The Benefits and Challenges of Registered Apprenticeship: The Sponsors' Perspective

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EXECUTIVE SUMMARY

Apprenticeship is a method of training that emphasizes learning by doing. Apprentices are taught by experienced workers at the job site and practice their skills in real work assignments. In the U.S., the registered apprenticeship system offers a framework for developing and registering apprenticeship programs, of which, in Fiscal Year 2007, there were nearly 28,000, with over 465,000 active apprentices. The Employment and Training Administration (ETA) of the U.S. Department of Labor oversees the registered apprenticeship system by issuing standards, monitoring state agencies, and promoting registered apprenticeship.

Registered apprenticeship program *sponsors* are individual employers or groups of employers (sometimes in collaboration with unions) who play a critical role. Sponsors recruit, screen and hire apprentices; develop formal agreements with them identifying the length of the program, skills to be learned, the wages to be paid at different points in time, and the required classroom instruction; and work with state apprenticeship agencies (SAAs) to make sure that their registered apprenticeship programs meet state and Federal requirements.

To better understand the perspective of sponsors, who are mainly employers, ETA commissioned a survey to learn more about what sponsors value, dislike, or would like to see changed about registered apprenticeship. The survey of sponsors was conducted in 2007 with a random stratified sample drawn from 90 percent of eligible sponsors nationally. Sponsors were asked about characteristics of their program and about their views on the value, benefits, and drawbacks of registered apprenticeship, its integration with the workforce investment systems, apprentice completion and reasons for non-completion, and suggestions for possible improvement. There were a total of 974 responses (for an estimated response rate of just over 70 percent).

Characteristics of Sponsors and Their Programs

Information from respondents in the survey showed the following:

- Thirty-six percent of sponsors identified their industry as construction. About 11 percent indicated their organizations were in the utilities (gas, electric, or water services), and 10 percent identified their industry as retail trade.

- About 26 percent of the sponsors indicated they were in programs jointly administered by employers and organized labor.

- Sixty percent of sponsors indicated that their program served only one employer, while 40 percent served multiple employers. Among programs with multiple employers, 38 percent had union involvement. The comparable figure for union involvement of single employer sponsors was 18 percent.

- Fifty-three percent of sponsors had small programs, with only 1 to 4 apprentices, while about 17 percent had no current apprentices and 30 percent had 5 or more.

- Forty-eight percent of the sponsors had programs that were over 10 years old and 31 percent had programs between 6 and 10 years old. About 3 percent of sponsors had programs that were less than one year.

The Value Sponsors See in Apprenticeship

- Ninety-seven percent of sponsors of registered programs said they would recommend the program to others, with 86 percent stating they would "strongly" recommend it and 11 percent indicating they would recommend it with reservations, due primarily to problems with accessing related instruction.

- The most frequently cited benefit of apprenticeship, identified as very important by over 80 percent of sponsors, was that it helped meet their demand for skilled workers. The second most frequently cited benefit (noted by 72 percent of sponsors) was apprenticeship's role in reliably showing which workers have the skills needed. Other benefits, cited by 68 percent of sponsors as very important, were: raising productivity, strengthening worker morale and pride, and improving worker safety. A majority of sponsors also cited as important benefits the role of registered apprenticeship in worker recruitment and retention and in meeting licensing requirements.

Drawbacks Sponsors See in Apprenticeship

- Competitor firms' bidding away trained apprentices, commonly called "poaching," and thought by economists to be a major disincentive to employer involvement in apprenticeship, was a concern but not a deterrent among current sponsors in the survey. Surprisingly, only 25 percent of sponsors identified this as a significant problem while 29 percent saw it as a minor problem, and 46 percent did not perceive it as a problem at all. However, even among sponsors who perceived poaching as a problem, about 85 percent would still strongly recommend apprenticeship to others.

- About a quarter (24 percent) of sponsors viewed apprentices' failure to complete their apprenticeship program as a significant problem; 31 percent saw it as a minor problem and 45 percent did not cite it as a problem.

- Sponsors generally did not find costs to be a significant problem. Sixty-three percent of sponsors said related instruction costs were not a problem, although 30 percent viewed it as a minor problem and 6 percent as a major problem. Similarly, only 7 percent of respondents saw the costs of experienced workers' time to instruct apprentices as a significant problem, while 34 percent indicated it was a minor problem.

- Only small percentages of sponsors indicated they had significant problems with other aspects of registered apprenticeship, such as it taking too long to produce skilled workers (11 percent of respondents), too much effort to manage a program (6 percent) and too much paperwork (9 percent).

Program Completion

- Sponsors reported high completion rates. Forty-four percent of sponsors said that the completion rate for their program was between 90 to 100 percent and 21 percent indicated it was between 70 and 89 percent, thus making a total of 65 percent of sponsors who reported completion rates at or above 70 percent. An additional 17 percent identified their completion rates as between 50 and 69 percent. High completion rates were especially common in the aerospace, automotive manufacturing, energy, health services, retail, and transportation industries.

- Thirty-six percent of sponsors identified personal issues as the reason for non-completion, making this the most frequently cited reason. Performance problems on the job or in the classroom were the next most commonly cited reason, noted by 32 percent of sponsors. However, about 30 percent of the sponsors said non-completion was the result of apprentices earning a craft license and then taking another job before completing the program and 11 percent cited transfer to another program as a reason for non-completion. These last reasons were particularly important in the construction industry.

Sources for Recruiting Apprentices

- About 65 percent of sponsors identified current employees as an effective source for recruiting new apprentices, making this the most frequently cited source. About 40 percent of sponsors indicated that educational institutions were an effective source.

- No more than 20 percent of the sponsors cited the Internet, community-based organizations, private vocational schools, and pre-apprenticeship programs as effective recruitment sources.

- Only 14 percent of sponsors indicated that the One-Stop Career Center system and unions were effective recruitment sources, making them the least frequently cited source.

Integration of Apprenticeship into the Workforce System

- Nearly 30 percent of sponsors said that they had at least one interaction with the public workforce investment system, with 17 percent reporting they used a One-Stop or Job Service to post apprenticeship openings and 16 percent reporting having applicants sent by the One-Stop or Job Service.

- Sponsors of joint programs, older programs, programs with more apprentices, and programs in the construction industry were more likely than the average sponsor to interact with the workforce investment system. Being a sponsor of a joint program and of a larger apprenticeship program increased the likelihood of some interaction with the workforce system by 13 percent and 20 percent, respectively.

Role of Related Instruction

- Fifty-eight percent of the respondents identified community colleges and public technical college as the providers of related instruction. Nearly one in four sponsors said that the related instruction was provided at a sponsor-owned or operated facility and about 17 percent reported they used proprietary trade schools.

- Sponsors generally gave high marks to the quality of related classroom instruction. Approximately 80 percent ranked the instruction as excellent or near excellent. Only 5 percent of the sponsors indicated that the instruction quality was poor or near poor while about 13 percent viewed instruction as average.

- Seventy percent of sponsors said that employers provided the funds for related instruction, while 23 percent indicated that the apprentice covered such costs.

- Fifty-eight percent of sponsors said related instruction was offered in the evening, 25 percent said it was offered during work hours, and nine percent said that it was offered on weekends.

- High quality of related instruction appeared to be correlated with sponsors recording higher percentages of individuals completing apprenticeship programs.

- Sponsors who utilized public technical schools for related instruction, appeared to have higher completion rates among their apprentices, but no other source of such instruction exerted a significant impact on completions.

Sponsors' View of the Registered Apprenticeship System

- Sponsors generally gave high marks to their state apprenticeship agencies (SAAs): 82 percent said the SAAs did a good or excellent job in being timely; 80 percent gave similar ratings for clarity of guidance; 70 percent rated them good to excellent for use of on-line registration; and 64 percent gave them similar marks for promoting and publicizing registered apprenticeship.

- Fifty-one percent of sponsors stated that more help in finding and screening applicants was important to them; 41 percent said they would like more help in finding related instruction; and 37 percent said they would like a simpler process for setting up a new program.

Competency-Based Approaches

- Over 55 percent of sponsors said they were interested in learning more about competency-based approaches in apprenticeship programs.

Key Findings and Implications

- Strong support from current sponsors. Nearly nine of every 10 sponsors would "strongly recommend" registered apprenticeship to others.

- Competitor firms' bidding away trained apprentices (commonly called "poaching") was a concern but not a deterrent to providing apprenticeship training. The problem was identified as a significant concern by about one in four sponsors and a minor concern by another 29 percent.

- Completion rates reported by sponsors were very high with 54 percent saying that at least 80 percent of their apprentices completed their program. However, non-completion is of concern to over half of all sponsors; 24 percent identified it as a significant problem and 31 percent indicated it was a minor problem.

- Sponsors often use current employees to recruit new apprentices but the second most frequently cited source was community colleges and public technical schools. The One-Stop Career Center system and unions were the least frequently identified sources, each cited by only about 14 percent of all sponsors.

- Many sponsors say they want help in finding and screening applicants, as well as in finding related instruction. A large share of sponsors also identified as important several operational improvements in the registered apprenticeship system, such as faster registration of apprentices (36 percent), a simpler process for setting up a program (37 percent), more feedback on delayed or rejected approvals for programs (26 percent), and easier multi-state registration (32 percent).

- Sponsors generally gave high marks to their State Apprenticeship Agencies. Eighty-two percent indicated the agencies did a "good" or "excellent" job in being timely; 80 percent gave similar ratings for clarity of guidance; 70 percent gave similar marks for use of on-line registration; and 64 said the SAAs were "good" or "excellent" in promoting and publicizing registered apprenticeship.

- The majority of sponsors wanted to know more about competency-based approaches. Just over 56 percent of survey respondents said they were interested in learning about, or how to use, competency-based apprenticeship training.

- Sponsors' interactions with the Workforce Investment System were generally quite limited. While nearly 30 percent of sponsors said that they had at least one interaction with the public workforce investment system, only 17 percent reported they used a One-Stop Career Center or the Job Service to post apprenticeship openings and 16 percent reported they received applicants referred by a One-Stop or Job Service

I. INTRODUCTION

Apprenticeship is a method of training that emphasizes learning by doing. Apprentices are taught by experienced workers and supervisors at the job site and practice their skills in real work assignments. In the United States, the registered apprenticeship system, established under the 1937 National Apprenticeship Act (also called the Fitzgerald Act), provides a framework for this form of training. In fiscal year 2007 there were nearly 28,000 programs providing training to over 465,000 active apprentices, according to data from the Office of Apprenticeship (OA) in the Employment and Training Administration (ETA) of the U.S. Department of Labor. OA oversees the registered apprenticeship system, issuing regulations, providing guidance and technical assistance to sponsors and state agencies, maintaining a database, monitoring trends, and promoting registered apprenticeship.

Registered apprenticeship program sponsors are individual employers or groups of employers (sometimes in collaboration with unions) who play a critical role. Sponsors recruit and hire apprentices; determine the content of the training, the partner for classroom instruction, and the number of apprentices to train; and develop formal agreements identifying the skills to be learned, wages to be paid, and the required classroom instruction. Sponsors also work with state apprenticeship agencies (SAAs) to make sure that their programs meet state requirements and standards as well as to register programs and apprentices.

To better understand the perspective of sponsors, who are mainly employers, ETA commissioned a survey to learn about what sponsors value, dislike, or would like to see changed about registered apprenticeship. The survey was administered to a representative sample of sponsors, drawn from a sampling frame that covered 90 percent of all sponsors in the United States. A stratified random sample was used to oversample sponsors in high-growth industries and final results were appropriately weighted to assure results were nationally representative.

The survey was fielded in the spring of 2007. This report presents and interprets the results of the survey, addressing the following questions:

- Who trains apprentices — what are the characteristics of the sponsors of registered apprenticeship programs?
- What are the key characteristics of registered apprenticeship programs in terms of size, type, and history?
- What do sponsors value about registered apprenticeship?
- What are the drawbacks or problems sponsors find in registered apprenticeship?
- How do sponsors recruit apprentices?
- How well integrated is registered apprenticeship with the workforce investment system?
- What institutions provide related instruction?
- What is the completion rate for apprentices and why do some apprentices fail to complete their programs?
- What changes in the registered apprenticeship system would sponsors recommend?
- What data do sponsors capture on their registered apprenticeship programs?
- What are the implications of these results for policy and further research?

The report addresses each of these questions and explores how they are connected to each other. The report also discusses the survey methodology and provides a contextual overview of apprenticeship.

II. CONTEXT OF REGISTERED APPRENTICESHIP

2.1 Background

Apprenticeship has existed for thousands of years[1] but it uses a method consistent with the findings of modern cognitive science on how individuals learn (Resnick 1987). Apprenticeship is particularly able to inculcate critical work-process knowledge, including specialized problem-solving practices in particular occupations (Borham 2004; Steedman et al. 1998). The apprenticeship model also helps individuals develop an occupational identity, a professional ethic, and self-esteem based on accomplishment (Rauner 2007).

While it is an important tool for helping workers develop their skills and earn a recognized and valued occupational credential, apprenticeship also likely raises their productivity. The literature on employer-provided training in general suggests it can achieve high returns in terms of worker productivity (Frazis and Loewenstein 1999).[2] Given the in-depth nature of apprenticeship training, rigorous evaluation of its effect on productivity would likely show similar results.

Apprenticeship plays a major role in training skilled workers in many countries (Steedman 2005; Leitch Commission 2006). The scale of apprenticeship has traditionally been largest in Central European countries, especially Austria, Denmark, Germany, and Switzerland. These countries typically use apprenticeship as a major component of school-to-work transition activities for 40-70 percent of youth in high schools or soon after high school. In recent years, several other advanced countries, such as the United Kingdom and Australia, have been expanding the role of apprenticeship (Steedman 2006; OECD 2006a). A recent report on the critical need to upgrade skills in the United Kingdom called for a major expansion of

[1] Ancient Egypt and Babylon organized training in craft skills to maintain an adequate number of craftsmen. In the 18th century BC, the Hammurabi Code of Babylon required artisans to teach their crafts to the next generation.

[2] In this study, Frazis and Loewenstein used data from the National Longitudinal Survey of Youth and the Employment Opportunity Pilot Project to obtain the most plausible estimates of returns to on-the-job training. They found that returns to training diminish with each additional hour of training. However, their estimates showed there are high wage returns from the initial intervention of formal training.

apprenticeship (Leitch Commission 2006). In Norway, a 1994 reform gave students a legal right to an apprenticeship as part of their three years of secondary education (OECD 2006a).

2.2 Registered Apprenticeship in the United States

Relative to other countries, apprenticeship plays a considerably smaller role in the United States (Gitter 1994; Winkelman 1997), where there are currently approximately 450,000 apprentices in registered programs, with over 200,000 entrants per year — modest numbers compared to the millions of individuals in the United States who receive occupational training and education in all types of colleges and universities. Overall, the number of individuals in registered apprenticeship per year is about as high as the combined number of participants receiving training through the Workforce Investment Act's Adult and Dislocated Worker programs, the Job Corps, and the Trade Adjustment Act (Mikelson and Nightingale 2004). The Federal costs for administering registered apprenticeship are quite modest (around $21 million), compared to the billions spent on other training programs, primarily because most of the costs of apprenticeship are borne by employers and state postsecondary education systems.

Although small in comparison to many countries and to U.S. college and university enrollments, apprenticeship in the United States has been growing, as evidenced by a 25 percent increase in apprentices from 1997-2003 (Bennici et al. 2004).

