



TRANSFORMING U.S. WORKFORCE DEVELOPMENT POLICIES FOR THE 21st CENTURY

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Toward a More Intelligent Workforce Development System

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To meet the challenges of developing a high-quality workforce for the twenty-first century, the next generation of workforce development programs will need to be smarter in providing information to customers. Job matching is an information-intensive process. For the workforce development system to maintain and even improve its effectiveness in assisting job seekers to find work and businesses to find qualified workers, the system will need to transform itself into a more intelligent one. An intelligent system, as envisaged in this chapter, not only provides customers with data essential to make informed decisions but also places this information in the proper context, personalized to the characteristics and circumstances of specific customers and made easily accessible at the time decisions are being made.¹

When the Workforce Investment Act (WIA)—the major national workforce development system in place at the writing of this chapter—was enacted in 1998, it called for more integrated service delivery through One-Stop Service Centers, and subsequently more integrated data systems. While making some progress toward that end, information provided by WIA remains fragmented, and the administrative data generated by the WIA program are used more for accountability than for informing customers.

In July 2014, Congress passed the Workforce Innovation and Opportunity Act (WIOA), which replaces WIA to become the first major workforce development system of the twenty-first century. In drafting WIOA, Congress recognized the need for a more intelligent system by directing local boards to “develop strategies for using technology to maximize the accessibility and effectiveness of the workforce development system for employers and workers and job seekers” (H.R.

803, sec. 107, subsec. d [7]). More specifically, the bill requires the development of “strategies for aligning technology and data systems across One-Stop partner programs to enhance service delivery . . . and to improve coordination” (H.R. 803, sec. 101, subsec. d[8]). The bill leaves considerable latitude for designing such a system. This chapter offers insight into what information is needed and describes a few pilots and demonstrations funded by the U.S. Department of Labor (USDOL) in recent years that could serve as a basis for a more integrated and comprehensive information system. While it is difficult to pinpoint a precise estimate of the benefits of such a system, several of the previous initiatives, which could serve as components of an integrated information system, have been rigorously evaluated and show positive and statistically significant net impacts for customers and society.

INFORMATION CUSTOMERS NEED

The purpose of the public workforce development system is twofold: 1) to help people find jobs through job search assistance, counseling, and training; and 2) to help employers find qualified workers through referrals, training, and assessment. Both groups of customers face complex decisions in finding the right job match. Job seekers must choose from among different job prospects and career paths as well as reemployment services and training and education options, typically without sufficient information about the benefits and costs of the various options. Employers must identify the skill sets of job prospects and match them to their perceived workforce needs. Furthermore, both job seekers and businesses must deal with future uncertainties and incomplete information in making these decisions.

Job seekers and employers can benefit from an intelligent information system that provides them with access to personalized data at critical decision points as they navigate the labyrinth of complex decisions within the job search and talent search processes. Such a system requires more than simply placing information on the shelf in a One-Stop Service Center or on a Web site link, which customers must not only locate at the time they need the information but must also recognize its relevance for their specific circumstances. Instead, it requires

the information to be readily accessible, personalized, and easily understood in the proper context at each key decision point.

In a recent article on the nexus of behavioral economics and labor market policy, Babcock et al. (2012) assert that “research has found that a large number of complex choices hinders decision-making and that interventions providing personalized and transparent information on the most ‘relevant’ choices can improve decision-making outcomes” (p. 12). The authors go on to say that not only is information essential in navigating the sequence of decisions involved in finding work but that behavioral economics suggests the context in which information is presented can matter in how individuals respond to choices. Furthermore, they suggest that “a successful workforce investment system is likely to be one that reduces complexity and the need for willpower from the perspective of workers, and relies less heavily on well-informed, patient participants for its smooth operation and success” (p. 10).

ELEMENTS OF AN INTELLIGENT WORKFORCE SYSTEM

Based on the needs of customers to make more informed decisions and to navigate the complex process of job matching and the lessons derived from behavioral economics, an intelligent workforce development system requires five basic elements. First, the system is data-driven. Longitudinal files are constructed for each workforce program participant in order to relate personal demographic information, educational and skill attainment, and past work history with postprogram employment outcomes. Second, information is customized for each participant so he or she can see the relevance of the information and can easily access the information at each critical decision point. Third, the system is evidence-based. The returns to training and the effectiveness of reemployment services are estimated for different groups of individuals facing different circumstances. Fourth, reemployment services and training are targeted to individuals with specific needs to ensure that provision of these services is cost-effective. Fifth, performance management of the workforce development system is based on measures that reflect the value-added of the system and not simply gross outcomes.

Many of these elements are either already embedded in the current workforce system or have been tried over the past years as pilots, demonstrations, or new initiatives. These elements must be closely intertwined to be effective. For instance, the construction of longitudinal data files is necessary in order to customize information for each participant and to compute the returns to training investment; in turn, the estimated effectiveness of services is needed to target resources to participants and to develop a value-added performance system.

However, these elements have yet to be brought together in an integrated and comprehensive fashion, which requires more than the integration of new technology; it requires, also, an inculcation of an evidence-based, data-driven culture. Fostering and sustaining such a culture requires more than simply presenting data; rather, it requires an analysis of the data and the capacity of the system to present the higher-level analytics to customers in meaningful formats on a timely basis.

