AMERICA ACHIEVES
RESULTS FOR AMERICA

THE HAMILTON PROJECT

Using Data to Improve the Performance of Workforce Training

Louis S. Jacobson, New Horizons Economic Research
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Abstract

Training programs provide opportunities for low-income individuals to qualify for better jobs and enter the middle class. These programs also provide opportunities for workers who lost long-held jobs to qualify for new positions that can offset a substantial fraction of their earnings losses. Although millions of workers seek out career and technical training options in the pursuit of financial security and better lives, many ultimately choose programs that do not suit their needs. Some individuals do not complete their training programs, some find that their new skills do not match the needs of local employers, while many others, uncertain of the outcomes, hesitate to invest time and money into training programs altogether. Too many workers are making poor choices in training, but fortunately, this problem can be resolved by helping workers select programs that they are more likely to complete and that are more likely to raise their earnings potential. This paper proposes a state-by-state solution, relying on a competitive framework to encourage states to help prospective trainees make better-informed choices. The plan will increase the return on training investments by developing the data and measures necessary to provide the information prospective trainees need, by presenting the information in user-friendly "report cards," by providing help for prospective trainees to use the information effectively, and by creating incentives for states to implement permanent information systems once they prove cost-effective. Using a mix of online systems coupled with assistance from career counselors, the ultimate goal of this proposal is to provide unambiguous evidence about how information systems can improve training outcomes for prospective trainees. With the earnings divide between skilled and unskilled workers at a historic high, it is imperative that we raise overall workforce skills in order to enhance America's competitiveness and ensure economic growth for all Americans.

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Introduction

Education and training have long propelled Americans to better jobs and higher living standards. With the earnings divide between skilled and unskilled workers remaining at a historic high, the imperative for increasing skill levels is great. Training programs offer opportunities for low-income individuals to qualify for jobs that enable them to enter the middle class, and for displaced workers to regain a significant portion of their lost earnings. Improving workforce skills also enhances America's competitiveness and economic growth.

There is compelling evidence that one or two years of career-oriented training provided by community colleges, for-profit colleges, and other education providers can raise annual earnings by as much as $12,000, which often represents an increase of 50 percent or more. These benefits can accrue to workers young and old as well as workers with weak or strong academic backgrounds. Course-for-course, the workplace outcomes of career training rival, and sometimes outstrip, outcomes from schooling at select universities.

Although the pursuit of financial security and better lives motivates millions of workers to seek out various career and technical training options, many individuals choose programs that they ultimately do not complete. For example, at community colleges nationwide, only 31 percent of students earn degrees, roughly half the rate of students at four-year colleges. Even those who earn a degree sometimes find that their new credentials do not lead to obtaining better jobs because their skills do not match the needs of local employers. In all, only about one in four community college students leave these schools with new skills that enhance their earnings substantially. Additionally, many other workers may hesitate to invest their time and money in further training because the outcomes for better jobs are so uncertain.

While there is no shortage of training programs that can enhance earnings substantially, too many workers overlook these programs and lose a chance to train for a better-paying job.

These poor choices represent a troubling loss of economic gains for workers and for taxpayers—a problem that could be resolved by helping workers select training programs that they are more likely to complete and that are more likely to raise their earnings.

Although poor training choices is a national problem, we propose a state-based solution, one relying on competitions to encourage states to help prospective trainees make better choices. We propose a plan to increase the return on training investments by developing the data and measures necessary to provide the information prospective trainees need to make better training choices. Once these data systems are in place, states would be encouraged to, first, present the information to prospective trainees in user-friendly report cards and, second, to provide the counseling and guidance resources that trainees require to use this information effectively. Finally, this plan would create incentives for states to put in place permanent information dissemination systems once they prove to be cost-effective.

Our approach tests a mix of online systems coupled with assistance from career counselors. These online systems could

be accessed at workers' homes, public libraries, campus career centers, and public One-Stop Career Centers. The help from career counselors could be integrated into support programs at training institutions and at One-Stop centers. The ultimate goal of our proposal is to provide unambiguous evidence about the characteristics of information systems that would improve training outcomes for prospective trainees who differ with respect to their academic preparation, facility with using data, workplace skills, and interests.

Lost potential in workforce development

Information that many prospective trainees need to evaluate programs simply is not available to them in ways that are helpful. Many individuals seeking new or upgraded skills, who are sometimes the first in their family to consider postsecondary education, cannot obtain reliable information about the options that would best complement their existing skills from friends or family, and they too readily accept advertising claims.

Our approach creates the information that prospective trainees need and tailors it to an individual's circumstances so the information is meaningful. For example, the information would be organized to show how completion rates of specific programs vary as a function of field of study, duration, intensity, trainee academic preparation, and local labor-market demand.

Most states, aided by substantial data development funding by federal and state governments, already have the basic data. Several states have taken the next step and are using the data to produce relevant performance measures. A few states have even made that information available online.

So far, these online systems have not produced much improvement in the completion of high-return career and technical training programs. In part, this is because users are unaware of or lack the means to access these systems. But more likely, the central problem is that the information is not meaningful—potential trainees who currently make the poorest training choices often have the least experience and preparation in using data to make complex decisions. This is especially true for individuals who did not do well academically in high school and have had little, if any, postsecondary education.

The availability of relevant information is a necessary prerequisite for making informed decisions, but it is not by itself sufficient. To improve trainees' choices, it is also necessary for the information to be disseminated in a way that allows users to understand its meaning and place it into an appropriate framework. Improved online systems may be sufficient to help some trainees, but experience with One-Stop Career Centers supported by the Workforce Investment Act (WIA) (Jacobson 2009) and evidence from experiments with college mentoring (Bettinger and Baker 2011) suggest that many trainees need assistance from well-trained career counselors to make the most appropriate decisions.

Understanding these challenges, we propose establishing a competition in which states are incentivized to use their own existing longitudinal data systems to fill major information gaps and to go beyond creating relevant information to delivering it in a meaningful way. A key element of the competition is developing effective online and counseling-based systems that would improve the choices made by prospective trainees—a critically important area that has received too little attention from educators, policymakers, and researchers.

The competition would reward states for (1) assembling the data needed to make sound decisions and organizing the data to produce relevant measures, (2) measuring the payoffs to training programs so that high-return courses and fields are identified, (3) disseminating the information using computer-based and staff-based systems in a way that improves training choices, and (4) sustaining cost-effective systems after evaluating which dissemination methods are most impactful. Although the primary focus would be on helping prospective trainees make the best possible choices, the competition also would create incentives for administrators and policymakers to respond to changes in those choices by moving resources from low-return programs where few workers end up with better jobs to high-return programs where many workers end up with better jobs.

The competition's four components are described in more detail below:

- **Component 1: Assembling the data.** A necessary first step is to assemble data on the outcomes of specific programs (completion rates and post-program earnings); program attributes (field of study, duration, and cost); and participants' backgrounds (age, gender, years of education, high school grade point average [GPA], number of years of high school math and science courses, and pre-program earnings).

- **Component 2: Measuring the payoffs to training programs.** The second step is to use these data to demonstrate how post-program earnings and completion rates vary depending on the characteristics of the programs, characteristics of the participant, and characteristics of the participant's local labor market.

- **Component 3: Disseminating the information.** The third step is to display the information so it is easily understood by stakeholders with different levels of experience in using data to make complex decisions. States would be encouraged to try out online "report cards" that provide basic statistics on each program as well as sophisticated "expert" systems that tailor the information to the specific attributes and interests of individual users. They also would be encouraged to assess the effectiveness of "self-service" online systems with, and without, guidance from well-trained career counselors.

- **Component 4: Sustaining cost-effective systems.** The fourth step is to identify information systems that are unambiguously cost-effective and to propose funding mechanisms to sustain those systems after start-up funds are exhausted. Such mechanisms could include inducing state education agencies and legislative bodies to reallocate resources from low-return to high-return programs based on evidence of their cost-effectiveness.

This approach has multiple benefits. First, it leverages the excellent work that some states and the federal government have already done to assemble the data required to construct these report cards. Through competitive grants such as the Department of Education's Statewide Longitudinal Data Systems (SLDS) Grant Program and the Department of Labor's Workforce Data Quality Initiative (WDQI), and through state initiatives, virtually every state is assembling databases necessary to evaluate its educational and training systems.

Second, this proposal will encourage states to go beyond collecting data to producing the right types of information and developing systems to disseminate that information to different stakeholders in a way that changes behavior for the better. After all, it is the dissemination aspect of the competition that is the missing ingredient that could have a transformative effect on the benefits of career and technical education.