Registered apprenticeship in the United States is also far more decentralized than in other countries. Although U.S. sponsors can use established curricula in their industry, they are not bound, as in many countries, by an external industry standard for determining the skills taught, the nature of work-based learning, the specific content of classroom instruction, and the tests of competencies. Nor are U.S. sponsors required to rely on representatives of industry, workers, and government to determine such program elements. Rather, sponsors and employers have the ability to customize apprenticeship training to their workforce needs, within the bounds of Federal and state standards.

Even in the United States, however, apprenticeships must meet minimum standards in apprenticeable occupations and occasionally use external competency-based assessments. Within those limits, individual employers and groups of employers, sometimes in collaboration with unions, have considerable discretion in designing and operating their programs. Sponsors

choose the apprentices, the content of the training, the type of partner for classroom instruction, and the number of apprentices to train. Since employers must spend their own resources on apprenticeship training, they have an incentive to increase the number of apprentices only when they believe they will require additional trained workers in the future. Compared to the systems in some other countries, the apprenticeship system in the U.S. is far more decentralized and relies more on employers' decisions.

A distinctive feature of registered apprenticeship in the U.S. is the contractual agreement that binds the apprenticeship sponsor, usually the employer, and the apprentice. This formal agreement clarifies expectations, helps assure fair treatment of apprentices, and creates a process by which apprentices are supported in their progress toward becoming the responsible, qualified workers that employers want. Apprentices must complete classroom instruction in theoretical aspects of their chosen field, as a complement to workplace learning. Unlike most education and training programs, registered apprenticeship involves wage payments, which typically increase over time in a series of steps, as apprentices complete established milestones in time and skill. Apprentices typically receive lower pay in expectation of receiving valuable training in return. A firm's investments in registered apprenticeship thus includes apprentices' wages and direct training costs (for related instruction) as well as costs associated with managing the program, experienced workers' and supervisors' time in instructing and mentoring apprentices, and inefficiencies created in the production process.

Though registered apprenticeship in the U.S. is largely employer-driven and decentralized, SAAs play a critical role in registering apprenticeship programs, monitoring programs, providing technical assistance to current and potential sponsors, obtaining data on registered programs, and encouraging the development of new programs. ETA also has an important role in developing and enforcing regulations and standards, as well as in recognizing and monitoring SAAs. Federal staff also administer registered apprenticeship in 25 states and three territories; while state government staff administer the program in the remaining 25 states.

One of the key goals of Federal standards is to discourage abuse of low-wage apprentices through inadequate training and advancement (Jacoby 1991). Thus, for a program to qualify to be registered, it must meet a set of standards, including:

- Fair application procedures;
- A schedule allowing the apprentice to receive training and work experience in the field;
- Organized instruction in technical subjects required for the occupation (usually at least 144 hours per year);
- A progressively increasing schedule of wages;
- Proper supervision of on-the-job training;
- Adequate facilities to train apprentices;
- Periodic evaluation of apprentices' progress in job performance and related instruction;
- Maintenance of appropriate records; and
- No discrimination in any phase of selection, employment, or training.

Although discrimination is prohibited, there are far more men than women in apprenticeship. Given that construction and manufacturing are the leading industries in sponsoring apprenticeships, this result is perhaps not surprising, even though ETA has made substantial efforts to increase the number of women in apprenticeships in non-traditional occupations. Also, historically, apprenticeship programs typically had relatively few minorities (Marshall and Briggs 1967; Taylor 2006), in part because of barriers to entry, including prerequisites barring individuals with low educational attainments, requiring unpaid apprenticeship preparation and providing limited information on available apprenticeship slots. In recent years, however, the share of minorities in registered apprenticeships has increased to about one-third of all new registrants in construction programs (Bilginsoy 2005) and over one-third across all industries (in fiscal year 2007).

U.S. apprenticeship programs have been highly concentrated in construction, manufacturing, and other selected fields, such as public safety and some military occupations. Since apprenticeship is new to many other industries such as health care and information technology, penetration of registered apprenticeship in these areas is only in the beginning stages of growth. While the number of active programs in the industries newer to apprenticeship is still small compared to traditional industries, there has been rapid expansion in some fields.

According to one study, the number of registered programs in energy more than doubled from 1995 to 2003 and the number of programs in social services (e.g., child care) almost quadrupled from 1995 to 2003 (Bennici et al. 2004). However, registered apprenticeship programs in health services decreased slightly and information technology remained relatively flat over the 1995-2003 period.

While registered apprenticeship appears to be relatively inexpensive from a Federal perspective, its performance, in terms of earnings gains for participants, appears to be robust, at least in the few quantitative studies available. One estimate of the net impacts of apprenticeship indicated there were significant earnings gains for participants (Cook 1989). Another study found that the earnings gains associated with apprenticeship training in Washington State were substantial two to three years after leaving the program (Washington State Workforce Training 2004). Those completing apprenticeships earned nearly $4,300 more per quarter than the primary comparison group. These earnings gains were nearly three times the comparably estimated gains for those graduating with a vocational degree from community colleges.

2.3 New ETA Initiatives

In 2001, ETA began the Advancing Apprenticeship Initiative (AAI) to encourage demand-driven strategies to address workforce challenges. ETA sought to develop registered apprenticeship programs in high-growth industries defined as those adding new jobs to the economy, causing growth in other industries, or using new technologies or innovations that require new skill sets from their workers. Under the AAI, ETA funded industry efforts to establish apprenticeships in new occupations and industries, such as in nursing, information technology, geospatial technology, advanced manufacturing, and maritime occupations. These initiatives involved the creation of industry standards and the provision of technical assistance and guidance to employers, with the goal of making registered apprenticeship a viable training option in the new industries and, in some cases, to stimulate new career ladders that would create more, and higher-paying, opportunities for workers in those industries.

ETA efforts to expand apprenticeship were further supported by subsequent initiatives, which were intended to create demand-driven workforce investment policies focusing on employers as key decision-makers. Federal efforts to expand the use of apprenticeship to other

employers in the United States thus require understanding how the apprenticeship system operates and what sponsors think about it. To learn more about these programs and the views of current sponsors, ETA undertook the survey that is the focus of this report.

III. METHODOLOGY

3.1 Overview

The Survey of Sponsors of Registered Apprenticeship was designed to capture nationally representative data on the characteristics and attitudes of registered apprenticeship sponsors. The survey was administered in March and April of 2007 via phone, fax, and Internet. A total of 947 sponsors completed the survey instrument, which asked about the sponsor's program characteristics, benefits of registered apprenticeship, drawbacks or costs of registered apprenticeship, views on the apprenticeship system, interactions with the larger workforce investment system, and related instruction. A detailed description of the sampling methodology can be found in Appendix B.1 and information on the weighting of the responses and response rates can be found in Appendix B.2. A set of tables with responses to the survey, weighted sample sizes and error rates, can be found in Appendix C.[3] Additional data tables and a public use data file can be found at the website, http://wdr.doleta.gov/research.

3.2 Sampling Methodology

The sampling frame for the survey was comprised of 90 percent of the estimated universe of private sector sponsors, based on the 2006 data from the 32 states that fully participated in the Registered Apprenticeship Information System (RAIS) database and six additional states that agreed to provide individual level data for this one-time survey, at the request of OA. There were a total of 21,324 apprenticeship sponsors in the sampling frame, running an estimated 24,700 apprenticeship programs for about 316,500 apprentices. Sponsors of registered programs in the military and in prisons were excluded since they were government programs rather than private sector efforts.

Since there were far fewer sponsors in new and emerging industries and far more sponsors in the construction industry, the sampling frame was stratified into three mutually

[3] The initial research design, an accompanying process study involving site visits to five states, the sampling and weighting methodologies for the survey, design of the survey instrument, survey data collection, data cleaning and data analysis were conducted by Planmatics, Inc. and its subcontractors, Westat and Decision Information Resources (DIR).

exclusive groups by industry classification: 1) high growth, 2) construction and 3) "other" (not high growth or construction). Industries considered "high growth" included advanced manufacturing, aerospace, automotive, biotechnology, construction, energy, financial services, geospatial technology, health care, hospitality, information technology (IT), and transportation. Sponsors of high-growth industries were oversampled.

Equally sized samples were randomly drawn from the three strata, with the goal of having a total sample of about 1,200. However, because of the likelihood of many sponsors being ineligible because they were no longer in business or had not had an apprentice within the last three years, additional sample members were drawn, resulting in a total sample of 1,792 individuals. Of the initial sample, however, 28 percent were found or imputed to be "ineligible," for the reasons noted above. Using the imputed number of ineligibles, the "best estimate" of the response rate was 71.3 percent for the 974 completed interviews.

In the analysis of the data received, responses were weighted in order to generate nationally representative information. Weights were computed and assigned to ensure that the relative importance given to each response was equal to the incidence of the type of sponsor nationally. The base weights were determined using the inverse of the probabilities of selection of the sponsors into the sample. Then, adjustments to the weights were made for duplicates, unknown eligibility cases, and non-respondents in the final sampling frame.

Distributions of responses nationally and by different subgroups of sponsors were analyzed and cross-tabulations reviewed. Also, a host of factors were examined in regression analyses to see if they might have any effect on key responses. For example, in analyzing the sponsor-reported value placed on apprenticeship, the possible effects of the type of program, number, and source of apprentices were examined, among other factors.

IV. CHARACTERISTICS OF SPONSORS AND THEIR PROGRAMS

The survey provides recent data on basic characteristics of sponsors and their apprenticeship programs. Sponsors were asked to identify their industry, if their program served one or more employers, if organized labor was involved in their program, how many years the program has been in existence, and how many current apprentices they have.

4.1 Industry

As Table 4.1 shows, the construction industry represented over a third (35.5 percent) of sponsors nationally. Two high-growth industries — energy and retail trade — had a strong toehold in registered apprenticeship, making up slightly over 20 percent of sponsors combined. Automotive manufacturing comprised almost 4 percent of the sponsors in the survey. Health services, hospitality, aerospace, automotive repair, information technology, and transportation had the fewest number of sponsors in the sample, each representing only 0.5 to 1.5 percent of the sample. The "Other" category, which included agriculture, wholesale trade, communications, government, services (other than health care, financial, and hospitality), and manufacturing industries (other than automotive, IT, and aerospace), had a large share, almost a third, of the sponsors.

There were some regional differences in types of industries reported by sponsors.[4] In the Northeast, Southwest, and West, the construction industry dominated, with 60 percent, 41 percent, and 48 percent of sponsors, respectively. (See Table A.1 in Appendix A.) Registered apprenticeship sponsors in the energy industry had a presence in all regions. The Mid-Atlantic and Midwestern states had a greater spread across industries with a concentration of sponsors in the retail trade in the Mid-Atlantic region (30 percent) and in the automotive manufacturing industry in the Midwestern states (10 percent). All regions had a fairly high percentage of sponsors in the "Other" industry category, ranging from 20 percent in the Northeast to 44 percent in the Southeast.

[4] The six DOL regions were used for the regional analysis. In general, Region I represents the Northeastern states; Region II, the Mid-Atlantic states; Region III, the Southeastern states; Region IV, the Southwestern states; Region V, the Midwestern states; and Region VI, the Western states. For the states that comprise these regions, please see the ETA webpage of the Regional Offices at http://www.doleta.gov/regions/regoffices/.

4.2 Number of Employers and Type of Program

Sponsors can serve either one or multiple employers, and may have organized labor involved in their program. Most (60 percent) of the sponsors surveyed had registered apprenticeship programs that served only one employer though programs in IT and construction more often had multiple employers.

Overall, about 26 percent of the sponsors indicated their programs were jointly administered by employers and organized labor. Among programs with multiple employers, 38 percent had union involvement. For programs with only a single employer, the comparable figure for union involvement was 18 percent.

Regional analysis showed that, except in the West, the vast majority of sponsors were not in joint programs. Most programs in the Northeast, Mid-Atlantic, and Midwest served only one employer while most Southeastern programs served multiple employers. The Southwest and West had a more even split between serving one or multiple employers.

4.3 Longevity of Programs

Traditionally, registered apprenticeship programs are rooted in the construction and manufacturing industries and have been operating for many decades. As shown in Table 4.1, the oldest programs are in the automotive, construction, energy, transportation, and the combined and "other" industry categories. Aerospace, health care, hospitality, IT, and retail had the youngest programs at one to five years in existence. Overall, almost half the sponsors (48 percent) had programs that were over 10 years old and 17 percent had programs six to ten years old. Thirty-one percent had programs that had been in existence for one to five years and about three percent had the newest programs (less than one year old). These findings held across the regions except that no new programs were found in the Southeast, Southwest, and West.

Table 4.1: Apprenticeship Sponsors by Industry, Duration, and Size of Programs

Industry	Percent of the Sample	Most Common Age of Programs (in Years)	Most Commonly Cited Number of Apprentices Currently in Program
Aerospace	.53	1-5	10-19
Automotive Repair	1.15	More than 10	1-4
Automotive Manufacturing	3.80	More than 10	1-4
Construction	35.50	More than 10	1-4
Energy (Gas, Electric, & Water)	10.56	More than 10	1-4
Health Services	1.44	1-5	1-4
Hospitality (Hotel, Restaurants, & Lodging)	1.35	1-5	1-4
Information Technology – Manufacturing	.65	6-10	1-4
Information Technology – Communication Services	.52	1-5	1-4
Retail Trade	10.37	1-5	1-4
Transportation	.57	More than 10	1-4
Combination of Biotechnology, Mining/Extraction, Finance, Insurance, Real Estate, & Homeland Security	1.10	More than 10	1-4
Other	32.46	More than 10	1-4

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

4.4 Number of Apprentices

Among the survey respondents, 53 percent of sponsors had 1 to 4 apprentices in their programs. Based on previous studies, this is typical of registered apprenticeship programs (Bennici et al. 2004). Table 4.2 shows that 17 percent of the sponsors surveyed had no apprentices in their program, 53 percent had 1 to 4 apprentices, and 8 percent had 5 to 9 apprentices. Nearly 22 percent of sponsors had 10 or more apprentices in their programs. Most sponsors in almost all of the industries had 1 to 4 apprentices in their program (see Table 4.1). Only the aerospace industry had a substantial number of apprentices (10 to 19) in its programs. There were a few programs with very large numbers of apprentices, which created a highly skewed distribution of apprentices by the number of programs. This was borne out by

descriptive statistics: there was a mode of one apprentice, a median of two apprentices, and a mean of 37.

Table 4.2: Percentage of Sponsors by the Range of Apprentices in the Program

Number of Apprentices	Percentage of Sponsors
No apprentices	17
1-4 apprentices	53
5-9 apprentices	8
More than 10 apprentices	22

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

V. WHAT SPONSORS VALUE ABOUT APPRENTICESHIP

5.1 Background

Building worker skills requires an investment of resources today that yields a flow of returns in the form of enhanced productivity in the future. The enhanced skills may be *specific* in that they raise a worker's productivity only within one firm, *general* in that the worker's added capabilities can increase productivity to a range of firms, or some of both (for example, learning one firm's computer system can be of help in another firm). Until recently, economic theory predicted that employers would be unlikely to finance general training because the workers capture all or nearly all of the associated gains in productivity. With added general skills, workers become more attractive to all firms and can thus command a higher wage. The fear that other employers will "poach" or hire away workers after training is thought to deter employers from providing the type of general training embodied in apprenticeship. Instead, employers theoretically have an incentive to invest only in *firm-specific* training.