CURRENT WORKFORCE DEVELOPMENT SYSTEM

Two workforce development programs—WIA and the Wagner-Peyser Employment Service (ES)—serve the vast majority of participants and set the guiding principles for the way reemployment and training services are delivered in the United States.² The three WIA programs—Adult, Dislocated Worker, and Youth—provide job search assistance, counseling, and training to the three groups targeted by these programs; the ES program provides job search assistance to job seekers, including dislocated workers receiving Unemployment Insurance (UI) benefits. Both programs provide recruitment services to businesses seeking to fill job openings. Local Workforce Investment Boards (LWIBs), which number nearly 600 across the nation, administer the WIA programs and contract with private providers to deliver most of the services. In many states, the reemployment assistance services provided by both WIA and ES are colocated within One-Stop Centers. Training services are typically provided at the facilities of the training provider, such as on the campus of a community college. The WIA and ES programs share similar employment assistance services, even to the extent that many states enroll participants in both programs. Therefore, to simplify the

discussion without limiting the generalizations that one can draw from the concepts presented in the chapter, much of the discussion will focus on the three WIA programs.

Several components of an intelligent workforce development system already exist within WIA, although they need to be improved in order to provide the information in the form and context necessary to better inform customers and program administrators. First, WIA has produced the elements of a data-driven system by compiling longitudinal data of its participants. Second, performance management is based on labor market and educational outcomes. Third, the basic elements of a resource-targeting system exist within ES programs under the Worker Profiling and Reemployment Services (WPRS) system. Although WPRS is not tied directly to WIA programs, it offers an example of the effectiveness of targeting resources within the workforce system. Current initiatives are under way or have been attempted through pilots that can help enhance and improve the existing components.

DATA-DRIVEN SYSTEM

The WIA legislation requires the construction of performance measures of employment and educational outcomes for each program at the national, state, and local levels. The measures are constructed by merging administrative records from the three programs with UI wage record data to form a longitudinal file for each program participant. The administrative records contain information about each participant's demographic characteristics, educational attainment, some skill-related certifications, barriers to entry, occupation and industry of the participant's most recent employment, and services received during enrollment in a program, among other data fields. Merging quarterly UI wage records with these files adds several quarters of employment history of each participant immediately prior to that participant's registering with a program and several quarters of employment outcomes immediately after his or her exiting from a program. The administrative data are obtained from state management information systems and are compiled in the Workforce Investment Act Standardized Record Data (WIASRD) database, which is updated quarterly. The availability of longitudinal

data provides a data platform that can become the foundation for an intelligent workforce system.

In addition to administrative data generated by the workforce development programs and the UI system, customers typically have access to labor market information compiled by state labor market information agencies and the U.S. Bureau of Labor Statistics (BLS). One-Stop Service Centers also provide assessment tools (which are typically self-administered), forecasts of demand for occupations, and a partial listing of job openings in the local labor market. In most if not all cases, none of this information is customized to the personal needs, attributes, or circumstances of each customer. Furthermore, most occupation-demand forecasts look at long-run trends and are not tied to near-term business demand, and job postings cover only a portion of the actual jobs available.

Workforce Data Quality Initiative

States, with encouragement from the federal government, have started to develop data systems that augment the administrative data compiled in WIASRD by expanding the longitudinal files of each participant to include a person's K–16 education outcomes and linking that series to an expanded series of quarterly employment outcomes. The Workforce Data Quality Initiative (WDQI), a federally funded collaboration between the U.S. Departments of Education and Labor, is a competitively bid national program that provides funds for states to pull together educational records, workforce administrative data, and UI wage records in order to construct a longitudinal history of each worker's education and employment.

The information can be used in a variety of ways to inform the decisions of workforce program customers. For example, WDQI can track the educational and employment outcomes of each student by the individual training provider with which each is enrolled. This information on “success” rates is useful for prospective students in choosing training providers and educational institutions and for program administrators in holding service providers accountable for student outcomes. It also provides the basis for estimating the economic returns to education and employment services.³ Furthermore, the WDQI expands the cover-

age of WIASRD to include all employees who are covered under the UI system, not only those who are enrolled in the WIA programs.

WDQI is still in the development stage, with 26 states participating in rounds one and two. Under contractual agreement, participating states are expected to use their data analysis to create materials on state workforce performance to share with workforce system stakeholders and the public. According to USDOL, high-quality and consistent data about services offered and the benefits received as they enter or reenter the labor market are integral to informed consumer choices (USDOL 2013). Colorado, for example, has merged K–12 longitudinal data with UI wage records of college graduates from all public colleges and universities and three private colleges in the state to provide prospective students with information about the earnings potential of various academic majors at each educational institution. This information helps students make informed decisions in choosing career paths and shows the value of various levels of educational attainment. The Workforce Data Quality Campaign tracks the progress of states in using longitudinal data for informing workforce- and education-related decisions.