Third, this competition will influence the actions of program administrators and policymakers because community colleges and other training providers are strongly market-driven, and the new systems will generate market forces that alter the demand for training from low-return to high-return programs. But, in addition, it will encourage administrators and policymakers to take independent actions to help students make better choices, such as developing more effective orientation and counseling programs. It also might stimulate the federal government to adopt measures that improve training outcomes and increase the returns to public investments in training. For example, funding structures could be altered to set aside portions of grants and loans to ensure students get the information, assessment, and counseling they need to improve the choices they make.

In sum, this approach will go a long way toward resolving key problems that prevent many workers from making well-informed choices when seeking career-enhancing training.

The Challenge:

Why do so many individuals leave career and technical training without skills that provide value in the workplace?

Although individuals pursue education for many reasons, career advancement is an important consideration for virtually all students. This is especially true for experienced workers displaced from long-term jobs and low-wage workers stuck in dead-end jobs with bills to pay and family responsibilities to manage but who do not have the time or funds to sustain years of additional training. The imperative for such workers is to increase their skills quickly and inexpensively so that they get better-paying jobs.

Evidence shows that many career and technical training programs lead to good-paying jobs and stable careers. In fact, the earnings of individuals with certificates requiring at least a year's worth of credits and two-year degrees in technical and industrial fields often are comparable to those of workers with more traditional four-year degrees (Jacobson 2011). As shown in figure 1, students who obtain four-year degrees after obtaining two-year degrees, two-year degrees in high-return or moderate-return fields of study, or career-oriented certificates requiring at least a year's worth of credits, all go on to earn more than $34,000 a year (Jacobson 2011).

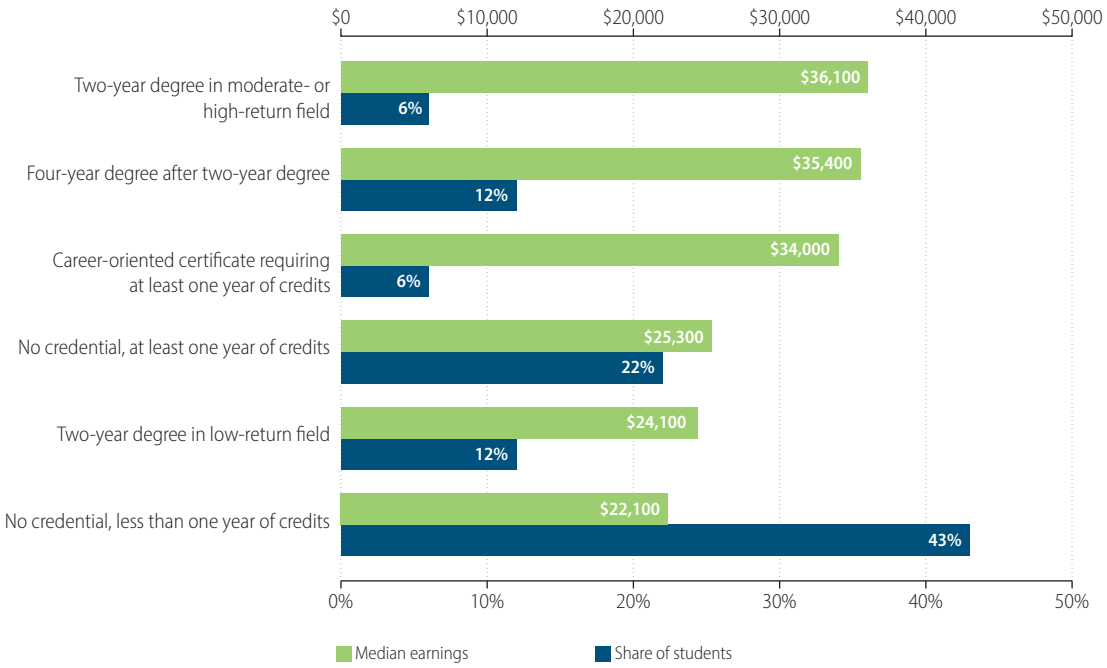
However, other students do not fare as well. Students who complete degrees in low-return courses earn roughly 33 percent less—$12,000 less—than their peers who spend the same time in school but complete higher-return courses.[1] And other students who amass credits without a credential—even those who earn more than twenty-four credits (about one year's worth)—go on to similarly low-earning jobs. Although these results apply to high school graduates in Florida with relatively little work experience, similar results apply to unemployment insurance (UI) claimants returning to college in Washington State and Pittsburgh, Pennsylvania (Jacobson, LaLonde and Sullivan 2004; Jacobson and Bednarzik 1993). In particular, these studies also found that there was wide variation in the effect of field-of-study on subsequent earnings, with the same sets of fields being in the high-, moderate-, and low-return groups.

Despite these very large differences in earnings shown in figure 1, three out of four community college students fail to complete a high-return or moderate-return program. Most either complete low-return programs or do not complete a program of any sort. Six percent earn a two-year degree in a high- or moderate-return field, 12 percent earn two-year and four-year degrees, and 6 percent earn a certificate. In contrast, 43 percent of community college students earn less than twenty-five credits before leaving school, 29 percent earn twenty-five or more credits but earn no credential, and 12 percent finish a two-year degree in a low-return field.

Again, while these results apply to recent high school graduates in Florida, similar results apply to UI claimants in Washington State and Pittsburgh. A key difference is that very few students who return to school after age twenty-eight accumulate anything close to the number of credits that younger students obtain. Thus, few receive degrees of any sort and a much higher percentage is in the group that earns no certificate and less than one year of credits.[2] However, course-for-course, the earnings-enhancing effect of high-return versus low-return courses is similar for older and younger students (Jacobson, LaLonde, and Sullivan 2005).

Figure 1

Median Earnings and Distribution of Students by Attainment in Community College



Note: These statistics are reproduced from Jacobson (2011) and use the student data base provided by the Florida Department of Education covering all students who entered ninth grade in 1996 and attended Florida community colleges from 2000 to 2006. Earnings are examined within the first three years after leaving college for students leaving college before 2005 and for other students between leaving college and 2007.

These results indicate that many students miss opportunities to increase their earnings substantially because they enroll in programs with low returns, and thereby do not reap the full benefits from their investments of their own time and money. But a substantial proportion of the cost of public training programs is borne by taxpayers—so that the missed opportunities of the potential trainees also substantially reduce the returns to public investments. A good proxy for the investment made in public training is the sum of course credits earned by a given student. Using this measure, more than 60 percent of investments (course credits) are used by the 75 percent of students who fail to complete high-return programs. (This percentage of credits is lower than the percentage of students, because 57 percent of low-return students leave after earning less than a year's worth of credits.)

The results also suggest that there is often a poor match between the skills and preparation of incoming students and the demands of the programs. There are programs that can lead to higher earnings for students with both strong and weak academic preparation, but students often enroll in programs that they cannot complete.

Poor academic preparation is a barrier to completing a degree. The majority of students who fail to complete degrees at community colleges, even those who obtain twenty-five or more course credits, have high school GPAs of C or lower. In contrast, only 35 percent of students who complete high-return two-year degrees and 25 percent of students completing four-year degrees had a GPA of C or lower. However, 65 percent of students who receive a high-return certificate have GPAs of C or lower. This percentage suggests that poor academic preparation was not a barrier to obtaining a high-return certificate. Also, students who left college with twenty-five or more credits (but no degree) spent enough time in school to have obtained a high-return certificate that, studies indicate, would have boosted their annual earnings by, on average, about $9,000.

Similarly, many students who earn two-year degrees in low-return fields have the same academic preparation as those who earn two-year degrees in high-return fields and spent as much

time in school. This finding suggests that many of the students who left college with low-return two-year degrees could have obtained two-year degrees in high-return fields that would have boosted their annual earnings by about $12,000.

The proposed competition will help determine precisely how much difference it would make if the information available to prospective trainees were improved and they were offered more help in making decisions that further their goals. Although there are high-return programs available to students with a broad range of academic preparation and interests, even with the best information and counseling, some students would not be able to complete a high-return program for a variety of reasons or would choose to complete a low-return program anyway.

Nevertheless, the social return on investment in training programs would increase significantly even if only 10 percent of students leaving college with twenty-five or more credits and no credential earned certificates for high-return jobs, and if only 10 percent of students leaving college with a two-year degree for a low-return job earned a two-year degree in a high-return field.

The goal of our proposal is to design, test, and ultimately put in place systems that provide students with the information and framework to make well-informed training decisions. We expect that such systems will lead to a shift in choices for students in the above groups of at least 10 percent, and thus greatly increase the return on investment in training. Another benefit will come from discouraging students from enrolling in any training at all, if they see that they are unlikely to succeed. But a larger positive effect could come from improved information and counseling that induces workers to seek training, particularly those who do not enter training programs because they are uncertain or even skeptical of their benefits and costs.

Why do students choose courses that they cannot finish or courses that do not lead to career advancement?