In a challenge to this view, Acemoglu and Pischke (1999) showed that employers often have an incentive to finance general training because transaction costs in the labor market make it difficult for workers to quit and costly for employers to replace them. Also, firms providing the training know more than other firms about the content and value of the training and the skills acquired by individual workers. Many companies now realize that specific and general skills are often complementary—the ability to achieve high productivity gains from specific training increases the productivity of the worker's general skills. Still, another issue is that the distinction between general and specific skills downplays the critical role of occupational skills that are general in the sense of having value to more than one firm but also are specific to a set of firms. Also, task-specific skills in one occupation are often transferable to tasks in other occupations using similar skills. Finally, some theorists argue that effective workers in any organization must obtain skills in the context of their work environment (Nelson 1997; Stasz 2001).

The survey of apprenticeship sponsors offers a practical window into what some employers say about the delivery of occupational and firm-specific training through apprenticeship. The survey instrument included a question about potential benefits of

apprenticeship and which benefits sponsors considered "very important," "somewhat important," or "not important." The list of potential benefits included items that touched on recruitment and retention, skills attainment, productivity, employee morale, and safety, and help in meeting licensing or other requirements. Also, an overall indication of sponsors' support for and satisfaction was captured by a question as to whether the sponsor would recommend registered apprenticeship to others to train their workers in skilled occupations.

5.2 Overall Patterns in the Survey

Sponsors in the survey appeared to be very supportive of registered apprenticeship. When asked whether they would recommend it to others, 97 percent said they would (including 86 percent who would "strongly" recommend registered apprenticeship and 11 percent who said they would recommend it with reservations). Sponsors of older programs tended to be more likely to recommend registered apprenticeship than sponsors of newer programs; 90 percent of sponsors in programs in operation less than a year recommended registered apprenticeship, compared to 99 percent of sponsors or programs operating for 10 years or more. Only about 3 percent of all sponsors answered that they would not positively recommend apprenticeship.

Sponsors' ratings of the benefits of registered apprenticeship are noted in Table 5.1. Nearly all said that their apprenticeship program helps them meet their need for skilled workers, with 83 percent of sponsors rating it as a "very important benefit and 14 percent saying this was "somewhat important." Apprenticeship's role in reliably documenting which workers have the appropriate skills, raising productivity and worker morale, and reducing safety problems were all identified by 70 percent of all sponsors as "very important," while around 25 percent indicated these benefits were at least "somewhat important."

A lower percentage of sponsors (around 55 percent) noted apprenticeship was "very important" in helping them meet licensing requirements with 26 percent saying this benefit was "somewhat important."

One interesting finding is that 56 percent of sponsors said that apprenticeship was "very important" in employee recruitment and retention—a proportion lower than for some other benefits. Thirty-four percent said this was somewhat important.

Table 5.1: Sponsor Views of Potential Benefits of Registered Apprenticeship

	Percent of Sponsors in Each Category		
Benefit of Apprenticeship	**Very Important**	**Somewhat Important**	**Not Important**
Helps meet our demand for skilled workers	83	14	3
Helps with employee recruitment and retention	56	34	10
Reliably shows which workers have the skills to do the job	72	23	5
Adds to productivity or high quality of services	70	25	5
Saves money on workers' pay	32	34	33
Good for worker morale or pride	69	25	6
Leads to fewer safety problems	68	24	8
Helps us meet government requirements	54	26	20
Helps us meet licensing requirements	56	21	23

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors.

Another interesting finding was that one-third of respondents said that saving money on pay was *not* an important benefit to them, one third said it was only "somewhat important," and another third said such savings were "very important." Among sponsors of joint programs, 72 percent said pay savings was either "very" or "somewhat important," as compared to 62 percent of sponsors in employer-only programs (see Table 5.2). These results may also reflect that pay savings are greater in companies where there are labor-management agreements.

Table 5.2: Percentage of Sponsors of Joint and Non-Joint Program by View of Apprenticeship: Saves Money on Workers' Pay

	Saves Money on Workers' Pay		
Sponsor Characteristic	**Very Important**	**Somewhat Important**	**Not Important**
Sponsor of a Joint Program	36	36	26
Sponsor of an Employer-Only Program	30	32	35

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors, Westat Inc.

Although not asked to provide comments, nine sponsors volunteered their thoughts on the benefits of registered apprenticeship beyond the itemized categories. While these responses are not of quantitative importance, they do provide a more personal view of what apprenticeship means to at least these sponsors. One sponsor noted that apprenticeship contributed to a positive

labor-management atmosphere while another noted that it allowed "greater participation from the minority community." Two respondents were former apprentices and one said that "I owe my future to the program and wish to pass it along." Finally, one sponsor summed up the benefits for the apprentice rather than for the employer, by stating that the apprenticeship program "provides a living wage for a human being and an opportunity to pursue dreams."

Overall, employer sponsors identified nearly all the listed benefits as "very important" or "somewhat important." This finding is significant in itself, since it demonstrates that employers and other sponsors believe they are reaping a wide array of benefits from apprenticeship programs.

5.3 Variations in Sponsors' Views of the Benefits of Apprenticeship

While responses about the value and benefits of apprenticeship were broadly positive, analysis was undertaken to determine if there were any significant differences among sponsors with different program characteristics (using willingness to strongly recommend as a proxy for satisfaction with registered apprenticeship). Factors considered were industry, program size, involvement of organized labor, age of the program, institution conducting related instruction, satisfaction with related instruction, sponsor role in financing related instruction, compensation of workers' time in related instruction, and apprentice completion rates. (Results from the multivariate regression using these factors as independent variables are presented in Table A.2 and Table A.3 in Appendix A.)

There were several factors that had statistically significant effects on the likelihood of a strong recommendation, with the apprentice completion rate being the most notable. Sponsors with completion rates of 90 percent or greater were more likely to strongly recommend registered apprenticeship than the average. Sponsors of very small programs with 5 to 9 participants and those with 10 to 39 apprentices were slightly more likely to strongly recommend registered apprenticeship, as were sponsors who gave higher ratings of their state agency's performance. Also, sponsors using proprietary trade schools for related instruction appeared *less* inclined to offer a strong recommendation.

Overall, however, the differences between those most supportive and least supportive were small and most were not statistically significant. Sponsoring a joint program did not

significantly raise or lower the strength of the apprenticeship recommendation, nor did the age of the apprenticeship program or the venues for providing related instruction (except proprietary schools).

However, there were some more striking effects regarding sponsor willingness to strongly recommend apprenticeship when views on different types of benefits are considered for joint and employer-only sponsors (see Table A.4 in Appendix A). For example, joint program sponsors' willingness to provide a strong recommendation was increased seven points among those who also saw apprenticeship as a way to save on worker pay but there was no statistically significant difference for sponsors of employer-only programs. This may be because apprenticeship offers a way for employers participating in collective bargaining agreements to gain some wage flexibility, which may not be a consideration for sponsors of unilateral programs. Similarly, joint sponsors who cited the benefits of apprenticeship for worker morale or pride were also more likely to strongly recommend it.

For sponsors of employer-only programs, willingness to recommend apprenticeship was higher (and statistically significant) among those who place greater value on benefits associated with recruitment and retention, documenting worker skills, and improving safety.

VI. DRAWBACKS SPONSORS SEE IN REGISTERED APPRENTICESHIP

As in other decisions regarding issues involving training and recruitment, sponsors are likely to weigh the benefits against the costs of registered apprenticeship. Since the survey covered only sponsors who participate in registered apprenticeship, most presumably view the benefits as being greater than the relevant costs. Still, it is crucial to know the costs or drawbacks sponsors viewed as the most troublesome to determine what administrative action or policy might be needed.

Respondents to the survey were given a fixed list of costs and drawbacks and asked to indicate if each item was a problem, and if so, whether it was a minor or a significant problem. The responses are reported in Table 6.1. Overall, only two categories — on dropouts and poaching by competitors — were considered a problem by a majority of sponsors. Most sponsors said that they did not have a problem with the remaining costs and drawbacks that they were asked about — related instruction, experienced workers' time, length of training, program management, and amount of paperwork — but around 40 percent saw these as at least a minor problem.

Table 6.1: Sponsor Views of Potential Costs or Drawbacks of Registered Apprenticeship

	Percent of Sponsors in Each Category		
Cost/Drawback of Apprenticeship	**Significant Problem**	**Minor Problem**	**Not a Problem**
Related Instruction	6	31	63
Experienced Workers' Time	8	35	58
Too Much Time Required for Training	11	32	57
Managing the Program	6	27	67
Too Many Apprentices Drop Out	24	31	45
Competitors Poach Workers After They Become Fully Skilled	25	29	46
Too Much Paperwork	9	30	61

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Of particular interest is the sponsors' concern that they will lose the workers they train to other employers. Employers' fear that they will not recoup training costs because of "poaching" has been advanced in human capital theory as the central explanation for lack of employer support for general training. Fear of poaching was not as great a determinant of employer attitudes among sponsors as theory would suggest. Only about 25 percent of sponsors regarded poaching as a significant problem while another 29 percent saw it as a minor problem. The concern about poaching appeared to be greater for sponsors of employer-only program, 27 percent of whom said it was a significant problem, compared to 18 percent of sponsors of joint programs, However, the impact of possible poaching should not be dismissed, as it may deter potential sponsors from starting new apprenticeship programs.

Concern about dropouts was about as significant as that for poaching, with 25 percent of sponsors identifying it as a significant problem. This concern was more likely viewed as significant in employer-only programs (26 percent) than in joint programs (18 percent).

Nearly 20 sponsors in the survey volunteered comments on other drawbacks and problems. A few focused on the lack of experienced workers to train apprentices and difficulties in finding qualified instructors. Other problems mentioned included: different fee structures across counties, lack of available educational sources in rural areas, lack of effective oversight by the program administrator, long and complicated application processes, and cost of related instruction.

While some sponsors reported a few select costs and drawbacks as significant problems, it is unclear whether these problems affected sponsors' assessment of apprenticeship. Examining the relationship between costs or drawbacks and the willingness of the sponsor to provide a strong recommendation of registered apprenticeship (see Table A.5 in Appendix A) shows that sponsors who identified poaching and high dropout rates were not less likely to recommend apprenticeship. The drawbacks which were correlated with less enthusiastic sponsor attitudes related to concerns with managing the program, the time required for training, and the time expended by experienced workers.

VII. PROGRAM COMPLETION

As in other workforce investment programs, completion rates for apprenticeship provide indicators of success both nationally and for individual programs. While there are few research projects on apprenticeship completion, a 2003 study of attrition and retention in construction industry apprenticeship programs offered some suggestive findings. Bilginsoy (2003) showed that completion was more likely for apprentices in joint programs than for unilateral employer-only programs. In addition, men were more likely to complete programs than women were, and minorities were less likely to complete than whites. Another study suggested that completion rates varied by program type within an industry and occupation and that numerous factors can affect completion (Bennici et al. 2004). Attrition depended on the long-term commitment necessary by apprentices, the recruitment and selection of apprentices, and the ability of sponsors to provide continuous employment to apprentices. Overall, the study found that after six years in a registered apprenticeship program, over 40 percent of apprentices completed their program.

The sponsor survey provides insights about completion rates overall and among sponsors with different characteristics. As can be seen in Table 7.1, nearly 44 percent of sponsors estimated that completion rates for their programs were between 90 to 100 percent, and a majority of sponsors (54 percent) reported a rate of completion at or above 80 percent. However, about 35 percent reported completion rates below 70 percent and 18 percent said their completion rate was below 50 percent. High completion rates of 90 to 100 percent were especially common in the aerospace, automotive manufacturing, energy, health services, retail, and transportation industries. (See Table A.6 in Appendix A for more details.)

The completion rates overall appear to compare quite favorably to the national 21.5 percent graduation rate in 2005 for first-time, full-time students at community colleges (U.S. Department of Education 2007). In addition, apprenticeship completion rates seem to be slightly higher than, or at least on par with, credential rates from WIA adult and dislocated worker programs, at 66 and 71 percent respectively (DOL 2007b).

Why apprentices fail to complete registered apprenticeship programs is a key concern for employers and program administrators. The survey asked sponsors about the main reasons for

early departure and offered fixed responses in four categories: transfer to another apprenticeship program, gaining a craft license/taking another job before completion, problems with performance, and personal issues. Almost 70 percent of sponsors identified at least one of these reasons for non-completion.

Table 7.1: Sponsor's Estimate of the Completion Rate for Apprentices in Their Program

Sponsor-reported Completion Rates	Percentage of Sponsors	Cumulative Percentage of Sponsors
0 %	1.8	1.8
1 – 9%	5.3	7.1
10 – 19%	2.9	10.0
20 – 29%	3.4	13.5
30 – 39%	2.7	16.4
40 – 49%	1.5	17.7
50 – 59%	11.5	29.2
60 – 69%	5.5	34.7
70 – 79%	11.5	46.2
80 – 89%	9.9	56.1
90 – 100%	43.9	100.0
Total	**100**	**100**

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

The most commonly cited reason for non-completion, identified by 36 percent of sponsors, were personal issues (such as family needs, mental health or substance abuse problems, physical illnesses, and legal issues). The next most commonly cited reason, performance problems on the job or in the classroom, was identified by 32 percent of sponsors. (See Table 7.2.)

Almost 30 percent of the sponsors said non-completion was due to apprentices earning a license in a licensed occupation and then taking another job before completing the program. Nearly 11 percent of sponsors said that transferring to another apprenticeship program was a main reason for non-completion of their program. Fifty-five percent of those who said this was a major reason for non-completion were in the construction industry (which made up only 36 percent of the respondents overall). Transferring among construction programs may be more

likely if only because the plethora of programs available affords apprentices more opportunities for change.

Table 7.2: Sponsors' Views of Main Reasons for Non-Completion of Apprenticeship Program

Reason for Non-Completion	Percentage of Sponsors	Percentage of Sponsors in the Construction Industry
Transferred to Another Apprenticeship Program	11	55
Gained Craft License/Took Another Job Before Completion	30	44
Problems with Performance	33	42
Personal Issues	36	38
Other	29	30

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Almost 30 percent of the respondents (275 sponsors) offered open-ended comments on the reasons for non-completion. Several suggested that apprentices did not complete their program because they changed jobs or were promoted. A few others suggested that there was a lack of interest or maturity on the part of the apprentice. Others cited problems with the length of the program, a lack of work in the industry, or apprentices' difficulties with the physical demands of the work.

VIII. SOURCES FOR RECRUITING APPRENTICES

The survey data provide new insights into the views of sponsors regarding effective sources and practices. Sponsors were asked to identify sources that they found effective for recruiting new apprentices. Most respondents identified multiple methods (see Table 8.1). The source cited by the largest percentage of sponsors (66 percent) was current employees, while the second most frequently cited source (identified by over 40 percent of sponsors) was community colleges and public technical schools. A little over a third of sponsors also thought that newspapers and high schools were effective to use in recruiting new apprentices.

None of the other recruitment methods, including Internet, One-Stop Career Centers, community-based organizations, pre-apprenticeship programs, and unions were cited by more than 20 percent of sponsors except for private vocational schools (22 percent). The One-Stop Career Center system and unions were the least frequently cited source for recruitment, each identified by only 14 percent of all sponsors.

Over 110 sponsors, more than 10 percent of the sponsors, provided additional responses to the questions on effective sources of new apprentices. Nearly a third of these respondents named "word of mouth" through family and friends as an effective recruitment source. Other sources cited included walk-ins, cold calls, website, career fairs, other employers in the same industry, the military, juvenile probation, magazine ads, and temporary employees.