Timely Labor Demand Information

The growing use of the Internet to post job openings offers another source of data that can be useful to customers, particularly with respect to the demand for skills by businesses. While not a statistically valid survey, the use of “spiders” to search and compile Web-based information on job postings has the advantage over surveys of being timely and including all jobs posted on the Internet and not simply a sample of postings. Several states and LWIBs have contracted with vendors to gain access to this information on job openings posted on the Internet. The more sophisticated approaches use algorithms to reduce duplication of job postings and to aggregate them by industry and occupation classifications.

Web-based information can be broken out into highly detailed occupational categories and even reported by individual businesses. These services can be customized for specific locations and can glean from the job postings requirements related to educational attainment, certifications, experience, and other qualifications. However, a current

difficulty with relying on job postings found on the Internet, or from other sources, is that no more than half the job postings list education requirements or other skill requirements sought by the employer. Without such information, it is difficult for job seekers to determine what skills they may need to qualify for a job opening and what training they may need to qualify in the future. Perhaps as the use of Web-based data increases and employers recognize the value of this data source for projecting skill needs, employers will be more willing to include skill and education requirements in their postings.⁴

VALUE-ADDED PERFORMANCE MANAGEMENT

To hold program administrators accountable for the outcomes of WIA programs and to foster continuous improvement, USDOL has established a performance-management system based on the longitudinal files of individual participants, described in the previous section (USDOL 2010).⁵ Accountability of the programs is established by setting targets at each level of government and monitoring whether or not local workforce investment areas (LWIAs) and states meet or exceed their targets. When performance measures exceed their targets, the program is considered effective; when performance measures fail to meet their targets, the program is considered ineffective. Financial incentives are tied to these performance targets.

However, there is no clear relationship between a program meeting or exceeding its targets and its effectiveness in helping someone find or keep a job. Therefore, under the current performance system, program administrators have little if any information generated on a regular basis about the effectiveness of their programs, and thus little guidance in how to improve the system. Furthermore, it is unclear whether these performance measures provide administrators with the proper incentives to operate programs effectively. This section describes the performance measures currently in use by WIA programs, states their shortcomings, describes research findings of their incentive effects, and outlines methods USDOL has adopted to adjust the measures for confounding factors.

Common Performance Measures

For the two WIA adult programs, the performance measures focus on employment outcomes—the entered employment rate, employment retention rate, and earnings levels.⁶ For the Youth program, the measures relate to educational attainment—placement in employment or education, attainment of a degree or certificate, and literacy and numeracy gains. WIA is a partnership among federal, state, and local governments and their nongovernmental intermediaries, and these performance measures are common across all three levels. Each year, USDOL sets national targets for each program; it then negotiates targets with each state, and the states in turn set targets for each of their LWIBs. Performance measures may vary from year to year and across states and LWIBs, depending on local economic conditions and characteristics of program participants. WIA requires that negotiations take into account these factors when setting targets, but it is unclear to what extent these factors are actually embedded in the targets, since negotiations are subjective and not transparent. Even more rigorous methods of adjusting targets for these factors, such as regression analysis, cannot purge the performance measures of these factors completely, although such an approach is more objective and transparent than negotiations.

The problem with interpreting performance measures as a reflection of the effectiveness of the workforce programs is that the common measures are not designed to be used in that way. The common measures focus, as they should, on whether or not a participant finds and keeps a job, but the measures cannot distinguish the contribution of the workforce programs from other factors that affect a person's employment. Other factors include a person's innate abilities, signaled by his or her educational attainment and work experience, and local labor market conditions. Evidence shows that these two sets of factors generally influence employment more than the reemployment and training services offered by the workforce system (Eberts and Huang 2011). Therefore, a program administrator may conclude that the services provided are effectively contributing to the employment outcomes of participants when the performance of the administrator's program exceeds its predetermined target, whereas it could simply be the case that the participants are more capable than was expected when the targets were set, or that labor market conditions are more favorable. Unless the per-

formance measures are adjusted for these factors in a rigorous way, they provide administrators with little information as to the effectiveness of their programs and what they may need to do to improve the delivery of services. Typically, rigorous evaluations, using comparison groups, are conducted to estimate the net effect of a program.⁷ Because of the expense in conducting such an evaluation, they are done infrequently, and thus their relevance may diminish over time.

Possible Adverse Incentives

In addition to concerns that the performance system implemented under WIA provides little guidance to administrators to improve their services, policymakers and researchers have for some time been concerned about the possible adverse behavioral responses to performance measurement systems. Questions have arisen as to whether the performance system may lead local administrators to “game” the system by admitting more qualified individuals in order to improve the performance of their programs, without actually improving the effectiveness of the services provided. Concerns have also surfaced as to whether financial incentives were sufficient to influence positive behavior.

James Heckman and a group of his graduate students conducted a series of studies on how performance standards and incentives influence the behavior of program administrators and staff and contribute to program outcomes or unintended consequences (Heckman et al. 2011). While the studies focused on the Job Training Partnership Act (JTPA), the predecessor to WIA, sufficient similarities exist between the two programs for their findings to be relevant to the current system.