To better understand why students often make poor choices, we interviewed staff members who advise students at workforce and community college programs. The close-to-unanimous conclusion from our discussions is that workers face systematic information deficits. The most common problems reported are that students simply do not have the information necessary to make good choices, underestimate the benefits of career oriented fields of study relative to academic fields, have difficulty identifying high-quality programs, and have little way of knowing whether they're prepared for the programs they enter. Box 1 provides further discussion of these areas of concern.

Would compensating for information deficits improve training outcomes?

Interviews and surveys with individuals tasked with counseling students strongly indicate that both lack of information and lack of access to effective assessment and counseling lead many students to jump into programs without an accurate view of the likely results. Community colleges spend billions of dollars on instruction, but only tiny amounts on support services. The counseling that takes place is aimed toward helping students select the courses they need to complete a program—after they have already selected a program of study. There are few organized efforts to help prospective trainees make sound choices of programs that further their goals and complement their skills. At most community colleges, the ratio of students to career counselors is greater than a thousand to one.

There is some evidence that provision of assessment and counseling to students does improve college outcomes and is a key element of successful college dropout prevention programs (Bettinger and Baker 2011). Assessment and counseling also are key elements of the "Success by Design" program supported by the Bill and Melinda Gates Foundation and designed to build on the experience of an array of earlier efforts to improve college outcomes, most of which had only limited success (Jacobson 2011).

Clearly, it is possible to provide low-cost assessment and counseling. One-Stop Career Centers provide these services to every applicant for a WIA training voucher to help him or her select an appropriate program. These services, which cost less than $300 per person, include individual and group counseling with well-trained staff. At the conclusion, individuals have filled out a form similar to a college application that is based on their own research and the information obtained from their counseling that describes the likely outcomes from the best available training options, the requirements to complete those options,

the extent to which the individual meets those requirements, the direct and indirect costs of the training, and how those costs will be met.

Practitioners at One-Stops and community colleges are convinced that this process substantially alters the choices made by workers. In particular, staff members report that the services frequently prevented prospective trainees from enrolling in programs that they were unlikely to complete, were unlikely to improve their career prospects, or were inconsistent with their interests and constraints.

Based on these views, the U.S. Department of Labor conducted a random-assignment study to estimate the value of enhancing counseling and assessment beyond what was then provided by One-Stops. That study showed small, statistically insignificant, effects on earnings and training received from increased counseling alone, but modestly large, statistically significant, positive effects on earnings from increased counseling coupled with increased voucher amounts (McConnell et al. 2006). One way the program raised earnings was by delaying the entry of prospective trainees until a more intensive and more expensive training program was available. How-

Box 1. Why Do Trainees Choose Low-Return Training Options?

Through a range of discussions and surveys, including the Market Responsive Community College Study, the One Stop-Community College Collaboration Study, and a survey of Florida community college counselors and support staff, we have identified several areas where a lack of information hinders student decision-making.

Range of offerings: Prospective trainees are not aware of the wide range of programs available at local community colleges and for-profit training institutions. In particular, they are familiar with academic programs leading to two-year and four-year degrees and ignore high-return certificate and career-oriented two-year programs.

Economic returns to programs: Prospective trainees have limited information about how returns vary across programs. They overestimate the returns from academic programs, and they underestimate the returns from career-oriented programs, especially those in building trades and protective services. They fail to recognize that some high-return programs can be completed quickly, while others take years to complete. They also fail to recognize that demand for some skills is widely distributed across the country, while other skills are in high demand only in some locations.

Prerequisite skills and preparation: Prospective trainees have difficulty assessing whether their schooling and experience is adequate for them to complete programs. On the one hand, they underestimate the importance of academic preparation in certain high-return fields, such as those that are science-, technology-, engineering-, and math- (STEM) related, and they fail to recognize when their STEM skills are not strong enough to complete certain high-return programs. On the other hand, they fail to recognize that they have skills needed to obtain high-return certificates in areas such as health care, protective services, auto mechanics, plumbing, and heating and air conditioning repair and installation.

Access to effective counseling: Prospective trainees have great difficulty obtaining effective career counseling. They may have few friends or relatives to turn to who are knowledgeable about training options. This is often true for low-income workers and displaced workers and children of immigrants who had no postsecondary training and may be the first persons in their families to pursue such training.

Comparing costs and quality across institutions: Prospective trainees are not able to adequately compare the net returns across similar programs at different institutions. By not factoring in differences in costs, they sometimes select high-return, high-cost, for-profit programs from which, after repaying loans, the net benefits are no higher than from lower return, but much less expensive, community college programs. While many for-profit programs offer high-return training that more than offsets their high costs, some advertise misleading statistics about benefits and costs. In addition, for-profits spend far more on advertising than community colleges do. The advisors we surveyed said that potential trainees too readily accept advertising claims without assessing their accuracy or carefully weighing the benefits and costs of alternatives.

ever, the value of the assessment and counseling provided prior to enrollment in WIA was not ascertained in this study, although it could be of high value.

Although there is unambiguous evidence that many career-oriented training programs are capable of increasing the earnings of workers with diverse backgrounds, the evidence is less strong for how better information and improved assessment and counseling would affect students' selection and completion of high-return programs. Nevertheless, educated opinion and statistical analysis suggest that filling information deficits and helping potential trainees improve their choices could increase returns on public-sponsored job training investments.

Box 2. New Opportunities for Evidence-Based Policies

The most comprehensive analysis presented in this paper on the earnings-enhancing effects of different training programs comes from an exceptionally wide range of databases assembled by the state of Florida. Moreover, Florida is using its federal WDQI Grant to further extend the linkages. Florida also is intent on analyzing and disseminating the data in a manner that will be conducive to improving choices made by students, administrators, and policymakers.

The Florida system under development will link information on high school and college attendance, earnings, UI benefit collection, receipt of WIA and other One-Stop services, and receipt of welfare and food stamp benefits. The breadth of the data is exceptionally wide and covers sixteen years, which is essential for obtaining a clear picture of the effectiveness of program participation.

Not only is Florida collecting an immense amount of data, it is also using its WDQI grant and other funds to analyze the data. The state is planning to complete and publicize extensive longitudinal analyses to study the importance of both K-12 education and workforce-development programs in increasing earnings. Florida and a few other states have begun the process of creating meaningful information from their databases and presenting it in an easy-to-digest format. However, these efforts are still in an early stage and have not yet realized their full potential.

Florida not only has the capacity to produce an array of statistics, it has invested in training staff to provide decision-makers at all levels with standard reports on a regular basis as well as rapid responses to requests for information. Demonstrating the value of the databases to state and local officials was critically important for obtaining the millions of dollars of state funds needed to develop and maintain them. Florida is one of only a few states to develop productive relationships among key decision-makers who want solid information, government workers who understand the databases, and private companies with the expertise to create the data systems. These relationships have allowed Florida to create information systems that prospective trainees can use to assess and select high-return programs.

In addition, Florida has made it possible for the research and evaluation community to access its data. The state has benefited from insights generated from this research without compromising the confidentiality of the data by establishing an approval process that ensured researchers were well-qualified to conduct the research and committed to producing unbiased and accurate results.

Assembling these data and analyzing them rigorously is a necessary step in the process of developing the information systems required to help workers make better training choices. However, as this paper discusses, developing the systems to disseminate the information effectively also is an essential part of the process.

A New Approach:

Creating a federal competition among states to provide the information, framework, and support needed to improve training outcomes

Our proposal allows us to test an important hypothesis—that developing accurate and useful measures of programs' effectiveness and helping prospective trainees use this information to improve their choices would substantially increase workers' earnings as well as the value of training investments to employers and taxpayers. To this end, we propose a competitive grant program that would provide states with the funds they need to develop and test information systems aimed at improving training choices.

To convey information on workforce training programs clearly and concisely, we propose that states use an at-a-glance report card that highlights the basics of a program's performance, such as annual post-program earnings for participants and the percentage of enrollees that complete the program, as well as a program's attributes, including field of study, cost, and time to complete. The report card could also allow deeper delving into a program's performance—for example, showing how completion rates vary by enrollees' levels of academic preparation and whether the program requires full-time attendance. The reports would be presented in ways that facilitate comparisons among programs (see figure 2).

Note that the sample provided in figure 2 focuses on *program* characteristics such as the completion rate, characteristics of participants, and the average increase in annual earnings. However, the best program for an individual worker will depend on personal as well as program characteristics. Establishing a system that can tailor recommendations is the next step in improving the information workers need to make sound training decisions.

Figure 2

A Sample Report Card

Certified Nursing Assistant Program

Total Cost
$3,200

24 Credits at $100/credit (in-state) + $400 for books and $400 for lab fee

Prerequisites:
High school diploma

Duration:
16 months (3 semesters)

Program Statistics:
Annual enrollment: 60 students
Completion rate: 34%

Characteristics of Entering Students:
Average age: 27
Average high school GPA: C (2.0)

Characteristics of Completers:
Average age: 31
Average high school GPA: B+ (3.2)

Benefits

Average increase in annual earnings:
$6,000

Average annual earnings of completers:
$29,000

A more expert system would include person-specific information. For example, such a system could tell a prospective trainee the completion rate of participants with similar profiles, based on factors such as highest level of education attained, high school GPA, and amount of prior work experience. Customization could be achieved by having prospective trainees enter their characteristics into an online system, by career counselors interviewing prospective trainees, or by some combination of the two.