Responses regarding recruitment sources varied by sponsor program characteristics. (See Table 8.1.) Sponsors of joint programs were more likely than employer-only sponsors to report that unions, newspapers, the Internet, and One-Stop Career Centers were effective in recruitment efforts. Sponsors operating programs for over 10 years reported a larger number of effective recruitment sources than did newer programs. Sponsors in the construction industry used many recruitment sources, but surprisingly unions were identified as effective recruiters for only 20 percent of construction sponsors. One of the clearest patterns is that large sponsors, those with 10 or more apprentices, cited many more recruitment methods than did smaller programs. For example, 76 percent of sponsors of large programs used current employees to recruit, a figure over 10 percentage points higher than all sponsors combined. In addition, large sponsors were

more likely than others to believe in the effectiveness of high schools, community colleges and technical schools, One-Stop Career Centers, and pre-apprenticeship programs. While it is not surprising that large programs make use of many recruitment sources, it is not self-evident either. In principle, large programs could concentrate on a few proven suppliers of applicants.

Table 8.1: Recruitment Methods Identified as Effective by Sponsors, by Sponsor Characteristics

Recruitment Method	All Sponsors	Joint Program Sponsors	Sponsors with Over 10 Years in Operation	Sponsors with 10 or More Apprentices	Sponsors in the Construction Industry	Sponsors with Completion Rates of 90-100 Percent
Newspapers	35	47	42	48	45	35
Internet	18	29	21	27	19	17
One-Stop Career Centers	14	27	19	30	20	11
CBOs	20	31	22	34	21	17
High Schools	34	39	40	52	38	31
Community College or Technical School	41	48	48	54	42	43
Private Vocational School	22	28	26	29	26	23
Pre-Apprenticeship	18	29	22	32	21	16
Current Employees	66	72	72	76	71	64
Union	14	48	21	41	20	16
Other	12	8	10	12	12	10

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

The lack of variation among different subsets of sponsors is also of interest. For example, sponsors who achieve high completion rates might be expected to have distinctive recruitment patterns. In fact, however, the mix of recruitment sources for these sponsors is quite similar to the mix employed by sponsors as a whole.

IX. INTEGRATION OF APPRENTICESHIP WITH THE WORKFORCE INVESTMENT SYSTEM

The Federally-funded workforce investment system, run by the states and localities, is the main provider of public employment and training services in the United States and a significant resource for jobseekers and employers. Under the Workforce Investment Act of 1998 (WIA), employers are not only customers but also partners in creating a demand-driven system to provide workforce services. Employers comprise the majority of state and local Workforce Investment Boards (WIBs), which develop policy for implementing WIA programs. Local One-Stop Career Centers, operated under the policies developed by WIBs, serve as the hub for employment and training services under WIA as well as providing access to many other services for both jobseekers and employers.

Registered apprenticeship has historically operated separately from the other parts of the workforce investment system and currently does not have a strong presence in most local One-Stop Career Centers. In order to build connections between the two systems, ETA issued policy guidance (U.S. Department of Labor 2007a) that suggested ways to integrate registered apprenticeship into the workforce system's strategic planning processes and in such One-Stop Career Center operations as screening of applicants, referrals to apprenticeship programs, job fairs, and using ITAs to support related instruction.

Greater integration, through these methods and others, requires careful and strategic planning as traditional differences in funding streams, reporting requirements, and overlapping purposes must be overcome. Currently, some level of integration between the workforce investment system and the registered apprenticeship program is occurring in various states and local areas. For example, the States of Washington and Kansas have taken steps towards integration by incorporating language into the state WIA plan, using WIA reserve funds for apprenticeship staff, and developing career guidance for secondary education institutions.

Data from the survey of apprenticeship sponsors provides some insight into the current level of integration of registered apprenticeship and the workforce system, particularly on four key dimensions:

- Sponsor use of a One-Stop Career Center to post apprenticeship openings;
- Workforce investment system referral of job applicants to sponsors;
- Contact by the One-Stop Career Center or Job Service; and
- Sponsor organization membership on WIBs.

Survey findings showed that nearly 30 percent of sponsors had at least one interaction with the workforce system and 17 percent reported more than one type of interaction. As shown in Table 9.1, 17 percent of sponsors reported that they used a One-Stop or Job Service to post apprenticeship openings and 16 percent said the One-Stop or Job Service had referred applicants to them. Fewer sponsors (14 percent) said that they had been contacted by the One-Stop or Job Service to post openings and only eight percent of sponsors reported that their organization or company had a representative on the WIB.

Sponsors with larger and longer-term programs as well as those that had organized labor involvement—particularly in the construction industry—appeared to have more interactions with the workforce investment system. However, those sponsors who reported completion rates of 90 to 100 percent seemed to have less interaction than other subgroups of sponsors.

Multivariate analysis of factors that may influence sponsors' interaction with the workforce investment system yielded some statistically significant results. (See Table A.7 in Appendix A for full multivariate results.) Being a sponsor of a joint program and of a larger apprenticeship program increased the likelihood of some interaction with the workforce investment system by 13 percent and 20 percent, respectively. Plans to expand apprenticeship programs also increased the likelihood of interacting with the system.

Two factors decreased the likelihood of interacting with the workforce investment system – high completion rates and being in a non-construction high-growth industry, but these factors only had a small marginal effect. Some factors appeared to have no effect on interaction with the workforce investment system – namely being a single-employer sponsor, having an older program, strongly recommending registered apprenticeship, and being in a WIRED region.

Table 9.1. Interaction with Broader Workforce System, by Characteristics of Sponsors

Sponsor Characteristics	Ever Used a One-Stop to Post Apprenticeship Openings	One-Stop or Job Service Sent Applicants to Sponsor	One-Stop or Job Service Contacted Sponsor about Posting Openings	Sponsor Organization Representative Is a WIB Member
All Sponsors	17	16	14	8
Sponsors in WIRED Regions	23	25	20	9
Sponsors Who Serve Multiple Employers	25	25	21	14
Joint-Program Sponsors	33	32	26	17
Sponsors with Over 10 Years in Operation	21	22	20	12
Sponsors with 10 or More Apprentices	40	37	32	19
Sponsors in the Construction Industry	28	24	20	9
Sponsors with Completion Rates of 90 to 100 Percent	14	12	8	7

Source: Weighted Tabulations from the 2007 Survey of Sponsors of Registered Apprenticeship

X. THE ROLE OF RELATED INSTRUCTION

Instruction related to an apprenticeship program is critical to helping the apprentice learn the theoretical knowledge required in the occupation. Although apprenticeship is distinctive for its primary emphasis on experiential learning at the workplace, related instruction of a minimum of 144 hours is required for a registered program. The following section focuses on findings from the survey about related instruction, such as sponsors' choice of institution to provide the instruction, who pays for it, and sponsors' view of its quality.

10.1 Sources of Instruction

Community college and public technical colleges together were identified by 58 percent of all sponsors as sources of related instruction, as can be seen in Table 10.1, making these public institutions the most commonly cited. Approximately one in four (24 percent) sponsors said related instruction was supplied through the sponsors' own facilities, while 17 percent said they turned to proprietary trade schools. Among sponsors who identified "other" sources, eight individuals specified that employer or industry associations were instructional providers.

Table 10.1: Sources of Related Instruction (more than one response permitted for each sponsor)

Source of Related Instruction As Reported by Sponsors	All Sponsors
Community College	31
Distance Learning	6
Public Technical College	27
High School	11
Proprietary Trade School	17
Sponsor's Own Facilities	24
Other	14

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

There were some notable differences between sponsors of single employer, joint, larger, and older programs and their counterparts. (See Table A.8 in Appendix A.) For sponsors that serve only one employer, 35 percent said they used community colleges as sources for related instruction compared to 25 percent of multi-employer sponsors. Sponsors of larger programs (17

percent) were less likely to use public technical colleges than smaller programs (29 percent) for related instruction.

Among single-employer sponsors 16 percent said they use sponsor-owned or operated training facilities for related training as compared to 35 percent of multi-employer sponsors. Sponsors of joint programs (36 percent), programs with 10 or more apprentices (47 percent), and programs more than 10 years old (28 percent) were more likely than their non-joint (19 percent), smaller (17 percent), and younger (19 percent) counterparts to use sponsor-owned or operated facilities. Use of high schools and propriety trade schools as sources of related instruction showed few major differences in these groups of sponsors.

10.2 Quality of Instruction

Sponsors generally gave high marks to the quality of related instruction, as shown in Table 10.2. Eighty percent ranked the instruction as excellent or near excellent (4 or 5 on a five point scale). Only 5 percent indicated that the instruction quality was poor or near poor (1 or 2) and about 13 percent viewed instruction as average (3).

Table 10.2: Sponsors' Ratings of Quality of Related Instruction Received by Apprentices
(1 = poor, 5 = excellent)

Quality Ratings	All Sponsors
1	2
2	3
3	13
4	41
5	39

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

About 15 percent of the respondents (141 sponsors) offered comments regarding the reasons for poor quality of related instruction. Of these comments, about 67 percent, or two-thirds, focused on specific problems with instructors, curriculum, or method of teaching, while about one-third focused on students' difficulties.

10.3 Who Pays for Related Classroom Instruction

The survey included a question regarding who was responsible for paying the costs of related instruction, and permitted sponsors to identify multiple sources. Seventy-two percent of the sponsors said the employer covered the direct costs of related instruction and 23 percent noted that apprentices paid some or all of the costs. Eleven percent of sponsors noted that the costs of related instruction were funded from a joint labor-management fund, and 9 percent said that it was paid with public funding from such sources as WIA, Pell grants, or state educational aid. Only a small percentage (5) of the respondents identified "other" sources of funding, with a handful indicating in comments that employers' associations paid for related instruction.

There were differences between single-employer and multi-employer sponsors. (See Table A.9 in the Appendix.) Among single-employer sponsors, 77 percent identified employers as the source of funds for related instruction, as compared to 66 percent of multi-employer sponsors. Single-employer sponsors were also less likely to use joint labor-management training funds (4 percent compared to 21 percent) and public funding (6 percent compared to 14 percent) than multi-employer sponsors.

Among sponsors of joint apprenticeship programs, 31 percent said labor-management training funds were a source for related instruction, while only 3 percent for sponsors of employer-only programs identified this source. Nonetheless, 60 percent of sponsors of joint programs said employers contributed to paying for related instruction as compared to 77 percent of sponsors of employer-only programs. Sixteen percent of sponsors of joint programs said that apprentices paid for related instruction, as compared to 25 percent of employer-only programs.

10.4 When Related Instruction Is Provided and Payment of Apprentices

Well over half (58 percent) of sponsors said related instruction was provided in the evening while 25 percent said it was provided during normal working hours and 26 percent said the times varied. Just under 9 percent of sponsors noted that related instruction was provided on weekends. About 31 percent of sponsors said that apprentices were paid for their time in related instruction, while 68 percent said that apprentices did not receive such pay.

10.5 Variations in Perceptions of Quality and Non-Completion of Programs

As discussed in Section V, the sponsors' assessment of the quality of related instruction exerted no significant effect on whether sponsors would "strongly recommend" apprenticeship to others, but sponsors who used proprietary schools did appear to be slightly less likely to make a strong recommendation. This section examines the effect of various sources of instruction on the quality of instruction, as viewed by sponsors. Using a multivariate analysis of the determinants of quality as a function of the source of related instruction, we find a small, statistically significant negative effect of proprietary schools and a small, statistically significant positive effect of using the sponsor's own facility (see Table A.10 in Appendix A). These effects remained statistically significant when joint-program and industry variables are included. Sponsors of joint programs also reported slightly higher than average quality of related instruction. Although some effects were statistically significant, they were small in magnitude, highlighting the fact that nearly all sponsors reported excellent or near excellent quality.

An important question about related instruction is whether its source and quality have an effect on the rates at which apprentices complete programs. To examine the relationship among these factors, a model of the reported share of apprentices who complete the program as a function of the source of related instruction, who pays for related instruction, joint or non-joint program, industry, timing of related instruction, and sponsors' assessment of the quality of related instruction was analyzed (see Table A.11 in Appendix A). The results indicated that the quality of related instruction raised the reported completion rates. Use of public technical schools was associated with statistically significant and higher completion rates, but there were no other significant effects on completion rates for other sources of instruction. Sponsors of joint programs in the automotive industry achieved higher than average completion rates while completion rates were lower in construction and retail industry programs. Another interesting finding was that having apprentices pay for the related instruction was associated with lower completion rates. However, paying apprentices for the time in related instruction was not associated with higher completion rates.

An alternative way of estimating effects on completion rates is to use the natural log of completion rates as the dependent variable. This approach highlights percentage changes; a rise in the completion rate from 20 to 30 represented a 40.5-percent increase, while a rise from 50 to

60 implied an 18-percent increase. Completion rates using this statistical method generally were higher if related instruction was provided in community colleges and in proprietary trade schools.

XI. RECORDS KEPT BY SPONSORS

The majority of sponsors kept records on a range of program information and performance-related statistics. Table 11.1 shows that almost 96 percent of sponsors kept records on the number of apprentices within their program and 88 percent tracked how many completed the program. Seventy percent of sponsors recorded the number of apprentices who stayed with the organization after completing their apprenticeship, while the number of sponsors who kept data on costs of instruction and benefits of apprenticeship was considerably lower (58 and 47 percent, respectively).

Table 11.1: Percent of Sponsors who Maintain Records, by Type of Information

Type of Record	Percent of Sponsors
The number of apprentices	96
How many complete the program	88
Reasons for non completion	68
How many pass state licensing/certification examination	63
How many stay with the organization after they complete their apprenticeship	70
Costs of related instruction	58
Benefits of apprenticeship	47

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Although almost all sponsors tracked the number of apprentices participating in their program, there was variation among sponsors on the type of information collected. Generally, sponsors with larger programs (based on number of apprentices) and older programs (as seen in Table 11.3) were more likely to have collected additional data. This occurred for several reasons. More established programs likely have had more time to implement mechanisms for collecting and storing data and to become more systematic in their data collection, since they have had to track multiple apprentices over time.

Tables 11.2 and 11.3 show the relationship between program characteristics and keeping data on program completion. Programs that had been in operation less than one year had the lowest percentage of sponsors (91 percent) who keep records on completion, followed by programs operating 1 to 5 years (at 94 percent), 6 to 10 years, and finally, with those programs operating the longest (more than 10 years).

Table 11.2: Percent of Sponsors With Records on Apprentice Completion by Longevity of Program

Number of Years Program Sponsored	Percent of Sponsors
Less than 1 year	91
1 to 5 years	94
6 to 10 years	97
More than 10 years	98

Source: Weighted Tabulations from 2007 Survey of Apprenticeship Sponsors

Similar to the positive relationship between program size and the proportion of sponsors who keep records on completion Table 11.3 shows a positive relationship between the number of apprentices participating in a program and keeping records on non-completion.

Table 11.3: Percent of Sponsors with Record of Reasons for Non-completion of Program, by Size of Program

Number of Apprentices in Program	Percent of Sponsors
1 to 4 apprentices	61
5 to 9 apprentices	68
10 to 39 apprentices	80
40 to 99 apprentices	89
100 or more apprentices	90

Source: Weighted Tabulations from 2007 Survey of Apprenticeship Sponsors

XII. SPONSORS' VIEWS OF THE REGISTERED APPRENTICESHIP SYSTEM

Even though a high percentage of sponsors would "strongly recommend" registered apprenticeship to others, sponsors also identified a number of areas they would support changing. This section explores sponsors' views on these potential changes, their interest in use of competency-based methods, and their satisfaction with the apprenticeship agency in their state.