The body of research drew two key lessons: First, agencies respond to incentives, even seemingly small ones, and second, the concern about “cream-skimming” is overstated. With respect to incentives, the researchers found that “low-powered cash incentives may, in fact, be high-powered because of the value of the budgetary awards in establishing the reputation of bureaucrats and the recognition that comes with them” (Heckman et al. 2011, p. 306). However, they cautioned that bureaucrats may learn over time the weaknesses of the system and how the weaknesses can be exploited to their advantage. They recommended that the incentive system and performance measures be reviewed reg-

ularly and redesigned when deemed necessary to achieve the desired outcomes.

Researchers also found that the financial incentives incorporated into the performance measurement system were further enhanced by performance-based contracting. Under both JTPA and WIA, contracts with local service providers, such as community colleges and non-profits, are based on the performance of the subcontractors. Heinrich (2000), in a detailed study of an Illinois Service Delivery Area under JTPA, found that the inclusion of performance incentives in service contracts has a very strong positive effect on participants' realized wages and employment at termination and for up to four quarters after they leave the program. Based on this result and that of others (Dickinson et al. 1988; Spaulding 2001), one can conclude that performance-based contracts yield higher performance on the rewarded dimension. However, as previously mentioned, one has to ensure that incentives are properly aligned with desired outcomes.

The second lesson from the studies is that the cream-skimming problem is overstated. There has been serious concern that local administrators of the workforce system game the system by enrolling program participants with high abilities to find employment at the expense of those who truly need assistance. Administrators were also suspected of gaming the system by exiting participants only when they had achieved a positive outcome, such as obtaining a job. However, the researchers found little evidence that this had occurred in the JTPA programs. Since WIA replaced JTPA, there has been a growing industry of consultants who purport to help LWIBs maximize their outcomes, and it is unclear whether this influence has led to more gaming under WIA than under JTPA. An assessment by Barnow and King (2005) of the first five years of WIA found that gaming or "strategic behavior" took place in the majority of states studied. However, they did not analyze, as Heinrich did, the actual impact of gaming behavior on performance outcomes.

Statistical Approaches to Adjusting Performance Measures

One possibility for the low incidence of cream-skimming could be related to the methodology used to adjust for factors that lead to such behavior. JTPA used a regression approach to adjust targets for factors

that affect participants' ability to find employment. By adjusting targets upward when a local program has a higher percentage of participants with characteristics more favorable to achieving positive employment and educational outcomes, the performance standards are raised for those trying to game the system by enrolling those who are more likely to find employment because of their own higher capabilities.

WIA legislation replaced the statistical approach to adjusting targets adopted by JTPA with a more subjective approach based on negotiations between the different levels of government. The reliance of WIA on negotiations to adjust for outside factors rather than using the quantifiable and transparent system adopted by JTPA led Barnow and Smith (2004) to conclude that WIA took a step backward from JTPA in measuring the contribution of the workforce system to achieving outcomes. As the performance system is adjusted more accurately for such factors, the system moves closer toward an indicator of the value-added of the program.⁸

Beginning with program year 2009, USDOL adopted a regression-adjusted approach for setting national targets for the three WIA programs and other federal workforce development programs. The regression-adjusted methodology followed the JTPA methodology to a large extent by controlling for factors related to personal abilities and local labor market conditions. However, USDOL did not return completely to using the method of setting targets under JTPA. Instead, it used a hybrid approach for states and LWIAs. As with JTPA, targets were determined for states and LWIAs using the regression methodology. These regression-adjusted targets were offered only as a starting point for negotiations, and the final targets were determined by the negotiation process (USDOL 2011). Nonetheless, by offering states and LWIBs regression-adjusted performance targets, they have objective data describing the factors that affect their performance outcomes and a transparent, objective method of understanding how these factors actually affect their performance (Eberts and Huang 2011). Several states use these data in the negotiation process.

Value-Added Performance Improvement System

Recognizing the need to provide better and more timely information to program administrators, the state of Michigan, with support from

USDOL, developed the Value-Added Performance Improvement System (VAPIS). Michigan provided VAPIS to local workforce administrators for several years (Bartik, Eberts, and Kline 2009; Eberts, Bartik, and Huang 2011). The system was similar to the regression-adjusted targets described previously, except that instead of adjusting the targets, the methodology adjusted the common measures. In this way, the performance measures themselves reflected to a greater extent the value-added of the workforce system. Performance measures were adjusted downward for participants who had a greater ability to find employment, and upward for those with less ability. The same approach was used for local labor market conditions: Performance measures in areas with favorable conditions were adjusted downward, and such measures were adjusted upward for areas with less favorable conditions. By purging the performance measures of factors unrelated to the actual effectiveness of the program services, the adjusted measures were more reflective of the value-added of the system.

VAPIS also addressed the issue of the timeliness of performance measures. Performance measures, based on UI wage records, are not available for up to a year after participants exit the program. The long lag makes it difficult for administrators to base management decisions on these measures or to use them for continuous improvement. VAPIS forecast the possible outcomes of participants currently receiving services so that local administrators could get some idea of how their current decisions may affect future outcomes.