With this additional information, workers, administrators, and policymakers would be better able to focus time and re-

Box 3. Grant Competition Summary

Component 1: Assembling the data

Assembling the longitudinal administrative data needed to estimate:

- Expected earnings following completion of training programs of different lengths, provided by different institutions, in different fields, and in different labor markets
- Probability of completing programs with different characteristics for trainees with different academic backgrounds, work experience, interests, financial resources, and family constraints

These data should be combined with information about where to get training, the cost of the programs, sources of funding to pay the cost, entrance requirements, intensity, and flexibility of when and where they meet.

Component 2: Measuring the payoffs to training programs

Estimating expected completion rates and earnings using the assembled data with the goal of:

- Providing statistics on how training programs increase earnings, how much they cost, and prerequisites for successful completion
- Tailoring the statistics to the specific characteristics of trainees, training-providers, and labor markets

Component 3: Disseminating the information

Testing dissemination mechanisms to determine:

- How much and what type of help is needed by prospective trainees, career counselors, administrators, and policymakers
- The most cost-effective way to provide the needed help; such mechanisms could include:
  - Publishing simple report cards on the web
  - Developing interactive systems on the web that tailor report cards to the characteristics of the trainee, local job opportunities, and local training providers
  - Combining report cards with systems to assess interests and attributes needed to complete programs
  - Combining the above information sources with individual and group assessment and counseling provided by well-trained staff
  - Creating a specialized online database for policymakers and program administrators

Component 4: Sustaining cost-effective systems

Developing a plan for sustaining use of the systems once it is demonstrated that their benefits exceed costs. Such a plan should consider:

- Sources of funding to maintain established systems
- Incentives to encourage workers, counselors, and other stakeholders to use the systems

sources on career-oriented programs that show the greatest benefits. Greater transparency on performance will also exert competitive pressures on programs to improve outcomes.

The competition would provide grants to states that propose developing and testing information systems that include all four components essential to creating, publicizing, and using training program statistics, as summarized in box 3. The remainder of this section expands upon each of the components and then gives guidelines on how a grant competition might be scored.

Component 1: Assembling the data

Longitudinal data that links completion of specific courses to labor-market outcomes is the central building block to the systems we propose.

Over the past twenty-five years, there has been increasing recognition of the value of assembling administrative data covering courses taken, grades received, credentials awarded, and standardized test scores attained at primary, secondary and postsecondary institutions and linking these data to administrative wage record data from the UI system. While a few states created these data sets in the early 1990s, most states only began assembling K-12 data in the early 2000s to produce the measures required under the No Child Left Behind Act (NCLB). Subsequently, some of these states added postsecondary data; most recently, some states began adding wage-record data.[3]

One key incentive to assemble these data was meeting NCLB and other federal data reporting requirements. However, a major impetus for creating these data came from the U.S. Department of Education when it made more than $600 million available to create education SLDS, and from the U.S. Department of Labor when it made about $30 million available to add workforce data to the education SLDS.[4] Today, at least one-third of the states have a full system in place that includes secondary, postsecondary, and earnings data, and most of the remaining states only lack inclusion of wage record data, which is not especially difficult or costly to include. Some states have data going back ten or twenty years, which is very useful for assessing the long-term effects of training and how the effects vary under different economic conditions, but most states have data covering much shorter periods.

For this component of the competition, states would be required to identify the sources of data and how they would be matched at the individual level, including safeguards to protect worker privacy. For further information on assembling the data, see appendix A.

Component 2: Measuring the payoffs to training programs

While nearly all states have the data required to estimate expected completion rates and earnings, or could assemble these data relatively easily, only a few states have organized the data to provide the information required to help actual and potential trainees improve their choices. These states have used the data mostly to produce basic tabulations of the number of students in a training program, number completing the program, basic characteristics of the average student, number employed, and earnings over different periods.

A key goal of the competition is to encourage states to produce statistics that potential trainees can use to assess their probability of completing different programs, estimate the boost in salary they could earn after completing the programs, and develop realistic estimates of direct and indirect program costs. Without having all three types of information, potential trainees might enter high-return programs that they would be unlikely to complete or that would cost more than students' expected increases in earnings.

Constructing simple measures of who participates in the programs and how they fare in the job market can yield valuable information on program completion rates and subsequent earnings by field of study. Analysis can also show the importance of program length and intensity, trainee characteristics that affect outcomes such as academic preparation, and labor-market characteristics relating to local demand for workers in different fields.

More advanced measures can tailor the information to applicant and program characteristics. For example, prospective trainees can be advised that information technology (IT) specialists earn about $45,000 three years after completing training. However, 90 percent of those completing IT programs had high school GPAs of 3.0 or better and completed at least three years of high school math courses. They also could be informed that IT graduates living in cities with sub-

stantial high-tech employment earned about $15,000 more than IT graduates living in small cities and rural areas far from high-tech centers. Further, prospective trainees who lack the academic preparation that makes completion of IT programs likely could be given comparative information about health care, protective services, and other training programs that offer high wages and high probabilities of completion to trainees with lower levels of academic preparation.

Growing recognition of the importance of providing reliable information about the returns and costs of trainings is demonstrated by the U.S. Department of Education's Gainful Employment Programs (U.S. Department of Education 2011). However, these provisions assume that the prescribed measures would be understood sufficiently to reduce unreasonable risk-taking by prospective trainees, especially those who might incur large debts to obtain high-cost training from for-profit institutions. Our proposed competition would complement Gainful Employment by providing information about which statistics are misleading, and what set of well-rounded statistics and assistance in interpreting them would lead to attainment of these regulations' underlying goals.

In the end, these calculations can provide easy-to-understand metrics to help stakeholders navigate the world of workforce development programs. For this component of the competition, states should describe what statistics would be produced, how the data collected in component 1 would be used to create those statistics, and what group or body would be charged with the task.

Component 3: Disseminating the information

Once a state produces a working system to create measures that can guide trainee choices, the next step is to package the information in a way that can effectively be used by trainees and the people who work with them.

States would be free to propose creating and testing a range of systems to display and disseminate information. Those systems include posting simple report cards on the web; putting sophisticated interactive systems on the web that could tailor report cards to the individual characteristics of the trainee, local job opportunities, and local training providers; combining various types of report cards with tests to assess interests and attributes needed to complete programs; combining the web-based assistance with individual and group assessment and counseling; and providing a customized online database for policymakers and program administrators.

Whatever systems the states implement, they will need to develop rigorous methods to measure their overall effectiveness and how different elements affect users with different characteristics. Particular attention should be given to devising systems to help individuals who are especially likely to make bad decisions without substantial assistance, such as those with the poorest academic preparation and least experience in using data to make decisions.

We suggest that states proceed in four stages. For example:

- First, states would focus on the development of a basic report card.
- Second, states would focus on tailoring report cards to the characteristics of potential trainees.
- Third, states would add systems to assess the interests and skills of prospective trainees.
- Fourth, states would develop systems to organize the information in report cards so it would be useful to mentors, practitioners, and decision-makers.

Each of these dissemination elements is discussed below. For this component of the competition, states should describe the dissemination system(s) they would develop and their approaches to obtaining and using user feedback on the systems.

Developing basic report cards

Most of the information in the report card illustrated in figure 2 can be obtained from SLDS, which is the central resource that makes it possible to provide comprehensive information at low cost. Many states already produce the highly relevant data that populate this illustrative card as well as the more detailed one shown in appendix B.

The simple report cards could have a menu-based system similar to web-based systems commonly used to find, for example, the lowest airfare. At the most basic level, a potential trainee could specify program characteristics and the web-

based system would display a menu on completion rates and earnings of appropriate programs. For example, potential trainees could enter values for items such as the field of interest, the location of interest, cost, duration of the program, whether full-time attendance is required, high school GPAs of completers, expected earnings gains of completers, and percentage typically completing.

The search engine would select the specific programs that meet the user's criteria in an order specified by the user, such as from highest to lowest expected returns. The user would review the information and alter the search criteria to narrow the search to the most relevant options. As the search is narrowed, the user could request that the system present a screen that directly compares a program with one or more other programs.

Florida and other states have systems that use the SLDS to place this type of information on the web along with information about the cost of the programs, entrance requirements, and duration. For example, a prospective trainee could inquire about registered nursing (RN) programs and certified nursing assistant (CNA) programs in Miami and then compare differences in earnings, completion rates, cost, and duration across these two types of programs and within each type.