12.1 Types of Changes Sponsors Favor

In the survey, sponsors were asked which specific potential changes were important to them. As displayed in Table 12.1, 51 percent of sponsors stated that more help in finding and screening applicants was important to them; 41 percent would like more help in finding related instruction, and 37 percent considered a simpler process for setting up a new program an important change.

Table 12.1: Potential Changes to Apprenticeship that are Important to Sponsor

Potential Changes	Percent of Sponsors
More help in finding and screening applicants	51
Faster registration of apprentices	36
Simpler process for setting up a new program	37
Better "due process" for delayed of rejected program approvals	26
Easier multi-state registration	32
More help in finding related instruction	41
More information on laws such as the Davis-Bacon Act	18

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

There was little variation in these rates between sponsors with programs over 10 years' old and those under 10 years' old. (See Table A.12 in Appendix A.) However, differences in the numbers of employers served, labor involvement, and number of apprentices in the program highlighted differences in the importance of help in finding related instruction. Sponsors that served only one employer (45 percent), non-joint program sponsors (44 percent), and sponsors with fewer than 10 apprentices (43 percent) all found help in finding related instruction of

greater importance than their counterparts. Sponsors in employer-only programs, as compared to those in joint programs, had higher levels of interest in changes such as faster registration (39 percent compared to 28 percent) and a simpler set-up process for new programs (40 percent compared to 29 percent).

Table 12.2 displays the potential changes to registered apprenticeship that are important to the sponsors by industry. There was very little disparity among the industries; however, the energy and automotive sectors almost always represented the lower bounds on each item and the retail trade sector represented the higher bounds of whether a potential change was identified as important.[5]

Table 12.2: Potential Changes to Apprenticeship that are Important to Sponsor, by Industry

	Percent of Sponsors				
Potential Change	**Construction**	**Automotive**	**Energy**	**Retail**	**Other**
More help in finding and screening applicants	57	54	44	68	53
Faster registration of apprentices	39	33	31	52	39
Simpler process for setting up a new program	38	50	41	45	41
Better "due process" for delayed of rejected program approvals	28	23	30	31	28
Easier multi-state registration	39	21	30	40	32
More help in finding related instruction	40	44	38	48	49
More information on laws such as the Davis-Bacon Act	41	4	14	2	7

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

In addition to answering the survey questions, 11 percent (or 110 sponsors) provided suggestions for other changes they think are needed in registered apprenticeship. Suggestions included: increasing the number of qualified instructors, better quality instruction, reduced

[5] "More information on laws such as the Davis-Bacon Act" is substantially more likely to be a change important to the construction industry because the Davis-Bacon Act requires all Federal government construction contracts over $2,000 to pay workers no less than the locally prevailing wages and benefits paid on similar projects. Therefore, this factor primarily affects the construction industry. This difference was also seen when the strata were analyzed.

paperwork requirements, more information on laws such as the Davis-Bacon Act, multi-state registration, changing the registration process, reduced time for program completion, and changing the ratio of skilled workers to apprentices.

12.2 Interest in Competency-Based Training

The survey also offered some insights on sponsors' interest in competency-based training. Over 55 percent of sponsors indicated they were interested in learning about or how to use competency-based apprenticeship training.

There was very little variation in levels of interest in competency-based approaches among industries. (See Table A.13 in Appendix A.) There was also little variation based on the duration the program had been running, whether they were part of a joint program, or whether they sponsored more than one employer. However, sponsors in the aerospace, IT (communications services), and transportation industries were more likely to be interested in learning about competency-based training, where construction and "other" industries were less likely to be interested.

The most significant factor associated with an interest in competency-based training was the size of the programs (see Table 12.3). Among sponsors with 100 or more apprentices, 57 percent expressed an interest in competency-based apprenticeship training, compared to 66 percent of sponsors with 10 to 39 apprentices in their program. Overall, the figures suggest the potential for substantially expanding the role of competency-based apprenticeship training, especially in programs of modest scale.

Table 12.3: Percent of Sponsors Interested in Learning about Competency-Based Apprenticeship, by Size of Program

Number of Apprentices in Sponsor Program	Percent of Sponsors
0	48
1 – 4	58
5 – 9	58
10 – 39	63
40 – 99	60
100 or more	57

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

12.3 Satisfaction with their State Apprenticeship Agency

In addition to asking sponsors to identify which changes were important to them and their interest in competency-based apprenticeship training, sponsors were also queried as to their views of the apprenticeship agency in their state and asked to rate their SAA on a scale ranging from "poor" to "excellent" in regard to several specific activities.[6] These activities included timeliness in processing applications and responding to inquiries, clear guidance on program registration and requirements, use of online registration, and promoting and publicizing registered apprenticeship. Generally, sponsors were quite satisfied with their apprenticeship registration agency, with a majority of sponsors rating their agency as either "good" or "excellent" on all factors.

Table 12.3 shows that there is little variation across the identified factors. However, more sponsors rated "use of online registration" and "promoting and publicizing registered apprenticeship" as being "poor" or "fair" (29 percent and 34 percent, respectively) than they did "timeliness in processing applications and responding to inquiries" and "clear guidance on program registration and requirements" (both 19 percent).

[6] As discussed in the introduction, the apprenticeship registration agency is either the state apprenticeship agency or the Federal OA representative in the state.

Table 12.3: Sponsors' Rating of the State Apprenticeship Agency

Rated Factor	Percent of Sponsors			
	Poor	Fair	Good	Excellent
Timeliness in processing applications and responding to inquiries	7	12	44	38
Clear guidance on program registration and requirements	6	13	43	37
Use of online registration (if applicable)	13	16	42	28
Promoting and publicizing registered apprenticeship	11	23	44	22

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

With one exception, there was little disparity between industries over whether they rated an aspect of their apprenticeship registration agency as either "good" or "excellent." (See Table A.14 in Appendix A.) The automotive manufacturing industry tended to have lower ratings than other industries on timeliness of and guidance from SAAs.

There was also little to no difference in ratings among sponsors in programs of different longevity but there were some differences between single-employer and multiple-employer sponsors (see Table A.15 in Appendix A.). One interesting finding is that sponsors of joint programs rated the apprenticeship registration agency "excellent" on all activities at higher percentages than non-joint programs. However, sponsors of employer-only programs were more likely than sponsors of joint programs to rate their SAA as "good" on timeliness in processing applications, clarity of guidance, and use of online registration.

However, there were some noticeable differences among sponsors of programs with different sizes (see Table A.16 in Appendix A). For example, when asked about their agency's timeliness in processing applications and responding to inquiries, 51 percent of sponsors whose programs had 100 or more apprentices rated the agency's performance as "excellent" compared to 35 percent of programs with 1 to 4 apprentices, 39 percent of programs with 5 to 9 apprentices, 45 percent of programs with 10 to 39 apprentices, and 34 percent of programs with 40 to 99 apprentices.

XIII. CONCLUSIONS: KEY FINDINGS AND IMPLICATIONS

The survey of registered apprenticeship sponsors provides, for the first time, data on a nationally representative group of registered apprenticeship sponsors concerning the operation of their programs, their views on the effectiveness of apprenticeship, and their recommendations for improving the registered apprenticeship system. Until now, policymakers and researchers had to rely on anecdotal evidence about registered apprenticeship, especially on the sponsors' characteristics and perspectives. Key findings from the survey are discussed below:

1) Strong support from current sponsors. Nearly nine of every 10 sponsors would "strongly recommend" registered apprenticeship to others. Over 80 percent of sponsors particularly valued registered apprenticeship's role in helping them meet their demand for skilled workers, while over 65 percent thought that registered apprenticeship provided important benefits in raising productivity, strengthening the morale and pride of workers, and improving worker safety. Current sponsors would likely be helpful in efforts to further market registered apprenticeship, if ETA undertakes such efforts.

2) Competitor firms' bidding away trained apprentices (commonly called "poaching") was a concern but not a deterrent to providing apprenticeship training. The disincentives to employers providing occupation-specific, apprenticeship training because competing firms will hire (or "poach") workers trained through apprenticeship did not appear to be as pervasive as economic theory has suggested. The problem was identified as significant by about one in four sponsors and was seen as a minor concern for another 29 percent. Surprisingly, it was not perceived as a problem at all for almost half of apprenticeship sponsors. Moreover, even among sponsors who perceived poaching as an important problem, about 85 percent would still strongly recommend apprenticeship to others.

3) Completion rates reported by sponsors were very high with 54 percent saying that at least 80 percent of their apprentices complete their program. However, non-completion is of concern to over half of all sponsors; 24 percent identified it as a significant problem and 31 percent indicated it was a minor problem. The most commonly cited reasons for non-completion (identified by 36 percent of sponsors) were personal issues (such as family needs, mental health

or substance abuse problems, physical illnesses, and legal issues). Performance problems on the job or in the classroom were the next most commonly cited reason (32 percent). Developing new approaches, possibly involving linkages with the workforce investment system, such as better screening or access to supportive services, might help reduce non-completion.

4) Sponsors often use current employees to recruit new apprentices but the second most frequently cited source were community colleges and public technical schools. The Internet, One-Stop Career Centers, community-based organizations, private vocational schools, and pre-apprenticeship programs were cited far less frequently. The One-Stop Career Center system and unions were the least frequently identified sources for recruitment, each cited by only about 14 percent of all sponsors.

5) Many sponsors say they want help in finding and screening applicants, as well as in finding related instruction. A large share of sponsors also identified as important several operational improvements in the registered apprenticeship system, such as faster registration of apprentices (36 percent), a simpler process for setting up a program (37 percent), more feedback on delayed or rejected approvals for programs (26 percent), and easier multi-state registration (32 percent). There might potentially be an expanded role for the workforce investment system in assisting in screening and identifying sources of related instruction.

6) Sponsors generally gave high marks to their SAAs. Eighty-two percent indicated the agencies did a "good" or "excellent" job in being timely; 80 percent gave similar ratings for clarity of guidance; 70 percent gave similar marks for use of on-line registration; and 64 said the SAAs were "good" or "excellent" in promoting and publicizing registered apprenticeship. Conversely, a substantial minority thought their SAAs were doing only a "fair" or "poor" job in promoting registered apprenticeship.

7) The majority of sponsors wanted to know more about competency-based approaches. Just over 55 percent of survey respondents said they were interested in learning about, or how to use, competency-based apprenticeship training. This finding was consistent with some sponsors indicating that programs take too long to complete. Provision of competency-based criteria in apprenticeship programs may help sponsors in exploring modifications to the way programs are designed.

8) Sponsors' interactions with the workforce investment system were generally quite limited. Although nearly 30 percent of sponsors reported having had at least one interaction with the workforce system, only 17 percent reported that they used a One-Stop Career Center to post apprenticeship openings; 16 percent had been sent applicants by the One-Stop Career Center; 14 percent had been contacted by the One-Stop Career Center to post openings; and only 8 percent reported that their organization or company had a representative sit on the WIB. Closer ties to the workforce investment system might help at least some sponsors (particularly sponsors of smaller programs) in recruiting and screening potential apprentices, and in possibly accessing services that would enable more apprentices to finish their programs.

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APPENDIX A

ADDITIONAL TABLES

Table A.1: Distribution of Sponsors by Industry in Each Region

	Regions					
Industry	**Northeast**	**Mid-Atlantic**	**Southeast**	**Southwest**	**Midwest**	**West**
Aerospace						
Automotive Repair					2.2	
Automotive Manufacturing					10.5	
Construction	59.6	25.3	33.3	40.5	23.3	47.7
Energy (Gas, Electric, & Water)	14.2	4.7	11.5	16.7	10.6	9.8
Health Services		4.0				
Hospitality (Hotel, Restaurants, & Lodging)		1.9			2.2	
Information Technology – Manufacturing						
Information Technology – Communication Services						
Retail Trade		30.5			8.0	
Transportation						
Combination of Aerospace, Automotive Repair and Manufacturing, IT, Transportation, Biotechnology, Mining/Extraction, Finance, Insurance, Real Estate, & Homeland Security						
Other	19.6	30.2	44.0	34.4	39.5	34.2

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors, Westat Inc.

Note: Cells with no entry indicated less than 0.5 percent of the sample.

Table A.2: Determinants of the Likelihood of Strongly Recommending Registered Apprenticeship to Others

Explanatory Variables	Coefficient
Joint Program	-0.004
Construction	0.024
Automotive	0.078
Energy	0.048
Retail	-0.017
Sponsored Program 1 to 5 Years	-0.055
Sponsored Program 6 to 10 Years	0.010
Sponsored Program More Than 10 Years	0.014
Number of Apprentices, 5 to 9	**0.067
Number of Apprentices, 10 to 39	**0.074
Number of Apprentices, 40 to 99	0.025
Number of Apprentices, 100 or more	0.061
Rating of the Agency	***0.042
Rating of Related Instruction	-0.001
Community College	-0.013
Distance Learning	0.007
Public Technical College	0.024
High School	-0.051
Proprietary Trade School	***-0.095
Sponsor's Facility	-0.011
40-59% Completion Rate	0.057
60-79% Completion Rate	**0.062
80-89% Completion Rate	0.059
90-100% Completion Rate	***0.086
Number of Observations	795
Pseudo R^2	0.12

Source: Probit analyses conducted by authors from Survey of Sponsors of Registered Apprenticeship

Note 1: The coefficients capture the marginal impact of a one unit increase in the independent variables on the likelihood of strongly recommending apprenticeship.

Note 2: * ** and *** represent statistical significance at the 5 and 1 percent levels.

Table A.3: Percentage of Sponsors Strongly Recommending Registered Apprenticeship, by Sponsor Characteristics

Sponsor Characteristics	Percent of Sponsors
All Sponsors	87
Sponsors That Serve One Employer	86
Sponsors That Serve Multiple Employers	88
Sponsors of Joint Programs	90
Sponsors of Non-Joint Programs	85
Sponsors of Programs with 10 Years or More in Operation	91
Sponsors of Programs in Operation Less Than 10 Years	82
Sponsors with 10 or More Apprentices	95
Sponsors with Less Than 10 Apprentices	84
Sponsors with Completion Rates of 90-10 Percent	90
Sponsors with Completion Rates of Less than 30 Percent	73

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.4: The Relationship Between Benefits of Apprenticeship and the Likelihood of Strongly Recommending Registered Apprenticeship to Others, by Joint or Non-Joint Program

	Impact of Importance of Benefit on Likelihood of a Strong Recommendation	
Benefits of Registered Apprenticeship	**Joint Program**	**Non-Joint Program**
Helps meet our demand for skilled workers	**0.074	0.033
Helps with employee recruitment and retention	0.010	***0.057
Reliably shows which workers have the skills to do the job	-0.035	***0.076
Adds to productivity or high quality of services	0.032	-0.002
Saves money on workers' pay	**0.054	-0.014
Good for worker morale or pride	**0.067	0.030
Leads to fewer safety problems	0.030	**0.044
Helps us meet government requirements	0.007	0.030
Helps us meet licensing requirements	0.010	-0.002
Number of Observations	248	578
Pseudo R^2	0.23	0.18

Source: Probit analyses conducted by authors from Survey of Sponsors of Registered Apprenticeship

Note: ** and *** represent statistical significance at the 5 and 1 percent levels.