While regression-adjusted performance measures may theoretically reflect more closely the value-added of a program, they still may not closely approximate the findings from a rigorous evaluation of effectiveness. A recent evaluation of the use of regression-adjusted performance outcomes in the Job Corps program found little relationship between these “value-added” measures and the net impact results from a rigorous randomized evaluation (Schochet and Fortson 2014). The authors attribute much of this effect to the weak associations between the unadjusted performance measures and long-term outcomes, as well as to unobserved factors. While performance outcomes were never intended to substitute for rigorous evaluations, the question still remains of whether a regression-adjusted approach provides administrators with information that can inform their decisions better than no information at all.⁹

Including Business Satisfaction Indicators

Businesses look to the workforce development system to help identify, assess, and train workers to meet their specific skill requirements. In return, the workforce development system looks to businesses to communicate their talent needs in order to assist with proper job matches and to ensure that workers are trained to meet the future needs of employers. Despite the importance of engaging businesses as customers and partners, the common measures currently adopted by USDOL do not include any direct measure of how businesses use the system, how they may benefit from using the system, or their satisfaction with the system. Obviously, the mere act of hiring a workforce-program participant is beneficial to the employer. However, the current performance measurement system does not record whether an employer used the workforce development system to find specific workers, nor does it record the length of time that employer retained the worker hired through the workforce system.

The Commonwealth of Virginia and the state of Washington considered including indicators reflecting the business use and satisfaction of public workforce development programs. Of particular interest is a measure they constructed to record the use by employers of WIA services. It measures repeat employer customers and is calculated as the percentage of employers served by WIA who return to the same program for service within one year (Hollenbeck and Huang 2008). More specifically, an employer was categorized as “satisfied” if the business hired someone who had exited from a program in the first quarter of the fiscal year and then hired another individual from the program before the fiscal year was over. The denominator for this indicator is the number of employers who hired someone in the first quarter of the fiscal year. Hollenbeck and Huang (2008) calculated the measure for the two WIA adult programs in Virginia and found that 52 percent of employers who hired someone from one of the two programs hired at least one more worker from the same program within the year. Of course, this is contingent on the number of times an employer hires during the year, but it can be normalized by a state or industry average.

The measure adopted by Virginia assumes that employers are repeat customers because the programs have provided them with job applicants with the appropriate skills and other qualifications. However, the

measure, while easy to calculate and inexpensive to administer, may be a poor substitute for more in-depth information obtained directly from employers. First, it does not offer any specific information about the level of satisfaction or exactly what services businesses found helpful in their recruiting efforts. Second, the measure may not reflect what it is intended to record. Rather, it may be the case that the same business did not return to the workforce programs in search of job applicants simply because it was not hiring during the period covered by the measure. Consequently, the lack of hiring needs may be confused with lower satisfaction with the workforce services. Third, the measure may be of little use to workforce administrators seeking better ways to help guide participants with sought-after skills to the appropriate employers, and of little use to training providers in determining the appropriate curriculum and the appropriate capacity in their training facilities to meet employers' demands.

CUSTOMIZED INFORMATION AND TARGETED SERVICES

The merit of providing information customized to the personal characteristics and circumstances of individual participants is supported by lessons from behavioral economics. According to Babcock et al. (2012), job search assistance and employment services should be simplified and streamlined by making tools available that gather information on an individual's background and interests, provide feedback on the education and employment opportunities pursued by others like the participant, list job openings that may interest the participant, and provide information on the projected growth in occupations (p. 8). The next logical step then is to use that information to find the services that best meet the needs of individual participants. Therefore, initiatives that combine customized information and targeting will be discussed in this section.

Frontline Decision Support System

The Frontline Decision Support System (FDSS) pursues an approach to customizing information and targeting resources that is

consistent with the lessons drawn from behavioral economics. FDSS offers a set of decision tools that provides job seekers and frontline staff with customized information about employment prospects and the effectiveness of services. Of the various initiatives considered, FDSS comes the closest to combining all five elements of an intelligent workforce system, including evidence-based decision making, and offers the possibility that the results of rigorous evaluations can be incorporated into the FDSS framework. FDSS uses existing administrative data and statistical algorithms to help staff and customers make better decisions about job prospects and about appropriate services that meet the customer's needs in finding employment. The Web-based screens guide job seekers through key decision points and provide them with easily accessible and customized information. The pilot was implemented in Georgia in 2002 as a joint effort of USDOL's Employment and Training Administration, the Georgia Department of Labor, and the Upjohn Institute (Eberts, O'Leary, and DeRango 2002).

FDSS walks job seekers through a systematic sequence of steps and presents customized information at each critical decision point. Using the case of a dislocated worker as an example, FDSS moves that individual through the reemployment process, beginning with understanding his or her likelihood of returning to work in the same industry, proceeding to explore job prospects in occupations that require similar skills and aptitudes, then accessing information about the earnings and growth of jobs in particular occupations within the individual's local labor market, and ending with an understanding of which reemployment and training services might work best for that person, if none of the previous steps leads to a job. At each of these critical decision points, personalized information is made available to help inform the decisions.