This paper provides two versions of a basic report card for a CNA training program. The short version (figure 2) highlights the most important information. Appendix B also depicts a full version with all available information. The user could start by using the short version to identify the most promising programs and then request the system show those programs' full characteristics.

Creating systems that tailor information to the characteristics of potential trainees

The next step would be to create an intermediate-level system where trainees would enter personal characteristics to obtain more tailored choices. The list of programs to be considered could be narrowed by putting in personal characteristics such as highest level of education, GPA, number of math courses completed, grades in those courses, as well as characteristics of programs of interest such as cost, duration, flexibility of when and where courses are offered, and fields of study. By providing much more accurate information about the individual's probability of program completion, the intermediate system would quickly narrow consideration to programs that have a high potential for completion and generate high returns for the individual user. Thus, the intermediate system would reduce the burden placed on users of determining the extent to which general statistics provided by the basic system would apply to them.

Creating advanced systems that provide assessment tools and tutorials to avoid the need for remediation

An advanced system would include all the features of the intermediate system, and in addition include a web-based assessment of the potential trainee's attributes that affect the probability of completion and interests. For example, there are web-based versions of both the Armed Service Vocational Aptitude Battery (ASVAB) and tests offered by the ACT that potential trainees could take to assess their level of academic and work-related skills and the careers the test-taker would be best qualified for and find most interesting. The information could be used by prospective trainees to widen the range of programs to be considered and to narrow choices to programs with the best salaries and highest levels of personal satisfaction. The test scores could be directly entered into an intermediate system to refine the estimates of returns and completion.

Community college entrance exams and other tests could also be used by trainees to determine if they qualify for specific programs. An important adjunct to these tests would be an online tutorial system that would help potential trainees brush up on skills they once mastered or even develop skills needed to gain entrance to programs. The Pueblo Colorado Community College, in association with the local One-Stop Center, developed this type of system with the help of an American Recovery and Reinvestment Act grant from the U.S. Department of Labor. The system has assisted many trainees who otherwise would have tested below the threshold needed to enter high-return, for-credit programs. If the test was not passed, the individuals would have had to first complete remedial courses, which are difficult, time-consuming, and costly. Such a system would be especially beneficial to workers who are unaware that community colleges require passing entrance exams to enter many programs, have rusty skills because they have been out of school for many years, or cannot afford the time or expense of completing remedial courses.

Box 4. Evaluating and Improving Dissemination Systems

Does the value of the incremental improvement in prospective trainees' choices cover the additional costs of using more expensive systems? To answer this key question states must consider:

1. How do the different web-based systems affect choices made by trainees?
2. How do the effects differ across users with different characteristics—prospective and actual trainees, mentors of the trainees, workforce system and training provider counselors, program administrators, and policymakers?
3. What difference does it make to provide different types of help in using these systems for different end-users?
4. What web-based systems together with their supportive services are most cost-effective in improving training outcomes and increasing the returns on postsecondary training investments?

Since determining the cost-effectiveness of the systems is crucial to deciding what permanent systems to put in place, states might opt to use randomized control trials to assess the effectiveness of the systems they develop. For example, they might arrange to use various systems as part of an orientation for incoming career-oriented students at a small group of community colleges. A letter could ask for volunteers to attend the orientation, and volunteers could then be assigned to one of three target groups or a control group that would not receive the orientation. The target groups would get an explanation of the intent of the demonstration, access to certain systems and supplemental help, and an invitation to alter their choices if they felt better options were available. One group would use a basic report-card system. A second would use an intermediate report-card system. A third would use an advanced report-card system that includes online assessment tools.

Variations on this theme could include offering individual and group counseling from well-trained staff to half of the members of each target group or expanding One-Stops on college campuses, as Washington State has done, and have the One-Stops provide assessment and counseling.

What is of paramount importance is developing unambiguous evidence that can guide widespread implementation of highly effective systems. The central tenet of this competition is that once there is unambiguous evidence that the benefits of these systems far exceed their costs, all levels of government will rapidly move forward to do what is needed to put these systems in place.

Informing policymakers and administrators

As individuals are empowered to make better choices about what programs to attend, policymakers and program administrators can be empowered to make better choices about where to devote their resources. The same system that collects data and creates the report cards and expert system above can be harnessed to produce metrics that are useful to decision-makers who want to understand how to better serve program participants. In particular, administrators could use information on labor-market returns to adjust course offerings—dedicating more resources to programs that meet trainees' needs and cutting back on programs that are mismatched to local employer demand.

Policymakers can complement administrators' efforts to reallocate resources toward high-return options by realigning incentives based on the newly available information. More specifically, constraints imposed by funding mechanisms based on widely-used metrics related to enrollment and degree awards could be eased by expanding the metrics to include labor-market outcomes and costs relative to benefits.

The measures discussed in the preceding section could identify career-oriented programs where completion rates are exceptionally low, few completers find training-related jobs, and few enrollees show substantial increases in earnings or the quality of their jobs.

With the addition of information about program cost, the outcome data could identify programs that are substantially more costly than average but where the labor-market returns justify expanding those programs. This would help resolve a major problem faced by public institutions: the lack of funds to expand high-return career programs that also are often much more costly than low-return academic programs. This is especially true in health-care programs where capacity cannot come close to meeting demand, and as a result, for-profits have filled the exceptionally large gap between supply of slots and demand for this type of training.

At the same time, it is important to recognize that the easily-produced measures discussed here are not a substitute for value-added measures that should be the basis for resource allocation decisions. The main use of the simple measures is to identify the programs at the extremes of the cost-effectiveness distribution—where statistics show the programs' performance is substantially below or above average. Simple statistics are not suitable for making fine-grained, cost-effectiveness distinctions. (See appendix C for a more-detailed explanation of why simple statistics are not an adequate substitute for value-added measures.)

Although the focus on dissemination to prospective trainees is on simplicity and personal guidance, decision-makers have different needs. They are able to conduct more thorough analysis and would benefit from more-detailed information. States should include plans to coordinate with policymakers, including those in the process of producing and disseminating the salient statistics, so that they obtain and use information that could help increase returns on training investments.

Component 4: Sustaining cost-effective systems

A final component of the competition is having states explain how they would permanently fund systems that are proven to be cost-effective. Sustainability is a relevant component of this competition because it will give precedence in awarding funds to states that have realistic plans to implement cost-effective systems. It also will give states opportunities to think about ways to create incentives for trainees to use the systems to achieve their own goals and for program administrators to use the systems to increase the returns of taxpayers' investments. For example, states could require recipients of student financial aid to use the systems to develop a realistic plan to achieve their goals—with the expectation that simply reviewing their options will improve their choices without any compulsion to alter decisions. Similarly, states could require community colleges to put in place performance-management systems to assess labor-market effects of career-oriented programs and make resource-allocation decisions that increase the number of high-return slots at the expense of low-return ones.

Basically, the states would be asked to describe how they would fund a proven system. They could make the case that state legislatures would approve the funds needed to put the systems in place using evidence produced by the systems to assess effectiveness. They also could describe ways to secure funding for these systems that would not require new appropriations. For example, they could propose making small reductions spread across many students in state-funded scholarships to cover the costs of creating and disseminating the information needed to make better decisions and expanding the help offered to students such as expanding orientations. They also might propose reducing community college career and technical education (CTE) programs with low enrollment and using those savings to fund the web-based systems and provide more career counselors.

Scoring state grant proposals

As with the U.S. Department of Education's Race to the Top competition, a key to obtaining high-quality proposals is to define clearly the goals of the competition and the theory of action underlying those goals and to provide a clear understanding of what is required to win an award. We want the proposed competition to focus attention on the need to create an integrated system where the whole is greater than the sum of its parts: assembling relevant data, creating useful measures from those data, testing alternative ways to disseminate the information so that it improves trainee choices, assessing the cost-effectiveness of alternatives, and putting in place permanent systems once they are proven to be cost-effective.

A second key element of the competition is creating an effective scoring system that ensures the funded proposals are those with the greatest potential to provide clear evidence for the effectiveness of systems for helping a range of users. In this section, we present suggestions for developing a scoring system that would achieve the central goal of helping potential trainees make better choices.

As the primary determinant of an award, we recommend using a combination of the expected benefits of the proposed system relative to its cost and the feasibility of creating the system. The goal is to fund innovative proposals that go beyond systems already in place but are still feasible to construct with available technologies.

The first part of each proposal would describe the system, provide a convincing explanation of how it would increase earnings and returns on investment, and explain how those benefits relate to costs. The centerpiece of the description would be an analysis of how the system would alter the choices made by prospective trainees and how those changes would affect earnings and investment returns.