Table A.5: How Sponsors' Perceptions of Significant Problems Affect a Sponsors' Willingness to Recommend Registered Apprenticeship Strongly to Others

Cost/Drawback of Apprenticeship	Marginal Impact of Cost on the Likelihood of Recommending Apprenticeship Strongly
Related Instruction	-0.058
Experienced Workers' Time	**-0.091
Too Much Time Required for Training	***-0.147
Managing the Program	***-0.146
Too Many Apprentices Drop Out	-0.036
Competitors Poach Workers After They Become Fully Skilled	0.033
Too Much Paper Work	-0.059

Source: Probit analyses conducted by authors from Survey of Sponsors of Registered Apprenticeship

Note: The independent variables equal 1, if the cost represents a significant problem, and zero otherwise. The symbols ** and *** represent statistical significance at the 5 and 1 percent levels.

Table A.6: Distribution of the Reported Apprenticeship Completion Rates Among Sponsors in Specific Industries

Industry	90–100 Percent	80–89 Percent	Less Than 80 Percent
Aerospace	67	0	36
Automotive Repair	40	13	47
Automotive Manufacturing	65	15	20
Construction	31	11	58
Energy (Gas, Electric, & Water)	48	11	41
Health Services	68	4	28
Hospitality (Hotel, Restaurants, & Lodging)	37	0	63
Information Technology – Manufacturing	43	0	57
Information Technology – Communication Services	16	14	70
Retail Trade	46	8	46
Transportation	46	18	36
Combination of Biotechnology, Mining/Extraction, Finance, Insurance, Real Estate, & Homeland Security	52	10	38
Other	54	6	40

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.7: Factors That Influence Interaction with the Public Workforce System

Influential Factors on Interaction with Workforce System	Impact of Factor on Likelihood of Interacting with the Workforce System
Sponsoring a Single Employer	-0.021
Sponsoring a Joint Program	***0.140
More than 10 Years in Existence	0.034
More than 10 Apprentices in Program	***0.190
Plans to Expand Program	***0.096
Strongly Recommends Registered Apprenticeship	0.004
90-100 Percent Completion Rates	**-0.080
In a WIRED Region	0.037
In a Non-Construction High Growth Industry	***-0.095
Public Funding Pays for Related Instruction	**0.121
No. of Observations	627
Pseudo R^2	0.229

Source: Probit analyses conducted by authors from Survey of Sponsors of Registered Apprenticeship

Note 1: The dichotomous variable for a higher level of interaction with the workforce system was created by adding together the variables on the 4 dimensions of interaction with the workforce system listed in Table 10.1. If a sponsor had answered "yes" to 2 or more of these dimensions, they were categorized as having a higher level of interaction and coded as "1." If the sponsor only answered "yes" to one or none of the dimensions, they were categorized as having a low or no level of interaction with the workforce system and coded as "0." The coefficients capture the marginal impact of a one unit increase in the independent variables on the likelihood of interacting with the workforce system.

Note 2: ** and *** represent statistical significance at the 5 and 1 percent levels.

Table A.8: Percentage of Sponsors Identifying Sources of Related Instruction, by Sponsor Characteristics (more than one possible for each sponsor)

Sources Providing Related Instruction	All Sponsors	Sponsors that Serve Only One Employer	Sponsors that Serve Multiple Employers	Joint Program Sponsors	Non-Joint Program Sponsors	Sponsors with Over 10 Years in Operation	Sponsors in Operation for 10 Years or Less	Sponsors with 10 or More Appren-tices	Sponsors with 10 or Fewer Appren-tices
Community College	31	35	25	26	33	32	30	27	33
Distance Learning	6	7	5	5	6	5	7	4	6
Public Technical College	27	29	23	23	28	27	26	17	29
High School	11	12	9	5	13	9	12	6	12
Proprietary Trade School	17	17	17	13	18	17	17	11	19
Sponsor's Own Facilities	24	16	35	36	19	28	19	47	17
Other	14	13	16	20	12	14	14	19	13

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.9: Distribution of Reported Funders of Related Instruction, by Sponsor Characteristics (more than one possible for each sponsor)

Funder of Related Instruction	All Sponsors	Sponsors that Serve Only One Employer	Sponsors that Serve Multiple Employers	Joint Program Sponsors	Non-Joint Program Sponsors	Sponsors with Over 10 Years in Operation	Sponsors in Operation for 10 Years or Less	Sponsors with 10 or More Appren-tices	Sponsors with 10 or Fewer Appren-tices
Employer	72	77	66	60	77	32	30	27	33
Apprentice	23	23	23	16	25	5	7	4	6
Joint Labor-Management Training Fund	11	4	21	31	3	27	26	17	29
Public Funding (e.g., WIA, Pell grants, state aid)	9	6	14	10	8	9	12	6	12
Other Source	5	4	8	8	4	17	17	11	19

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.10: Factors That Influence High Sponsor Ratings of Related Instruction

Factors Associated with Satisfaction with Related Instruction	Impact of Factor on Rating of Related Instruction
Union	0.101
Community College	0.084
Distance Learning	-0.005
Public Technical School	-0.034
High School	0.019
Proprietary/Trade School	***-0.167
Sponsors' Facility	***0.278
Employer Pays	-0.070
Worker Pays	-0.143
Joint Program Pays	0.088
Construction	-0.025
Automotive	0.049
Energy	-0.077
Number of Observations	921
R^2	0.03

Source: Probit analyses conducted by authors from Survey of Sponsors of Registered Apprenticeship

Note 1: The dichotomous variable for a high sponsor rating of related instruction was coded as "1" if the respondent indicated a "4" or "5" rating ("5" being excellent) and "0" if the sponsor indicated a "1", "2", or "3" ("1" being poor). The coefficients capture the marginal impact of a one unit increase in the independent variables on the likelihood of interacting with the workforce system.

Note 2: ** and *** represent statistical significance at the 5 and 1 percent levels.

Table A.11: Factors That Influence Sponsor-Reported Program Completion Rates

Factors Associated with Reported Completion Rates	Effect of Factor on Reported Completion Rate
Sponsor Gave High Rating of Quality of Related Instruction	***8.80
Community College	2.53
Distance Learning	1.65
Public Technical School	***9.30
High School	2.83
Proprietary/Trade School	3.55
Sponsors' Facility	-0.60
Employer Pays	0.910
Worker Pays	-5.24
Joint Program Pays	0.28
Public Pays	-2.78
Joint	***6.92
Construction	***-6.81
Automotive	8.15
Energy	***-3.15
Retail	-9.63
Number of Observations	921
R^2	0.06

Source: Ordinary Least Squares analyses conducted by authors from Survey of Sponsors of Registered Apprenticeship

Note: ** and *** represent statistical significance at the 5 and 1 percent levels.

Table A.12: Percentage of Sponsors Citing Potential Area of Change As Important, by Sponsor Characteristics

Factor Considered Important to Change	All Sponsors	Sponsors that Serve Only One Employer	Sponsors that Serve Multiple Employers	Joint Program Sponsors	Non-Joint Program Sponsors	Sponsors with Over 10 Years in Operation	Sponsors in Operation for 10 Years or Less	Sponsors with 10 or More Appren-tices	Sponsors with 10 or Fewer Appren-tices
More help in finding and screening applicants	51	53	47	48	52	49	53	48	52
Faster registration of apprentices	36	35	39	28	39	36	37	38	36
Simpler process for setting up a new program	37	38	36	29	40	34	41	32	39
Better "due process" for delayed of rejected program approvals	26	24	28	25	26	27	24	31	25
Easier multi-state registration	32	30	35	26	34	33	32	31	32
More help in finding related instruction	41	45	35	33	44	40	42	34	43
More information on laws such as the Davis-Bacon Act	18	15	22	14	19	18	17	20	17
Other	11	12	10	13	11	11	12	10	12

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.13: Percentage of Sponsors Interested in Learning about Competency-Based Apprenticeship, by Sponsor Characteristics

Sponsor Characteristics	Percent of Sponsors
All Sponsors	55
Sponsors That Serve One Employer	54
Sponsors That Serve Multiple Employers	58
Sponsors of Joint Programs	53
Sponsors of Non-Joint Programs	56
Sponsors of Programs with 10 Years or More in Operation	54
Sponsors of Programs in Operation Less Than 10 Years	57
Sponsors with 10 or More Apprentices	61
Sponsors with Less Than 10 Apprentices	54
Sponsors by Industry	
Aerospace	64
Automotive Repair	46
Automotive Manufacturing	57
Construction	54
Energy (Gas, Electric, & Water)	55
Health Services	56
Hospitality (Hotel, Restaurants, & Lodging)	53
Information Technology – Manufacturing	58
Information Technology – Communication Services	100
Retail Trade	59
Transportation	66
Combination of Biotechnology, Mining/Extraction, Finance, Insurance, Real Estate, & Homeland Security	55
Other	29

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.14: Percentage of Sponsors by Industry Who Provided Good or Excellent Ratings on the Performance of their State Apprenticeship Agency on Key Activities

	Percent of Sponsors with Ratings of Good or Excellent			
Industry of Sponsor	**Timeliness in Processing Applications and Responding to Inquiries**	**Clear Guidance on Program Registration and Requirements**	**Use of Online Registration**	**Promoting and Publicizing Registered Apprenticeship**
Aerospace	76	88	38	86
Automotive Repair	61	54	83	82
Automotive Manufacturing	85	83	70	69
Construction	83	81	72	66
Energy (Gas, Electric, & Water)	82	76	78	71
Health Services	79	70	90	81
Hospitality (Hotel, Restaurants, & Lodging)	90	86	62	71
Information Technology – Manufacturing	78	68	63	27
Information Technology – Communication Services	100	73	57	63
Retail Trade	77	87	60	63
Transportation	88	80	76	62
Combination of Biotechnology, Mining/Extraction, Finance, Insurance, Real Estate, & Homeland Security	82	81	67	59
Other	86	74	58	80

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.15: Percentage of Sponsors Who Provided Good or Excellent Ratings of their State Apprenticeship Agency, by Sponsor Characteristics

	Percent of Sponsors							
	Sponsors that Serve Only One Employer		**Sponsors that Serve Multiple Employers**		**Joint Program Sponsors**		**Non-Joint Program Sponsors**	
Rated Factor	Good	Excellent	Good	Excellent	Good	Excellent	Good	Excellent
Timeliness in processing applications and responding to inquiries	44	38	43	38	38	44	45	36
Clear guidance on program registration and requirements	44	37	44	35	41	43	45	34
Use of online registration (if applicable)	42	26	46	27	32	37	48	22
Promoting and publicizing registered apprenticeship	45	19	41	25	41	29	44	19

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

Table A.16: Percentage of Sponsors Who Provided Good or Excellent Ratings of their State Apprenticeship Agency, by Size of Sponsor Program

	Percent of Sponsors									
	1–4 Apprentices		5–9 Apprentices		10–39 Apprentices		40–99 Apprentices		100 or More Apprentices	
Rated Factor	Good	Excellent	Good	Excellent	Good	Excellent	Good	Excellent	Good	Excellent
Timeliness in processing applications and responding to inquiries	45	35	43	39	38	44	45	34	38	51
Clear guidance on program registration and requirements	48	31	39	42	40	37	41	31	28	61
Use of online registration (if applicable)	49	22	48	20	32	41	32	25	26	46
Promoting and publicizing registered apprenticeship	45	17	50	15	35	28	41	26	35	44

Source: Weighted Tabulations from the 2007 Survey of Apprenticeship Sponsors

APPENDIX B

METHODOLOGY

SAMPLING AND WEIGHTING METHODOLOGY

Prepared by Lou Rizzo, Tiandong Li, and Frank Bennici, Westat[1]

SAMPLING METHODOLOGY

SAMPLE DESIGN

The Survey of Registered Apprenticeship was designed to draw a probability sample from a frame of all apprenticeship sponsors in the United States who were registered with the Office of Apprenticeship Training, Employer, and Labor Services, or a recognized State apprenticeship agency. These sampled sponsors were then asked to complete an instrument in which they provided descriptive information about their programs as well as their views about various aspects of registered apprenticeship. The initial sample design called for three separate mutually exclusive groups of sponsors, for which high-precision unbiased estimators were required. These groups of sponsors included those with registered programs in

1) High-growth industries (not including construction);
2) Construction industry; and,
3) Other non-construction and non-high-growth industries.

The SIC code definitions for sponsors with programs each of these domains are given in tables B-12 through B-17. The goal was to have a large enough sample in each of these domains so that there would be standard errors of no more than 2.5% for any population percentage (e.g., the percentage of sponsors in the domain who answer a particular yes/no question in the affirmative). This corresponded to a sample size of 400 under simple random sampling for each of these three domains.

The actual sponsors' frame at the time of sampling is described in Table B1-1 below. There was a set of sponsors whose stratum status could not be fully determined, due to inadequate information provided on industry status. This is the fourth stratum as given in Table B1-1 below. It is designated as 'non-construction, unknown-growth' as we do know that these sponsors are not in the construction industry (domain 2), but we don't know whether they are in the designated high-growth industries (domain 1) or in the complement set (domain 3).

[1] Appendix B was produced by Westat, Inc. of Rockville, MD 20850 using Federal funds from the U.S. Department of Labor, Employment and Training Administration, Office of Policy Development and Research (OPDR) under Contract Number AF-12547-02-30 with Planmatics, Inc. Westat was a subcontractor to Planmatics, Inc.

Table B-1. Sponsors' counts on the sampling frame by stratum.

Stratum	Sponsor count	Percent of frame
1-Smaller high growth	3,674	17.2%
2-Construction	8,976	42.1%
3-Other	8,071	37.9%
4-Non construction unknown growth	603	2.8%
Total all sponsors	21,324	100.00%

The sample design was a stratified random sample design, using the four strata as given in Table B-1, (as described, for example, in Cochran [1977], Chapter 5). The sample sizes were assigned to each of these strata anticipating attrition from both non-response and ineligibility. A total attrition rate of 36% was expected (i.e., 64% of the sampled sponsors were expected to provide interviews, finally). The overall target sample size was 1,792, with an expected total of 1,147 completed interviews. Definitions of domains and SIC industry coding for each state are discussed the methodology that we used to decide on the target interview sample sizes given in Table B-2 below. In a nutshell, the target interview sample sizes were set to achieve a precision equivalent to a sample size of 400 (a maximum standard error for percentages of 2.5%) for each of the three domains.

Table B-2. Stratum sample sizes for revised design.

	Target interviews	Predicted response	Predicted eligibility	Target sample size
Stratum 1	360	0.8	0.8	563
Stratum 2	384	0.8	0.8	601
Stratum 3	359	0.8	0.8	561
Stratum 4	43	0.8	0.8	67
Total	1,147			1,792

Below is a description of the frame of sponsors, the sampling process, and the final sample of sponsors.

FRAME OF SPONSORS

The respondent universe consisted of all sponsors of active[2] apprenticeship programs registered either with the state offices of the DOL's Office of Apprenticeship (OA), or a recognized State Apprenticeship Agency or Council (SAA or SAC). The sampling frame included states that fully participated in the Registered Apprenticeship Information System (RAIS) database and six additional states. Thirty-two states fully participated in RAIS (of which 23 were OA states and nine were SAC/SAA states). In order to assure a sampling frame that was nationally representative of all sponsors, DOL sought a one-time download of data from seven states that had the largest numbers of programs among states that do not fully participate in the RAIS. Data was obtained from six of the seven states.