The personalized information is based on statistical relationships between a customer's employment outcomes, personal characteristics, and other factors that may affect his or her outcomes, all of which are available from workforce administrative files already collected by the various agencies. The statistical algorithms provide an evidence-based approach to determining which services are most effective for specific individuals. The algorithms also personalize labor market information so that it presents information that is pertinent to the participant's abilities and circumstances, such as the probability of someone with the

observed characteristics of the specific individual returning to his or her previous occupation and industry. By using administrative data that capture the experience of all customers who have recently participated in the state's workforce system, this evidence-based approach offers a more comprehensive and "collective" experience of what works and what doesn't than relying on the narrower experience of individual caseworkers.¹⁰

Barnow and Smith (2004), in a critique of the performance management system of the federal workforce system, recommend using FDSS as the centerpiece for a redesign of the performance system. In what they describe as an "ideal" performance system, "randomization would be directly incorporated in the normal operations of the WIA program . . . [through] a system similar in spirit to the Frontline Decision Support System" (p. 49). They contend that such randomization need not exclude persons from any intensive services, but only assign a modest fraction to low-intensity services—that is, the core services under WIA. The randomization would then be used, in conjunction with outcome data already collected, to produce experimental impact estimates that would serve as the performance measures. However, one of the drawbacks with randomization is sample size. A relatively large sample—typically larger than the inflow of participants into many local workforce programs—would be required. Because of the need for large samples, this approach would be most applicable for state-level performance incentives, which is not the level at which contracts are administered and services delivered. Furthermore, for purposes of informing management decisions, the effect of either individual services or bundles of services is more useful than the overall effect of the program. To use randomization to estimate service-specific effects would require even larger sample sizes.

Another approach to estimating the effects of programs and services is to use propensity scoring techniques to construct counterfactuals. While this is thought to be not as reliable in estimating net impacts as randomization, it is considered a viable alternative and has been used extensively in program evaluations, most recently in evaluating the net impact of WIA programs (Heinrich, Mueser, and Troske 2009; Hollenbeck et al. 2005). For the purpose of providing pertinent information to decision makers, it has several advantages over randomization. One is the need for a smaller sample size; a second is that one need not

exclude participants from any services. With randomization, a control group is constructed by randomly excluding individuals from services. With propensity scoring, the control group is constructed by identifying observationally similar individuals who were not enrolled in any of the services being evaluated. One of the drawbacks of the latter approach is that individuals may not have enrolled for reasons that are not observed and thus could bias the net impact estimates. However, finding individuals who are similar in observed characteristics helps to control for these unobserved attributes, and the previously mentioned studies have used as comparison group members those who participate in the Wagner-Peyser Employment Service. A third advantage is that propensity score matching methodologies can be “built in” to a performance system and can be refreshed periodically as new data are entered into the system. While not completely automatic and self-functioning, it does require a minimal amount of intervention during the updating phases.

FDSS has never been rigorously evaluated to determine whether the information provided and the way in which it was presented improved the effectiveness of the WIA programs compared with the typical conveyance of information within One-Stop Service Centers. However, the development and implementation of FDSS was based in part on the success of two U.S. Department of Labor initiatives, both of which were rigorously evaluated and found to be effective. These two initiatives, Welfare-to-Work and WPRS, are discussed in the next two sections.

Targeting Services to Welfare-to-Work Participants

The Welfare-to-Work referral system used a statistical methodology, similar to that used in FDSS, to target services to program participants. The purpose of the pilot was to improve the employment outcomes of participants by referring them to services that best meet their needs. Funded by USDOL and developed by the Upjohn Institute, the pilot referred Welfare-to-Work participants to one of three service providers based on a statistical algorithm that used administrative data to determine which provider offered services that were shown to be most effective for customers possessing specific characteristics and employment backgrounds. Each provider offered different services and different approaches to delivering those services. Before the pilot was established, the LWIB where the pilot took place randomly referred

participants to the three different providers. Therefore, the relationships between different types of services and employment outcomes for groups of participants with different characteristics were based on a randomized sample. Using this sample, the observed employment outcomes were regressed against personal characteristics of the participants, and these relationships were then used to refer new enrollees to providers based on the enrollees' personal characteristics.

The initiative demonstrated that customizing services based on participant characteristics could increase the effectiveness and efficiency of the intervention. A random assignment evaluation of the pilot showed that targeting services in this way significantly increased the 90-day employment retention rate of participants by 20 percentage points, yielding a benefit-cost ratio of greater than three (Eberts 2002).

Worker Profiling and Reemployment Services

WPRS is a national program signed into law in 1993, which requires each state to identify UI claimants who are most likely to exhaust their UI benefits before finding employment and then to refer them as quickly as possible to reemployment programs. The purpose of WPRS is to encourage a targeted subset of UI beneficiaries to use reemployment services intensively at the beginning of their unemployment spell rather than toward the end, when they face the prospect of exhausting their benefits. The identification procedure uses statistical methods similar to some of the algorithms used in FDSS. Independent evaluations show that WPRS reduces the use of UI benefits and the length of unemployment spells by statistically significant amounts compared with appropriate comparison groups (Dickinson, Decker, and Kruetzer 2002).