The second part of the proposal would detail how the system would be created within the proposed time and budget constraints. This section would include a thorough description of what data would be used, how the data would be organized to estimate completion and earnings, how the estimates of completion and earnings would be developed, how those estimates and other information would be accessible on a website, and how end-users would extract information from the system. A key component of this discussion would be describing prior experience in performing each task and the qualifications of the team members on the project.

The third part of the proposal would describe how the proposed system would be tested, the types of training programs and users that would be included in the test, and how the benefits of the system would be measured. For example, a state could propose developing and testing all three of the report-card systems described earlier in the dissemination section.

The basic query system would allow users to enter information about programs they are interested in and the computer provides attributes of programs specified. The intermediate system would allow users to enter their interests and characteristics such as high school GPA. The computer would then display the programs likely to generate the highest returns. The advanced system would add an opportunity for users to take tests that help them determine how their skills and interests match characteristics associated with successful program completion, tests required for entrance into programs, and tutorials to help them pass those tests.

States also could propose using each system with and without career counseling and skill testing. The assessments could focus on a few or many groups of users and be geographically broad or narrow. The more inclusive the test and the greater the rigor of the test, the more points would be awarded.

While the estimate of the expected value of the proposed system would be the primary basis for making awards, no award would be made unless the proposed tests were sufficient to determine whether the system was cost-effective for at least some users and some types of programs. However, the review panel could work with a state with a promising proposal to refine the tests to reach a point where a reasonably accurate test could be performed.

The fourth part of the proposal would describe the funding mechanisms that would be used to sustain systems once they are demonstrated to be unambiguously cost-effective.

This element of the proposal also could describe how states would ensure trainees and program managers use the systems effectively, and thereby generate the savings that could be used to sustain the systems. For example, trainees receiving state grants could be required to produce coherent plans that examine local demand for the skills being pursued, the probability of program completion, direct and indirect costs, and how the out-of-pocket expenses would be covered prior to registering for programs; community colleges could be required to conduct orientations for first-time students prior to registering for classes or after registering but prior to the start of classes. That orientation would include group sessions providing an overview of how to make sound choices, use of the information systems to develop an effective plan, as well as group and individual sessions to review plans with career counselors. Similarly, community college program managers could be required to oversee the development of information on workplace outcomes by program and student characteristics, and then describe how they would use the information to provide feedback to various departments and use the information to make resource allocation decisions.

Our view is that awards should go to the proposals that offer to create systems with the best chances of being highly cost-effective as long as they provide the means to determine their effectiveness. However, if there are proposals that are roughly equivalent in terms of expected value and clarity of the test, preference should go to proposals that offer the system with the greatest promise of being sustained.

Summary and Conclusion

This paper examined a way to increase the ability of career-oriented training to help low-income workers enter the middle class and dislocated workers regain lost earnings that would also increase the supply of skilled workers that employers need to heighten U.S. competitiveness.

First, we reviewed evidence suggesting that community colleges, for-profit colleges, and other training providers offer an array of programs that have the capacity to increase the annual earnings of trainees regardless of their age or academic preparation, but too many prospective trainees fail to take advantage of these opportunities. This evidence suggests that the return on investment for individuals and the public sector in training could be substantially increased if individuals selected training programs that they are more likely to complete and that are more likely to raise their earnings.

Second, we reviewed the almost universal agreement among practitioners that there exists a lack of relevant information about the wide range of options available. We outlined the factors that should be examined in selecting a high-return training program, as well as the difficulties in using this information to improve individual choices. These are the primary reasons so many trainees select programs that they are unable to complete or that are unlikely to raise their earnings. This view is based on recognizing that individuals who can benefit from training the most often have little instruction or experience in fact-based decision making and poor access to reliable information from friends and relatives, while training institutions devote only a tiny fraction of their resources to helping trainees make sound choices.

Third, we presented evidence that many students could raise their earnings substantially without completing more courses or completing courses that are more challenging academically. These findings imply that the return on training investments could be greatly increased even if a small number of the students who accumulate at least a year's worth of credits and leave college without any credential earned a certificate, and a few students who earned two-year degrees in a low-return field earned a two-year degree in a high-return field.

To improve trainee choices, we propose a competition that would provide the funds needed to use state longitudinal databases to create report cards that would provide relevant measures that students and their mentors could use to examine the effects of training on earnings, the probability of completing programs, the cost of the programs, their duration, and whether they require full-time attendance during normal business hours. The necessary data have been developed in almost every state through their own expenditures and allocations of more than $100 million in federal funding for this purpose. In addition, several states have used longitudinal databases to create many of the most relevant measures and made them available on websites.

Assembling the data and using them to create relevant measures is a necessary component of the proposed competition, but it is not sufficient to improve the choices trainees make. A key additional step is disseminating the information in a way that makes it easily understood by users and places the information into a framework that will improve the choices trainees make. We include, as part of the competition, testing ways

of putting the information into online information systems with and without making trained staff available to provide assessment and counseling to facilitate using the information effectively to develop sound plans.

Because so little is known at present about what would constitute a cost-effective system that would increase the returns of investment in training, we would give awards to states that offer to test a range of dissemination mechanisms with and without different types of staff assistance, assess how well they work for potential trainees with different characteristics, and assess how they would sustain information systems that are proven to be cost-effective.

One system, a basic query system, allows users to enter information about the types of programs they are interested in and receive descriptions of the programs they specify. A second system allows users to enter their interests and personal characteristics, such as their high school GPA, and receive from the computer information on the programs suited to the users that are likely to generate the highest returns. A third system would offer users a range of tests that would help them determine how their skills and interests match characteristics associated with successful program completion, as well as tests that are required for entrance into the programs, and tutorials to help students then pass those tests.

In conclusion, our review of the evidence suggests that this is the time to launch a series of demonstration projects aimed at increasing the return to investments in training for individuals with different educational backgrounds and work experience in different labor markets. These projects would take advantage of the major progress that has been made in creating highly relevant databases to disseminate useful information in a way that also would provide unambiguous evidence about what systems are most cost-effective.

Appendix

Appendix A: Operational details of creating the databases to improve workforce development programs

Much of the competition among states and the ability to produce usable report cards hinges on the development of longitudinal databases. To assess the effectiveness of workforce programs, researchers need to track the progression of participants as they enter and complete the training, and over time. Comparing the earnings and education of trainees before they enter programs with changes in income or status that result from the training can help determine the effectiveness of different programs. Short-term effects after a couple of years are important to track, but long-term effects at the ten-year mark would provide a more complete picture.

Much of the data already exist. State unemployment insurance programs already collect wage and employment records for much of the workforce, and state agencies have records on government transfers such as welfare and food stamps. Community colleges, training programs, and K-12 schools keep enrollment and completion records for their students.

Establishing longitudinal databases requires federal, state, and local agencies to collect existing records on employment and wages, program participation, education history, and other relevant factors and to link this existing data for each individual. Pertinent information includes outcomes (e.g., earnings before, during, and after training), participant characteristics (e.g., demographic information and educational attainment), and details of training (e.g., record of participation, field of study, and credentials received). Appendix table 1 lists some of the most important data that need to be linked.

Appendix Table 1

Sources of Data to Improve Workforce Training

Data Element	Source
Schooling/Training	
Receipt of One-Stop (WIA and Wagner-Peyser Services) a. The date, location, and nature of each service received b. Customer characteristics—age, gender, ethnicity, disadvantaged status, marital status, etc. c. Outcomes—credential attainment, entered employment, earnings	One-Stops Already standardized and reported at the state and national levels using Workforce Investment Act Standardized Record Data (WIASRD)
Postsecondary education – State colleges, district secondary career and technical education, postsecondary career and technical education, and adult general education data a. Transcript data, credential attainment, and standardized test scores b. Student demographics—age, gender, ethnicity, etc.	College and postsecondary education provider administrative records Can be reported to and collected by state department of education
K-12 information a. Transcript data, credential attainment, and standardized test scores b. Student demographics—age, gender, ethnicity, handicaps, eligibility for free and reduced-price meals	District administrative records Can be reported to and collected by state department of education
Wages	
Unemployment insurance (UI) wage records a. Quarterly earnings from each employer b. Industry, firm ID, and location of each employer	State UI program
Wage records – federal workers	U.S. Department of Defense, U.S. Office of Personnel Management
Wage records – out-of-state workers	Wage Record Interchange System, a U.S. Department of Labor program to share UI wage records across states
Other Outcomes	
UI benefit collection a. Total and weekly entitlements b. Claimant characteristics i. Demographics—age, gender, marital status, number of dependents, ZIP Code, etc. ii. Work history—occupation, base period earnings, number of employers, etc.	State UI program
Temporary Assistance for Needy Families (TANF) and food stamp receipts a. Total and weekly entitlements b. Services received—training, referrals to supportive services i. Recipient characteristics ii. Demographics—age, gender, marital status, number of dependents, ZIP Code, etc. iii. Work history—occupation, earnings, etc.	State welfare agency
Incarceration	State department of corrections

These variables must be traceable to an individual over time, requiring a consistent identifier for each individual. Standardization of records is also crucial, with common naming standards, units of measurement, and other conventions. Social Security numbers, already included in many of the relevant records, can be used. Records can also be linked using other identifying, demographic information. While there are some confidentiality issues, they have been overcome in the past and are manageable.