[2] To be active, a program must have had an apprentice within the last two years.

There were a total of 21,324 apprenticeship sponsors on the final sampling frame, corresponding to 24,708 programs and 316,545 apprentices. It should be noted that military sponsors were excluded as out-of-scope from this frame[3]. In addition, any Corrections industry sponsors who had only prisoners as apprentices were excluded[4] (Corrections sponsors with corrections officer apprentice programs were *included* on the frame). Table B-3 gives the distribution of programs across sponsors: 19,829 sponsors had exactly one program and 1,495 had two or more programs. The largest sponsor (in terms of programs) had 68 programs.

Table B-3. Distribution of programs across sponsors on the frame.

Distributional statistic	Exactly one program	Greater than one program	All sponsors
N	19,829	1,495	21,324
SUM	19,829	4,879	24,708
MEAN	1.00	3.26	1.16
MINIMUM	1	2	1
25th PERCENTILE	1	2	1
MEDIAN	1	2	1
75th PERCENTILE	1	3	1
MAXIMUM	1	68	68

Table B-4 provides a distribution for the frame by number of current apprentices. 4,358 of the sponsors had no current apprentices[5]; 12,270 had one to four apprentices currently; and 4,696 had five or more apprentices currently. The largest sponsor had 6,308 apprentices.

Table B-4. Distribution of apprentices across sponsors on the frame.

Distributional statistic	No current apprentices	One to four current apprentices	Five or more current apprentices	All sponsors
N	4,358	12,270	4,696	21,324
Percent of total	20%	58%	22%	100%
SUM	0	20,829	295,716	316,545
MEAN	0	1.70	62.97	14.84
MINIMUM	0	1	5	0
25th PERCENTILE	0	1	7	1
MEDIAN	0	1	14	1
75th PERCENTILE	0	2	45	4
MAXIMUM	0	4	6,308	6,308

The distribution by sampling stratum is given in Table B-5.

[3] These were distinguished by text strings in the name such as 'DEPARTMENT OF DEFENSE', 'ARMY', 'NAVY', 'AIR FORCE', 'MARINES' and 'COAST GUARD'.

[4] These were distinguished by having a text string such as 'DEPARTMENT OF CORRECTIONS' or 'DEPT OF CORRECTIONS', and also having occupation codes which were not corrections officers.

[5] Sponsors with no apprentices currently are generally new programs which will have apprentices in the near future.

Table B-5. Distribution of sponsors and apprentices by sampling stratum on the frame.

Stratum	Count of sponsors	Percent of sponsors	Count of apprentices	Percent of apprentices	Mean apprentices per sponsor
1	3,674	17.2%	44,670	14.1%	12.2
2	8,976	42.1%	229,563	72.5%	25.6
3	8,071	37.9%	37,965	12.0%	4.7
4	603	2.8%	4,347	1.4%	7.2
Total	21,324	100.00%	316,545	100.0%	15.6

Frame distributions for other characteristics (SIC code, state, program type) are provided in the section below on the sample frame.

SAMPLING PROCEDURES

The frame and sample sizes are given in Table B-6 below. Each sponsor within the sampling strata had an equal chance of selection. The sampling rates are equal to the sample size divided by the frame size. The sampling process was systematic (see for example Cochran (1977), Chapter 8). In this process, the frame set in the stratum is ordered (see below for the sort order), with each sponsor receiving a unit weight. The sampling interval is computed as the inverse of the sampling rate. A uniform random number between 0 and the sampling interval is computed. The random number is rounded up to give the first sampled unit. For stratum 1 for example, the sampling interval is 6.53. A uniform random number between 0 and 6.53 is drawn. If for example, it is 2.35, then this is rounded up to 3, and the 3rd sponsor on the list is selected. The remaining sample is generated by adding multiples of the sampling interval to the random number, rounding up, and then drawing that sponsor. For example, multiples of 6.53 are added to the random start of 2.35 (2.35+6.53, 2.35+(2*6.53), 2.35+(3*6.53), etc.), which are then rounded up. This sequence for example will be (3, 9, 16, 23, etc.), and the 3rd, 9th, 16th, 23rd etc., sponsors will be in this particular sample. Each particular sponsor in stratum 1 for example has a 1 in 6.53 chance of being selected, but neighboring sponsors on the ordered list can never be sampled together (the joint probabilities of selection are much higher for sponsors seven or eight units apart on the ordered list, and are zero for sponsors one through six units apart).

Table B-6. Frame and sample sizes for each sampling stratum.

Stratum	Frame count of sponsors	Sample count of sponsors	Sampling rate	Sampling interval
1	3,674	563	15.32%	6.53
2	8,976	601	6.70%	14.94
3	8,071	561	6.95%	14.39
4	603	67	11.11%	9.00
Total	21,324	1,792	8.40%	NA

The ordering for each stratum is generated using a 'serpentine sort' based on size category and SIC code. The size category is trichotomous, with level 1 no apprentices, level 2 one to four

apprentices, and level 3 five or more apprentices. Size category level 1 precedes size category level 2, which precedes size category level 3 in the ordering within each stratum. Note that the systematic sampling procedure along with this ordering guarantees that sample percentages for each size category level will be close to the frame percentages (so that none of the three size categories are under- or over-sampled). Within each size category level, the ordering is by two-digit SIC code. The ordering is 'serpentine' in that the ordering is ascending by SIC code within the first size category level, is descending by SIC code within the second size category level, and ascending by SIC code within the third size category level. Along with the systematic sampling procedure, this spreads the sample over SIC codes as much as possible (as 'neighbors' in the sort order have SIC codes not much different).

FINAL SAMPLE DISTRIBUTIONS

The final sample sizes by stratum are given in Table B-6. Within each stratum, the sampling rate was constant: each sponsor had an equal chance of selection.

Table B-7 below is a parallel table to Table B-4: it provides the distribution of apprentice size across the sample (as opposed to the distribution of apprentice size across the frame). These are weighted sample distributions. The 'weights' in this case are the inverse of the probabilities of selection of the sponsors, adjusting for the differentials in sampling rates. The weighted sample percentages are unbiased estimators of the frame percentages. Any deviation is due to sampling error (states getting less or more sponsors than their population share due to the randomized sampling process). As can be seen in comparing the two tables, the sampling deviation is not large.

Table B-7. Distribution of apprentices across sponsors in the sample.

Distributional statistic	0 apprentices	1 to 4 apprentices	5 or more apprentices	All sponsors
N	4,359	12,267	4,698	21,324
Percent of total	20%	58%	22%	100%
Weighted SUM	0	20,395	278,192	298,588
MEAN	0	1.66	59.21	14.00
MINIMUM	0	1	5	0
25th PERCENTILE	0	1	8	1
MEDIAN	0	1	16	1
75th PERCENTILE	0	2	39	4
MAXIMUM	0	4	2,098	2,098

Table B-8 below presents frame percentages of sponsors and weighted sample percentages of sponsors by state, and Table B-9 presents frame and weighted sample percentages of apprentices by state, (the percentages are of apprentices rather than sponsors). Note that the variability for the apprentice percentages is higher because of the presence of outliers increasing the sampling variances (sponsors with large numbers of apprentices).

Table B-8. Frame and sample percentages of sponsors by state.

State	Frame percent	Weighted sample percent	State	Frame percent	Weighted sample percent
AK	0.94	0.90	MS	0.44	0.39
AL	0.45	0.40	NC	1.24	1.31
AR	4.31	4.64	ND	0.33	0.29
AZ	0.57	0.63	NH	2.97	2.96
CA	2.27	2.37	NJ	6.76	6.82
CO	1.41	1.41	NV	1.01	1.04
CT	6.53	6.39	NY	3.01	2.76
FL	1.28	1.41	OH	4.98	5.22
FM	0.01	0.00	OK	0.40	0.33
GA	0.82	0.64	PA	5.93	5.84
GU	0.18	0.12	SC	0.30	0.54
HI	0.07	0.03	SD	1.15	1.19
IA	1.92	1.69	TN	1.35	1.28
ID	1.24	1.30	TX	1.97	2.01
IL	2.48	2.12	UT	2.25	2.37
IN	3.72	3.34	VA	15.17	15.22
KS	1.28	1.26	VT	0.01	0.00
KY	1.35	1.41	WI	8.24	8.21
MI	6.18	6.60	WV	2.42	2.27
MO	2.59	2.74	WY	0.49	0.53

Table B-9. Frame and sample percentages of apprentices by state.

State	Frame percent	Weighted sample percent	State	Frame percent	Weighted sample percent
AK	0.64	0.33	MS	0.56	0.59
AL	0.50	0.64	NC	2.52	1.62
AR	2.08	6.35	ND	0.20	0.07
AZ	1.50	5.77	NH	0.47	0.58
CA	23.13	15.72	NJ	2.07	1.01
CO	1.34	0.37	NV	2.65	1.60
CT	1.46	1.18	NY	6.70	5.84
FL	4.90	4.81	OH	5.41	13.97
FM	0.00	0.00	OK	0.37	0.62
GA	1.18	0.74	PA	5.89	4.76
GU	0.09	0.04	SC	0.22	0.26
HI	0.05	0.00	SD	0.28	0.54
IA	1.26	0.89	TN	1.23	1.41
ID	0.32	0.52	TX	2.92	5.57
IL	5.02	1.42	UT	0.92	0.71
IN	2.94	2.38	VA	5.44	4.18
KS	0.71	1.87	VT	0.00	0.00
KY	0.67	0.55	WI	5.61	6.91
MI	2.78	3.65	WV	1.19	0.92
MO	4.70	1.57	WY	0.10	0.04

Table B-10 presents frame and weighted sample percentages by program type. Sponsors could be joint programs, or not, and could be multiple programs, or not. In some cases, one or the other program-type status was missing. These are given as separate categories in the table. The weighted sample and population percentages are very close.

Table B-10. Frame and sample percentages by program type.

Joint Program/ Nonjoint Program	Multiple program/ Single program	Frame percent	Weighted sample percent
Missing	Missing	7.73	7.77
Joint	Missing	2.84	3.18
Joint	Multiple	5.41	5.17
Joint	Single	7.14	6.71
Non-joint	Missing	7.37	7.18
Non-joint	Multiple	2.64	2.80
Non-joint	Single	66.86	67.20
Total	Total	100.0	100.0

Table B-11 presents frame and sample percentages for each major industry area. Note that many sponsors had no SIC information (or conflicting SIC information), and are in the 'missing' category. The frame and weighted sample percentages are very close.

Table B-11. Frame and weighted sample percentages by SIC industry area.

Industry area	Frame percent	Weighted sample percent
Agriculture 01-09	0.19	0.06
Mining 10-14	0.18	0.25
Construction 15-17	35.81	35.81
Manufacturing 20-39	18.24	18.18
Transportation and Communication 40-49	4.28	4.26
Wholesale Trade 50-51	0.53	0.61
Retail Trade 52-59	3.70	3.70
Financial Services 60-67	0.44	0.45
Services 70-89	16.69	16.70
Government 90-99	2.37	2.28
Missing SIC2	17.57	17.66
Total	100.0	100.0

DEFINITIONS OF DOMAINS AND STRATA

The three domains of interest for the strata (discussed at the beginning of this appendix) are defined in terms of industry by a four-digit SIC-code. All four-digit SIC codes in SIC 15, 16, and 17 are in the construction domain. Tables B-12 through B-14 present the four-digit SIC codes in domains 1, 2, and 3 respectively.

In some cases, there was information about the sponsor at the two-digit SIC code level, but not a full four-digit code. In some cases, the two-digit SIC codes mapped completely into one of the three domains. Tables B-15 and B-16 present two-digit SIC codes which map completely into domains 1 and 3 respectively. Table B-17 presents two-digit SIC codes which 'straddle' domains 1 and 3 (i.e., there are four-digit SIC codes in domain 1 and in domain 3 from this two-digit SIC category).

Table B-12. High growth (non-construction) four-digit SIC codes (Domain 1).

Energy:	1221, 1222, 1241, 1311, 1321, 1381, 1382, 1389, 2911, 2999, 4612, 4613, 4619, 4911, 4922, 4923, 4924, 4925, 4931, 4932, 4939, 4941, 4971, 5172
Information Technology	3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3676, 3677, 3678, 3679, 7371, 7372, 7374, 7375, 7376, 7377, 7378, 7379
Aerospace	3721, 3724, 3728, 3761, 3764, 3769, 3812, 9661
Automotive	3711, 3713, 3714, 7532, 7536, 7537, 7538, 7539, 7549
Biotechnology	2833, 2834, 2835, 2836, 8731, 8733, 8734
Geospatial	2752, 2754, 2759, 3821, 3822, 3823, 7389, 9511, 9532
Retail Trade (Merchandizing only)	5211, 5231, 5251, 5261, 5271, 5311, 5331, 5399, 5411, 5421, 5431, 5441, 5451, 5461, 5499, 5511, 5521, 5531, 5541, 5551, 5561, 5571, 5599, 5611, 5621, 5632, 5641, 5651, 5661, 5699, 5712, 5713, 5714, 5719, 5722, 5731, 5734, 5735, 5736, 5912, 5921, 5932, 5941, 5942, 5943, 5944, 5945, 5946, 5947, 5948, 5961, 5962, 5963, 5983, 5984, 5989, 5992, 5993, 5994, 5995, 5999
Transportation	4011, 4013, 4111, 4119, 4121, 4131, 4141, 4142, 4151, 4173, 4212, 4213, 4214, 4215, 4221, 4222, 4225, 4226, 4231, 4311, 4412, 4424, 4432, 4449, 4481, 4482, 4489, 4491, 4492, 4493, 4499, 4512, 4513, 4522, 4581, 4724, 4725, 4729, 4731, 4783, 4785, 4789
Homeland Security	7381,7382, 9211, 9221, 9222, 9223, 9224, 9229, 9431, 9621
Hospitality	5812, 5813, 7011, 7021, 7032, 7033, 7041
Financial Services:	6011, 6019, 6021, 6022, 6029, 6035, 6036, 6061, 6062, 6081, 6082, 6091, 6099, 6111, 6141, 6153, 6231, 6282, 6289, 6311, 6321, 6324, 6331, 6351, 6361, 6371, 6399, 6411, 6512, 6513, 6514, 6515, 6517, 6519, 6531, 6541, 6552, 6553, 6712, 6719, 6722, 6726, 6732, 6733, 6792, 6794, 6798, 6799
Health Services	8011, 8021, 8031, 8041, 8042, 8043, 8049, 8051, 8052, 8059, 8062, 8063, 8069, 8071, 8072, 8082, 8092, 8093, 8099

Table B-13. Construction four-digit SIC codes (Domain 2).

Construction:	1521, 1522, 1531, 1541, 1542, 1611, 1622, 1623, 1629, 1711, 1721, 1731, 1741, 1742, 1743, 1751, 1752, 1761, 1771, 1781, 1791, 1793, 1794, 1795, 1796, 1799

Table B-14. Other, non-construction, non-high growth four-digit SIC codes (Domain 3).