Value of Information and Guidance about Training Outcomes

The training programs delivered under WIA offer fertile ground for exploring ways to guide participants through the process of determining the type of training. WIA-funded training is offered primarily through Individual Training Accounts (ITAs), which provide job seekers with a fixed amount of money they can use to pay for training from providers of their choice. With this high degree of choice, individuals are faced with a series of complex choices involving the calculations of future

returns to training and the selection of the type of training and, subsequently, choice of occupation, in addition to the psychological barriers of investing time and money in training with distant payoffs. Babcock et al. (2012) suggest that training programs through One-Stop Centers should “emphasize reducing complexity and providing guidance to participants as priorities” (p. 11).

To help job seekers make more informed decisions, WIA requires states to compile and post Eligible Training Provider Lists, which provide job seekers with information about past success rates of participants enrolled with specific training providers. To be eligible to receive WIA funding for postsecondary training, a training provider must meet the criteria for being included on the list. Most pertinent for this discussion is the requirement that training providers post information on specific student outcomes, such as the percentage graduating from the program and the percentage completing the training and finding employment. To construct the Eligible Training Provider List, student data from each provider was to be linked with UI wage records. However, for many providers, this linkage was never completed. The Workforce Data Quality Initiative has rekindled interest in completing the information for training providers and educational institutions in general.

In addition to providing information about the education and employment outcomes of training providers, USDOL considered the relative effectiveness of offering different levels of guidance to prospective training participants. USDOL commissioned an evaluation that considered three models, which varied along two dimensions: first, the freedom that trainees were given in selecting a training provider, and second, the gap between the cost of training and the funds provided by WIA to pay for training.

Findings from the randomized control trial evaluation suggest that customers and society would benefit markedly from intensive counseling and higher potential ITA awards, compared with less information and direction from counselors and fixed awards. Estimates from the benefit-cost analysis indicate that society would benefit by about \$46,600 per ITA customer by participants’ receiving more guidance from counselors compared to less oversight (Perez-Johnson, Moore, and Santillano 2011). Results also show that customers who were given more guidance were significantly more likely to be employed in the occupation for which they trained, offering additional support for the suggestion from behavioral economics of providing guidance to participants.

EVIDENCE-BASED DECISIONMAKING

Evidence-based decisionmaking permeates many of the initiatives described in this chapter, and various methodologies of estimating the effectiveness of programs have already been discussed. One of the trade-offs inherent in providing information on the effectiveness of programs and services is between the rigor of the evaluation and the timeliness of the information. Another trade-off is between the rigor of the evaluation and the granularity of the information, such as obtaining effectiveness estimates of specific services or bundles of services for subgroups of the population. The latter is important for customizing information to individual customers and for targeting resources to individuals. Some researchers, such as Barnow and Smith (2004), have suggested embedding a randomized trial evaluation in a system such as the FDSS. Researchers at the IAB in Germany have experimented with that approach.¹¹ Others have explored the possibility of incorporating an evaluation instrument based on propensity scoring within a similar framework. And still others have looked at refining a regression-adjusted approach. As previously mentioned, some research has already examined the trade-offs between the different approaches, and more needs to be done to find the right balance for the different applications of evidence-based information.

EXTERNAL PARTNERS

The workforce development system depends on close relationships with other entities in order to provide effective reemployment and training services. Many LWIBs act as facilitators to bring together various local organizations, such as economic development entities, businesses, social agencies, educational institutions, and labor groups, to help address workforce aspects in their local areas. According to a Government Accountability Office report (GAO-11-506T, p. 12), One-Stop Centers provide an opportunity to coordinate the services among a broad array of federal employment and training programs. The study also points out that colocation of services affords the potential for shar-

ing resources, cross-training staff, and integrating management information systems.

Regional Sector Alliances

Several states have initiated programs that engage businesses and form partnerships with local educational institutions and economic development agencies through a sectoral approach. Two examples are the Michigan Regional Skills Alliance and the California Regional Workforce Preparation and Economic Development Act (Eberts and Hollenbeck 2009). Typically, local areas engage in a strategic planning process that includes an analysis that identifies the key growth sectors in the region. Partnerships are formed within these sectors by bringing together key businesses within these sectors with local entities that provide training and economic development initiatives.

Beginning in 2006, USDOL funded WIRED (Workforce Innovation in Regional Economic Development), which supported the development of a regional, integrated approach to bring together workforce development, economic development, and educational activities. The goal of WIRED was to expand employment and career advancement opportunities for workers and catalyze the creation of high-skill and high-wage opportunities. WIRED consisted of three generations of regional collaborations, totaling 39 regions (Hewat and Hollenbeck 2009). The WIRED initiative was a competitive program in which selected regions received from \$5 million to \$15 million over three years to support the formation of partnerships. The evaluation of WIRED, funded by USDOL, found that the WIA programs within the WIRED regions had statistically significantly higher entered employment rates and retention rates than WIA programs in the comparison group (Hewat, Hollenbeck, and others 2011, chapter 5).

The information requirements to foster effective partnerships across entities external to the workforce system are similar to the information needs within the system. Partnerships work best when organizations share a common vision and strive to meet common goals. The performance of one organization, therefore, affects the success of another organization within the partnership. Consequently, each organization needs to be able to understand its contribution to the common goal, which requires each to develop value-added performance measures.

Moreover, since it is likely that each organization will have a different management information system, a common platform is needed upon which relevant data from the various organizations can be shared. Such platforms are available, through which organizations can share data at various levels of disaggregation and thus disclosure. Probably the most challenging barrier to sharing information is to establish trust between partnering entities and leadership to identify a common vision and act collectively toward a common goal.