These goals can be achieved at low cost by building on current systems. For example, the SLDS program, which assists states that seek to develop longitudinal education performance databases, distributes grants averaging $6 million. Moreover, the WIA program already links wage records, institutes a performance-management system, and mandates that states provide information on training program effectiveness. What makes building on the WIA system so attractive is that the system enables every state to follow up on trainees using wage-record data from the state's UI system. This existing ability to link wage-record data to data on postsecondary training and schooling obtained by individuals is the backbone of the expanded system we advocate creating.

The types of institutions whose data should be linked are public certificate programs, community colleges, four-year colleges, for-profit private programs, and non-profit private programs. Community college data are especially important, as community colleges provide training to more than 85 percent of the 20 million Americans enrolled in postsecondary CTE programs in an average year. (About 10 percent of those enrollees are served by for-profits, and 5 percent by Adult Basic Education programs run by local high schools.) This 100-fold increase in the number of individuals being tracked would provide sufficiently large samples to allow for meaningful information on investment returns by field of study, number of instruction hours, labor market and trainee characteristics, and institution, especially when data are pooled over several years.

Appendix B: Full version of a basic report card

Certified Nursing Assistant
Provider: Community College X, Location Y
Program began: 1994

Part A and Part B	Part C	Part D	Part E	Part F
Program requirements and prerequisites	**Program cost and ways to cover cost**	**Program enrollment, completion, and capacity**	**Characteristics of entering student**	**Characteristics of completers**
Credits required: 24 (8 semester-long courses)	Average time of completion: 16 months (3 semesters)	Number of students entering program each year: 60	Average age: 27	Average age: 31
Credential award: Certificate	Program cost: $2,400 *24 credits at $100/credit (in-state) + $400 for books and $400 for lab fees*	Number completing the program each year: 20	Gender: 85% female	Gender: 85% female
Credits transferable to other post-secondary institutions: Yes	Percent receiving Pell Grants: 30% *Average grant amount: $3,000*	Completion rate: 34%	High school GPA: C (2.0)	High school GPA: B+ (3.2)
Required full-time attendance: No	Percent receiving student loans: 20% *Average loan amount: $3,500*	Can slots be expended: No	Completed: 2 science courses and 2 math courses in high school	Completed: 4 science courses and 3 math courses in high school
Courses offered on weekends and evenings: Yes	Percent working while in program: 67% *Average earnings while in school: $4,400*	Is there a formal enrollment process: Yes	Percent entering program within two years of leaving high school: 25%	Percent entering program within two years of leaving high school: 10%
Labs/internship required: Yes		How are students selected: First come, first serve each Fall semester	For students entering program 3 or more years after leaving high school: • Highest level of education: 50% had some college, 10% had a two year degree • Percent employed in year prior to entry: 60% • Average annual earnings of those employed in year prior to entry: $12,000	For students entering program 3 or more years after leaving high school: • Highest education level: 75% had some college, 20% had a two-year degree • Percent employed in year prior to entry: 80% • Average annual earning of those employed in year prior to entry $18,000
Duration of labs/ internships: 40 hours over one semester		Are required courses guaranteed to be open: No		
Program can be entered at start of fall or spring semester				
Prerequisites: High school diploma				

Certified Nursing Assistant *(continued)*
Provider: Community College X, Location Y
Program began: 1994

Part G: Post-program employment and earnings

	Difference between completers and noncompleters after 18 months	Difference between completers and noncompleters after 4 years	Employment of completers after 18 months	Employment of completers after 4 years	Employment of noncompleters after 18 months	Employment of noncompleters after 4 years
Percent employed	10%	10%	85%	85%	75%	75%
Annual rate of earnings	$6,000	$6,000	$22,000	$29,000	$16,000	$23,000
Percent employed in medical job	55%	40%	60%	50%	5%	10%
Earnings of top 25%	n/a	$12,000	n/a	$37,000	n/a	$25,000
Earnings of bottom 25%	n/a	$4,000	n/a	$12,000	n/a	$8,000

Part A and Part B – Program requirements and prerequisites

Part A and Part B identify the training provider and the basic program characteristics that might strongly affect choice, such as prerequisites, whether full-time attendance is required, and whether courses are offered in the evening and weekends, as well as factors that influence the value of the training such as whether courses are transferable to other training institutions.

Part C – Program cost and ways to cover cost

Part C identifies to what extent work can be combined with training. (Note that average earnings while in school are considerably lower than earnings in the year prior.) It also provides information needed to determine if the program is affordable based on obtaining funds from a variety of sources. A module could be added that allows the user to obtain more specific information about eligibility for various forms of student aid.

Part D – Program enrollment, completion, and capacity

Part D provides especially important information about (a) the likelihood of completion, (b) the extent of competition for slots, and (c) how slots are filled. In particular, many trainees fail to factor in the probability of completion, which can be low because completing the program is difficult or because there is competition for required courses. Parts E and F focus on difficulty based on academic preparation. Here we describe the overall probability of completion, as well as factors related to the level of competition. Information about competition is important; many students do not realize how difficult it can be to get into the courses required to complete a program and what they need to do to get into those courses (such as register the moment registration opens each semester).

Part E and Part F – Characteristics of entering students and completers

Part E and Part F provide information essential for assessing the probability of completing a program. In the case illustrated it should be clear that most completers have a higher GPA than noncompleters, had substantial math and science in high

school, had some college prior to enrolling in the specific program, and were more mature when they entered the program.

Part G – Post-program employment and earnings

The first two columns in Part G are a reasonable measure of the expected gains for a person who completes the program. In this case the gain is about the same, $6,000, in the short run and long run. In other types of training the long-term gains could be substantially greater than the short-term gains. The illustration also shows that the long-term gain could range from $4,000 to $12,000.

The last four columns in Part G show how the completer/non-completer comparisons were obtained. It is useful to include this information so users understand differences in income levels as well as the expected gain. Without displaying both the level and the increase, some potential trainees who already have high earnings or access to jobs with comparable pay might overestimate the value of the completing the program.

Appendix C: Measuring the cost-effectiveness of training programs

In this paper we draw a sharp distinction between measures of the *expected value* of entering alternative training programs that are suitable for helping trainees and their mentors select among training programs, and measures of the *value added* of the same programs that are suitable for making resource allocation decisions and creating incentives that increase the return on training investments. Use of the SLDS discussed here for creating *expected-value* measures also have been shown to be very useful in creating *value-added* measures, but mainly to follow-up trainees and controls in experimental studies—those that use a random-assignment design.

While it would be beneficial to put in place systems to routinely measure the *value added* of specific programs for trainees with different attributes in labor markets with different characteristics, doing this is technically challenging and well beyond the scope of our proposed competition. Because it is important to understand the differences between the two types of measures, the limitations of the measures that are the targets of the proposed competition, and because these differences are often poorly understood, we discuss in this appendix the advantages of having *value-added* measures and how those measures could be produced.

To illustrate our key points, let's assume that we directly observe that a trainee's annual earnings increase from $30,000 before entering training to $40,000 after completing a program. Can we say that the *value added* by the program equals the $10,000 per year increase in earnings? Absolutely not! Other factors may be at play: the trainee might have shown a similar increase in earnings had he or she stayed at the same job or changed jobs especially if economic conditions improved.

To cite another common example, suppose that we observe that a trainee's annual earnings decrease from $50,000 before entering training to $40,000 after completing a program. Can we say that the *value added* by the program equals the $10,000 per year decrease in earnings? Absolutely not! What if in this case the trainee had lost a long-held job due to a plant closing and without the training might have earned $30,000?

Without having an accurate counterfactual measure of what earnings would be in the absence of training, we have no idea what contribution the training made to a person's earnings.

The only widely accepted means to estimate what earnings would have been is to conduct a random-assignment experiment in which a training program is over-subscribed, and qualified applicants are randomly assigned to be offered, or not be offered, a slot. Those offered a slot are called targets, and those not offered slots are called controls.

Other techniques have been used to attempt to measure the *value added* of training, but those methods have been shown to have significant shortcomings. For that matter, random-assignment experiments also present problems, but generally the problems are more easily identified and taken into account (LaLonde 1995; LaLonde, Heckman, and Smith 1999).

