particular skills to fill a large number of jobs in the economy — also appears important as evidence of alignment, but research paints a conflicting picture. Although COVID-19 and the resulting economic damage are shattering models used for employment analysis, for some time there has been an argument by business and industry arguing that workers skills do not match job opportunities.⁴¹ The evidence they point to suggests that many employers have a difficult time filling positions requiring certain credentials.⁴² Others conclude that the idea of a skills gap is not supported by research and data on the actual skills employers value in their workplace, and that the number of vacancies reported in arguments in favor of skills gaps may be overestimated.⁴³

A first step in evaluating which tools and policies can lead to an aligned education and workforce system is agreeing on exactly what such a system looks like and how to measure such alignment between two traditionally siloed approaches to human capital development and employment. In addition to metrics on earnings and placement noted above, there should be relevant analysis of long-term unfilled positions by occupation. An aligned system should be able to adjust over time and produce workers to fill these openings, recognizing that compensation levels must also be appropriate.

Further, considering the tools mentioned above, it should be reasonable to evaluate whether a local workforce training office or community college using tools developed by Emsi, Burning Glass, or Skills Engine lead to a more aligned system.

An additional step is that education and training programs must provide skills and abilities at a cost in line with expected compensation. Career opportunities in fields that do not provide wages high enough for workers to afford the education and training required are likely to a) show evidence of mis-alignment on the metrics related to job openings and b) see graduates and training completers leaving quickly for other opportunities.

Lastly, an aligned system must solve the consumer information puzzle. At this point, the research is fairly conclusive that consumer information tools focused on the earnings associated with education and training programs on their own are not sufficient to empower market forces (broadly speaking) to align these systems. One could perhaps argue that the next generation of consumer information tools will finally, through better design, artificial intelligence, or some other next-big-thing, create a system where those considering education and training options “vote with their feet,” leading to fully-aligned systems. But, policymakers, funders, and government agencies should be highly skeptical and demand thorough research and evaluation of such claims.

Although alignment of our education and training opportunities with career opportunities and workforce demands has been a policy and legislative goal for as long as we have had publicly funded education, we still lack clarity and consensus on how best to recognize, define, and measure this alignment. A new generation of tools and providers offers a fresh opportunity to rethink alignment, how to evaluate it, and what the best ways are to achieve it.

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