SUMMARY: AN INTELLIGENT, INTEGRATED INFORMATION SYSTEM

As outlined in this chapter, customers and managers of the workforce system require more relevant and current information to make informed decisions. Job seekers ask for information that will help them identify the occupations and skills demanded by businesses, find jobs, and move into more meaningful careers. Businesses seek information about the pool of qualified workers. Workforce program administrators seek information to help them make better management decisions. To meet these needs for relevant information, an intelligent workforce system, therefore, needs to incorporate five elements: 1) a data-driven system, 2) information customized to the specific needs and circumstances of each customer, 3) an evidence-based system, 4) targeted reemployment and training services, and 5) value-added performance management. The current workforce system embodies various aspects of these elements, but significant improvements must still be made.

The WIOA, which replaces the current workforce development system, encourages states to target services, integrate data-driven counseling and assessments into service strategies, more fully integrate programs, and provide easy and seamless access to all programs. It even requires states to periodically evaluate the workforce system using comparison-group methodologies. Something like the FDSS comes the closest to incorporating these functions: It integrates administrative workforce data with education and wage data, it develops statistical algorithms that provide personalized information to help customers understand what various trends and circumstances mean to them, and it

brings this information back down to the customers and frontline staff who are making decisions. Such a system incorporates some of the lessons gleaned from behavioral economics that demonstrate the benefit of customized information, feedback on the possible returns to education and training choices, and personalized employment prospects and labor market information. As Barnow and Smith (2004) suggest, this framework can be combined with counterfactuals that provide a better sense of the value-added of programs and, more specifically, the services provided within those programs. Such a system is not perfect, of course. It does not substitute for rigorous evaluations of the effectiveness of programs, nor does it guarantee that incentives are properly aligned with desired outcomes. However, it does make significant advances in getting relevant information in an easily accessible format to the customers and decision makers of the workforce system.

Development of an intelligent workforce system will not happen all at once, even though much of the foundation has already been laid by past initiatives and within the current workforce system. To begin the process, one possible approach is for the federal government to provide innovation dollars to one or two interested states with the specific purpose of developing such a system. Once the system is up and running, other states can see how it works and begin to recognize the merits of such a system. To ensure that statistical algorithms and other key innovative aspects of the system are continually updated, regional data centers could be established to give researchers who are interested in creating, updating, and improving such a system access to administrative data. Involving researchers and practitioners in the ongoing development of the system will help to ensure that the system continues to evolve to meet the current and future needs of customers and administrators of the workforce development system.

Notes

1. This chapter draws from Eberts (2013).
2. WIA was enacted in 1998, and the Wagner-Peyser was established in the 1930s. WIOA is based on principles similar to WIA (and its predecessor, JTPA) of a federal-state-local partnership with authority given to local boards to administer the programs.

3. For an example of using similar data for computing rates of return for worker training programs, see Jacobson and LaLonde (2013).
4. Some analysis has been conducted to compare the accuracy of job openings data obtained from vendors with the survey-based Job Openings and Longitudinal Time Series (JOLTS) data compiled by the BLS. While the actual numbers of job openings differ between the two sources, they both seem to track similarly, with turning points occurring at roughly the same time. Brad Hershbein has conducted this research at the Upjohn Institute, and the results are available upon request.
5. Training and Employment Guidance Letter (TEGL) 17-05, issued February 17, 2006 (USDOL 2010). The Government Performance and Results Act (GPRA) of 1993 requires that all federal programs set performance targets and establish performance tracking systems. Even before GPRA was enacted, the ETA incorporated an outcomes-based performance system into many of its programs. Today, 15 federal workforce programs, serving nearly 20 million people annually, are subject to performance measures and targets. GPRA was updated in 2010 with the enactment of the Government Performance and Results Modernization Act.
6. Performance measures of the WIA adult programs include educational attainment outcomes in addition to employment outcomes.
7. The legislation to replace WIA requires that each state periodically evaluate its workforce programs using methodologies that include comparison groups.
8. Heckman's team of researchers also found that the short-term outcomes are not highly correlated with longer-term outcomes, which suggests that the regression-adjusted targets do not substitute for a rigorous evaluation of the program, no matter how well the adjustments may move the gross outcomes toward value-added outcomes.
9. Barnow and Smith (2004), in an assessment of performance management of the WIA system, expressed concern that short-term performance outcomes mandated by WIA do not correlate with long-term program impacts. They recommended that the performance system be suspended until research identifies such short-term measures.
10. While not indicting all caseworkers, Lechner and Smith (2007) provide evidence that caseworkers do not do a very good job in referring displaced workers (in Switzerland) to services that maximize their employment prospects.
11. The German public employment service, through its research arm, the Bundesagentur für Arbeit (IAB), used randomized experiments to develop an evidence-based system that identifies services that have been shown to contribute the most to the improvement of employment outcomes of individual workforce participants. The approach grew out of the Hartz reform to improve the effectiveness and efficiency of German's active labor market programs. Dr. Susanne Rassler was the project director.

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