The thorniest problem plaguing non-experimental evaluations is the failure to adequately control for variation in the way trainees are selected to enter a given program. For example, community colleges' nursing programs often select students who have the best academic records and the best evidence of strong interest and capability. Those not selected may attend career for-profit colleges and have lower completion rates and lower earnings than the higher-caliber group selected by community colleges. It is possible to use a sta-

tistical technique such as nearest neighbor matching to take into account the differences in the *observable* characteristics of the trainees in these programs to measure the difference in the *value added* of these programs. But experience with actual programs suggests that there often are *unobservable* characteristics that cannot adequately be taken into account using non-experimental means.

To understand why this is the case, consider two training programs serving what appear to be identical populations. Program A carefully screens applicants to select only individuals who appear highly motivated to succeed. Program B takes applicants on a first-come, first-served basis. Both programs train participants with similar observable characteristics, but the outcomes from program A are far superior to those from program B. It could be that program A is more effective than program B, but we cannot rule out that the differences in outcomes stem from program A participants being more highly motivated to succeed than program B participants.

Our view is that there might be ways to develop a system to routinely measure the *value added* of training programs that could be used to make resource allocation decisions and create incentives to increase returns of investment, but it would take years to develop and test those systems. We, therefore, give priority in the proposed competition to developing measures that could immediately be put to good use.

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Louis S. Jacobson is the President of New Horizons Economic Research. He has conducted basic research on the cost of job loss and the means to offset those losses through services provided by One-Stop Career Centers and community colleges. Dr. Jacobson recently examined how community colleges and One-Stops can work together to help workers develop career-enhancing skills, and analyzed the returns to community college training using a large Florida data base for the Bill and Melinda Gates Foundation, the Pew Charitable Trust, and the National Assessment of Career and Technical Education. He is currently extending this work to examine how workforce system services affect those returns as well as the returns to short-term training provided by for-profit training providers. He also is evaluating a statewide Florida program to increase the college readiness of high school students. While at Westat, Dr. Jacobson was the principal investigator of a six-state evaluation of the effectiveness of public labor exchanges in a One-Stop environment and the long-term follow-up of the National JTPA Evaluation. While at the Upjohn Institute, he authored major studies of the cost of worker dislocation and observed first-hand the effectiveness of government and private activities designed to deal with loss of long-held industrial jobs. Dr. Jacobson served on the Montgomery County (Maryland) Workforce Investment Board, chairing the assessment committee. Dr. Jacobson holds a Ph.D. in economics from Northwestern University and a B.S. in economics from MIT.

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Endnotes

1. The figures in the graph examine earnings over the first three years after leaving school, and therefore understate the long-term effect on earnings of getting a four-year degree. But they do not understate the difference among students who do not go on to obtain four-year degrees.

2. UI claimants who return to school, in particular, are quicker than other students to abandon their studies and look for permanent full-time jobs if they are struggling to complete courses or conclude the courses will not lead to better employment opportunities. This makes sense because claimants cannot afford to remain jobless after their benefits are exhausted, student financial aid is insufficient for them to remain in school, and unemployment is highest for individuals who have the poorest academic preparation. UI claimants would benefit substantially from having better information and counseling prior to enrolling in training programs, especially information about the relationship between prior academic preparation and the chances of completing different high-return programs. Nevertheless, claimants enrolled in high-return programs that they are likely to complete might need greater financial aid to remain in school long enough to get enough training to increase their earnings.

3. For a precise summary of each state's SLDS, see Data Quality Campaign (2013).

4. For program details, see National Center for Education Statistics (2013).

References

Bettinger, Eric, and Rachel Baker. 2011. "The Effects of Student Coaching in College: An Evaluation of a Randomized Experiment in Student Mentoring." National Bureau of Economic Research (NBER) Working Paper No. 16881.

Data Quality Campaign. 2013. "State Analysis by Action." http://www.dataqualitycampaign.org/

Jacobson, Louis. 2009. "Strengthening One-Stop Career Centers: Helping More Unemployed Workers Find Jobs and Build Skills." Discussion Paper No. 2009-01, The Hamilton Project, The Brookings Institution, Washington, DC.

———. 2011. *Improving Community College Outcome Measures Using Florida Longitudinal Schooling and Earnings Data*. Research supported by the Bill and Melinda Gates Foundation. May 16.

Jacobson, Louis, Robert LaLonde, and Daniel Sullivan. 2004. "The Returns from Community College Schooling for Displaced Workers." *Journal of Econometrics* 125 (1–2).

———. 2005. "The Impact of Community College Retraining for Older Displaced Workers: Should We Teach Old Dogs New Tricks." *Industrial and Labor Relations Review* 58(2): 398–415. April.

Jacobson, Louis, and Robert Bednarzik. 1993. "Long-Term Training for Dislocated Workers: The Impact on Earnings of an Innovative Program in Pittsburgh." 68th Annual Western Economic Association International Conference, Lake Tahoe, June 20–24.

LaLonde, Robert. 1995. "The Promise of Public Sector-Sponsored Training Programs." *Journal of Economic Perspectives* 9 (2): 149–168.

LaLonde, Robert, James Heckman, and Jeffrey Smith. 1999. "The Economics and Econometrics of Active Labor Market Policies," in *The Handbook of Labor Economics*, edited by Orley Ashenfelter and David Card, Amsterdam: North-Holland.

McConnell, Sheena, Elizabeth Stuart, Kenneth Fortson, Paul Decker, Irma Perez-Johnson, Barbara Harris, and Jeffrey Salzman. 2006. "Managing Customers' Training Choices: Findings from the Individual Training Account Experiment." Report prepared for the U.S. Department of Labor, Employment and Training Administration. December.

National Center for Education Statistics. 2013. "Statewide Longitudinal Data Systems Grant Program." http://nces.ed.gov/programs/slds.

U.S. Department of Education. 2011. "Gainful Employment Operations Manual." http://www.ifap.ed.gov/GainfulEmploymentOperationsManual/attachments/GainfulEmploymentOperationsManualMasterFile.pdf

Using Data to Improve the Performance of Workforce Training

Summary of findings

Workforce training programs have the potential to increase the incomes of American workers, lifting low-income workers into the middle class and preventing others from falling out of it. Despite their promise, however, many existing training programs are not as beneficial as they could be. Too many workers enter programs that they are unlikely to complete; others complete programs that are unlikely to raise their earnings. Even more workers who could benefit from training fail to enter programs because they are unsure of the expected benefits. If workers had access to better information and guidance when selecting their educational investments, the increase in their earnings could be substantial.

Louis S. Jacobson and Robert J. LaLonde propose a federal competition to incentivize states to develop the information and dissemination systems necessary to help prospective trainees make better choices. The competition builds on the progress that states have already made in assembling data on worker training programs, but goes a step further by encouraging states to develop innovative dissemination systems that actually lead to better training choices.

There are four essential building blocks to this competition: (1) assembling the data needed to make sound decisions and organizing the data to produce relevant measures, (2) measuring the payoffs to training programs so that high-return courses and fields are identified, (3) disseminating the information using computer-based and staff-based systems in a way that improves training choices, and (4) sustaining cost-effective systems after evaluating which dissemination methods are most impactful.

One goal of the competition is to spur experimentation to help determine which methods of dissemination are the most effective, from simple "report cards" on the effectiveness of various training programs to training experts being available to provide one-on-one guidance to workers. With tightening budgets and many Americans still out of work, there is an imperative for collecting and sharing information about the effectiveness of training programs. Not only will workers benefit from gaining skills in the programs best suited to them, but employers and the economy as a whole will benefit from having a more skilled and better-prepared labor force.

Fast facts

- Workforce training programs can help many workers build the skills they need to get high-paying jobs, but not all programs provide the same job-market benefits for all students. For example, students who complete degrees in low-return courses earn roughly 33 percent less than their peers who spend the same time in school but complete higher-return courses.
- There are several reasons why workers who seek training end up in low-return programs. Many workers lack basic information on the benefits of different programs and the known likelihood of individuals completing a program given their background. Some workers also have difficulty accessing and using available information when making complicated decisions.
- Many states, often with the help of federal grants, have started to collect and analyze data on workforce training programs with the aim of providing the information to equip prospective trainees to select a high-return program that they are likely to complete. But, much work remains to be done to ensure that all relevant information is available and that prospective trainees obtain the guidance they need to use this information effectively.
- Jacobson and LaLonde propose a competition among states that includes the four following components:
  - **Component 1: Assembling the data**
    Gathering the administrative data on training programs and their participants is an important first step. Useful data include earnings and costs of programs. Many states have already made great progress in this component.
  - **Component 2: Measuring the payoffs to training programs**
    Once the data are assembled, statistics such as expected completion rates and earnings will provide the most important information.
  - **Component 3: Disseminating the information**
    It is critical that the information is conveyed to participants in a useful, digestible way. This could include simple "report cards" produced by the states, more interactive online platforms, and one-on-one guidance by well-trained staff.
  - **Component 4: Sustaining cost-effective systems**
    Once an effective system is in place for collecting and disseminating the data, it is imperative that a long-term strategy be put in place to ensure its sustainability.

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