Advanced (High-Tech) Manufacturing	2011, 2013, 2015, 2021, 2022, 2023, 2024, 2026, 2032, 2033, 2034, 2035, 2037, 2038, 2041, 2043, 2044, 2045, 2046, 2047, 2048, 2051, 2052, 2053, 2061, 2062, 2063, 2064, 2066, 2067, 2068, 2074, 2075, 2076, 2077, 2079, 2082, 2083, 2084, 2085, 2086, 2087, 2091, 2092, 2095, 2096, 2097, 2098, 2099, 2111, 2121, 2131, 2141, 2211, 2221, 2231, 2241, 2251, 2252, 2253, 2254, 2257, 2258, 2259, 2261, 2262, 2269, 2273, 2281, 2282, 2284, 2295, 2296, 2297, 2298, 2299, 2311, 2321, 2322, 2323, 2325, 2326, 2329, 2331, 2335, 2337, 2339, 2341, 2342, 2353, 2361, 2369, 2371, 2381, 2384, 2385, 2386, 2387, 2389, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2399, 2411, 2421, 2426, 2429, 2431, 2434, 2435, 2436, 2439, 2441, 2448, 2449, 2451, 2452, 2491, 2493, 2499, 2511, 2512, 2514, 2515, 2517, 2519, 2521, 2522, 2531, 2541, 2542, 2591, 2599, 2611, 2621, 2631, 2652, 2653, 2655, 2656, 2657, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2711, 2721, 2731, 2732, 2741, 2761, 2771, 2782, 2789, 2791, 2796, 2812, 2813, 2816, 2819, 2821, 2822, 2823, 2824, 2841, 2842, 2843, 2844, 2851, 2861, 2865, 2869, 2873, 2874, 2875, 2879, 2891, 2892, 2893, 2895, 2899, 2951, 2952, 2992, 3011, 3021, 3052, 3053, 3061, 3069, 3081, 3082, 3083, 3084, 3085, 3086, 3087, 3088, 3089, 3111, 3131, 3142, 3143, 3144, 3149, 3151, 3161, 3171, 3172, 3199, 3211, 3221, 3229, 3231, 3241, 3251, 3253, 3255, 3259, 3261, 3262, 3263, 3264, 3269, 3271, 3272, 3273, 3274, 3275, 3281, 3291, 3292, 3295, 3296, 3297, 3299, 3312, 3313, 3315, 3316, 3317, 3321, 3322, 3324, 3325, 3331, 3334, 3339, 3341, 3351, 3353, 3354, 3355, 3356, 3357, 3363, 3364, 3365, 3366, 3369, 3398, 3399, 3411, 3412, 3421, 3423, 3425, 3429, 3431, 3432, 3433, 3441, 3442, 3443, 3444, 3446, 3448, 3449, 3451, 3452, 3462, 3463, 3465, 3466, 3469, 3471, 3479, 3482, 3483, 3484, 3489, 3491, 3492, 3493, 3494, 3495, 3496, 3497, 3498, 3499, 3511, 3519, 3523, 3524, 3531, 3532, 3533, 3534, 3535, 3536, 3537, 3541, 3542, 3543, 3544, 3545, 3546, 3547, 3548, 3549, 3552, 3553, 3554, 3555, 3556, 3559, 3561, 3562, 3563, 3564, 3565, 3566, 3567, 3568, 3569, 3579, 3581, 3582, 3585, 3586, 3589, 3592, 3593, 3594, 3596, 3599, 3612, 3613, 3621, 3624, 3625, 3629, 3631, 3632, 3633, 3634, 3635, 3639, 3641, 3643, 3644, 3645, 3646, 3647, 3648, 3651, 3652, 3691, 3692, 3694, 3695, 3699, 3715, 3716, 3731, 3732, 3743, 3751, 3792, 3795, 3799, 3824, 3825, 3826, 3827, 3829, 3841, 3842, 3843, 3844, 3845, 3851, 3861, 3873, 3911, 3914, 3915, 3931, 3942, 3944, 3949, 3951, 3952, 3953, 3955, 3961, 3965, 3991, 3993, 3995, 3996, 3999
Agriculture:	0111, 0112, 0115, 0116, 0119, 0131, 0132, 0133, 0134, 0139, 0161, 0171, 0172, 0173, 0174, 0175, 0179, 0181, 0182, 0191, 0211, 0212, 0213, 0214, 0219, 0241, 0251, 0252, 0253, 0254, 0259, 0271, 0272, 0273, 0279, 0291, 0711, 0721, 0722, 0723, 0724, 0741, 0742, 0751, 0752, 0761, 0762, 0781, 0782, 0783, 0811, 0831, 0851, 0912, 0913, 0919, 0921, 0971
Mining:	1011, 1021, 1031, 1041, 1044, 1061, 1081, 1094, 1099, 1231, 1411, 1422, 1423, 1429, 1442, 1446, 1455, 1459, 1474, 1475, 1479, 1481, 1499
Communication (and Utilities):	4812, 4813, 4822, 4832, 4833, 4841, 4899, 4952, 4953, 4959, 4961
Wholesale Trade:	5012, 5013, 5014, 5015, 5021, 5023, 5031, 5032, 5033, 5039, 5043, 5044, 5045, 5046, 5047, 5048, 5049, 5051, 5052, 5063, 5064, 5065, 5072, 5074, 5075, 5078, 5082, 5083, 5084, 5085, 5087, 5088, 5091, 5092, 5093, 5094, 5099, 5111, 5112, 5113, 5122, 5131, 5136, 5137, 5139, 5141, 5142, 5143, 5144, 5145, 5146, 5147, 5148, 5149, 5153, 5154, 5159, 5162, 5169, 5171, 5181, 5182, 5191, 5192, 5193, 5194, 5198, 5199
The Rest of Service:	7011, 7021, 7032, 7033, 7041, 7211, 7212, 7213, 7215, 7216, 7217, 7218, 7219, 7221, 7231, 7241, 7251, 7261, 7291, 7299, 7311, 7312, 7313, 7319, 7322, 7323, 7331, 7334, 7335, 7336, 7338, 7342, 7349, 7352, 7353, 7359, 7361, 7363, 7373, 7383, 7384, 7513, 7514, 7515, 7519, 7521, 7533, 7534, 7542, 7622, 7623, 7629, 7631, 7641, 7692, 7694, 7699, 7812, 7819, 7822, 7829, 7832, 7833, 7841, 7911, 7922, 7929, 7933, 7941, 7948, 7991, 7992, 7993, 7996, 7997, 7999, 8111, 8211, 8222, 8231, 8243, 8244, 8249, 8299, 8322, 8331, 8351, 8361, 8399, 8412, 8422, 8611, 8621, 8631, 8641, 8651, 8661, 8699, 8711, 8712, 8713, 8721, 8732, 8741, 8742, 8743, 8744, 8748, 8811, 8999
The Rest of Public Administration:	9111, 9121, 9131, 9199, 9311, 9411, 9441, 9451, 9512, 9531, 9611, 9631, 9641, 9651, 9711, 9721

Table B-15. Two digit SIC codes only in the high growth non-construction domain (Domain 1).

Transportation	40, 41, 42, 43, 44, 45, 47
Retail Trade	52, 53, 54, 55, 56, 57, 58, 59
Financial Services:	60, 61, 62, 63, 64, 65, ***66,*** 67
Health Services	80
Homeland Security	92

Table B-16. Two digit SIC codes only in the non-high-growth, non-construction domain (Domain 3).

Agriculture	01, 02, 07, 08, 09
Mining	10, 14
Manufacturing	20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33, 34, 39
Communication	48
Wholesale Trade	50
Service	70, 72, 76, 78, 79, 81, 82, 83, 84, 86, 88, 89
Public Administration	91, 97

Table B-17. Two digit SIC codes in both Domains 1 and 3.

Mining and Construction	12, 13
Manufacturing	27, 28, 29, 35, 36, 37, 38
Communication	46, 49
Trade	51
Service	73, 75, 87
Government	94, 95, 96, ***99***

WEIGHTING METHODOLOGY

This section describes experiences in the field, construction of sampling weights, adjustments, and response rates for the Survey of Registered Apprenticeship Sponsors. The sampling weights had the following components (which were multiplied together to give the final weights):

- The base weight: the inverse of the probability of selection of the sponsor into the study sample;
- An adjustment to the base weight for duplicates;
- An adjustment for eligible and nonresponding sample units.

The base weights, adjustments for duplicates, and adjustments for nonresponding sample units are all discussed below.

BASE WEIGHTS

The base weight w_i was the inverse of the probability of selection p_i at the time of sampling (the index *i* indicates sponsor *i*). The probability of selection at the time of sampling was based on assignment of sponsors to one of four strata as follows:

1) High-growth industries;
2) Construction industry;
3) Other, including non-construction and non-high-growth industries; and
4) Unknown industry.

Under the sample design, the sampling rate was much higher for stratum 1, given the smaller frame numbers and the considerable interest in this group: 15.32%. The sampling rate for strata 2 and 3 were 6.7% and 6.95% respectively. The fourth category was given an intermediate sampling rate (11.11%), given our uncertainty as to whether these really belonged in stratum 1 or stratum 3. Table B-18 summarizes the frame counts at the time of sampling, the assigned sample sizes, the sampling rates, and the base weights (the reciprocal of the sampling rate). The sections on sampling methodology (see above) provide further details regarding the sample design.

Table B-18. Sampling rates and base weights from the sponsor frame.

Stratum	Frame count of sponsors	Sample count of sponsors	Sampling rate p_i	Base weight w_i
1	3,674	563	15.32%	6.53
2	8,976	601	6.70%	14.94
3	8,071	561	6.95%	14.39
4	603	67	11.11%	9.00
Total	21,324	1,792	8.40%	NA

ADJUSTMENTS TO THE BASE WEIGHTS FOR DUPLICATES

There were a total of 21,324 apprenticeship sponsors in the final sampling frame, corresponding to 24,708 programs and 316,545 apprentices. The section above on sample methodology details the sources for the sampling frame, and the process for generating the final sampling frame, including exclusions and other changes from the source data. This frame even after careful processing had 'false sponsor records' of two kinds. The first kind involved 'sponsors' who turned out to be ineligible because they were out-of-business or had not had an apprentice for at least three years. The second kind were duplicate records, i.e., multiple records which corresponded to single sponsors.

The ineligible sponsors are easy to handle: they are viewed as never really belonging to the frame in the first place, and are simply dropped from both frame and sample. The duplicates are not as easy to handle. For these duplicates, it was necessary to identify all records in the sample which corresponded to a single sponsor, using information collected from the sponsors themselves. A single sponsor was then assigned a probability of selection based on their multiple chances of being included. Supposing that there are m (m=2,3,4,….) records for a particular sponsor s, with frame probabilities of selection $p_1, p_2, \ldots, p_m$, the probability and weight assigned to the sponsor were as follows:

$$p_s = 1 - \prod_{i=1}^{m}(1-p_i) \qquad w_s = p_s^{-1} = \left[1 - \prod_{i=1}^{m}(1-p_i)\right]^{-1}$$

The logic of this is as follows: the stratified systematic design is viewed as being approximated by a Poisson sampling process, with each unit having one-by-one an independent chance of selection p_i determined by its stratum. A sponsor ends up in the sample if any one of their associated records is sampled. Thus, a sponsor is *not* sampled if and only if *none* of the m records for the sponsor are sampled. The chance of this is $\prod_{i=1}^{m}(1-p_i)$, the product of the probabilities that each record is *not* sampled. The probability the sponsor *is* sampled is then the complement of this, which is $1-\prod_{i=1}^{m}(1-p_i)$. It should be noted that the adjustment was only made for the m duplicates in the ***sample,*** not the M duplicates in the frame. No attempt was made to go back to the original frame and identify all M duplicates at that level, as this was not feasible. Thus the correct weight $\tilde{w}_s = \left[1 - \prod_{i=1}^{M}(1-p_i)\right]^{-1}$ may be somewhat smaller then the weight we are computing which is equal to $w_s = \left[1 - \prod_{i=1}^{m}(1-p_i)\right]^{-1}$. The sampling weight was adjusted downwards correctly for its multiple chances of selection, but possibly not quite far enough. This may introduce a small bias. It should be noted that no adjustments were made for sample units for which there were no duplicates in the sample (m equals 1), but only for duplicates on the frame which didn't happen to be sampled, i.e., M is greater than 1. In this case, the original weight was used rather than a more appropriate lower weight, which was, however, impossible to compute.

Note that this base weight adjustment was made whether or not the sponsor was ultimately a respondent or non-respondent. If, on the other hand the sponsor was identified as ineligible, then all of the records were ruled as such and their weights left alone. In the sample, 56 records were duplicates. Seventeen of the sponsor records were assigned as non-respondents or ineligibles and the weights were retained. Further discussion of the 17 cases can be found be in the next section. The remaining 39 duplicate records were associated with 13 sponsors and were dropped (given zero base weights and coded out as duplicates).

All of the 73 records associated with the 13 sponsors had an aggregate base weight of 749. The aggregate weight for the same set of records after the adjustment for duplicates was 185. Thus in a sense 749 frame records are re-evaluated as corresponding to only 185 real sponsors, resulting in effect in a frame count drop of 564.

There was one case in which a sponsor with multiple records actually provided multiple interviews for multiple programs associated with the sponsor. In this case, the adjusted weight was divided between these interviews, so that in effect the interviews were 'averaged together' to represent the single weight for the sponsor.

ADJUSTMENTS FOR UNKNOWN ELIGIBILITY CASES AND RESPONSE RATES

Table B-19 presents a breakdown of disposition codes after the 56 cases discussed in Section 3 were re-weighted. The base weight total here is 20,760, which is 564 less than the frame total of 21,324 (see Table B-18).

Ineligibles and unknown-eligibility cases were a large portion of the sample. The known ineligibles included the duplicates[6], sponsors which had no apprentices in the last three years, and sponsors no longer in business. Following the American Association for Public Opinion Research (AAPOR 2004) procedures, only units which are positively confirmed to fall into one of these categories were coded out as ineligible.

[6]Thirty-nine of these duplicates received zero base weights, following the procedure discussed in Section 3. The remaining 17 duplicates could not be associated with an eligible sponsor, and retained their original weights. Among the 17 duplicates, 7 were recoded to "refused interview" since the sponsor only had duplicates and ineligible records and 10 stayed as ineligible and kept the weights, as the linkage information to other records were missing. Thus, the sum of weight is 147 (rather than 0).

Table B-19. Unweighted and weighted counts by disposition status.

Eligibility outcome	Sample count	Percent of grand total	Sum of base weight	Percent of grand weighted total
1-Completed interviews	947	52.8%	11,303	54.4%
1-Refused interviews	80	4.5%	919	4.4%
Total confirmed eligible	1,027	57.3%	12,221	58.9%
2-Duplicates	49	2.7%	147	0.7%
3-No apprentices in last 3 years	272	15.2%	3,102	14.9%
3-No longer in business	49	2.7%	542	2.6%
Total confirmed ineligible	370	20.6%	3,791	18.3%
4-Answering machine	171[7]	9.5%	2,102	10.1%
4-Busy signal	3	0.2%	35	0.2%
4-Disconnected	65	3.6%	797	3.8%
4-Fax/modem	20	1.1%	220	1.1%
4-Gatekeeper refusal	1	0.1%	7	0.0%
4-No answer	33	1.8%	384	1.8%
4-Respondent unavailable	55	3.1%	646	3.1%
4-Wrong number	47	2.6%	558	2.7%
Total unknown eligibility	395	22.0%	4,748	22.9%
Total	1,792	100.0%	20,760	100.0%

The unknown eligibility group consists of those cases for which not enough information could be collected to confirm that the sponsor was either out of business or hadn't had an apprentice in three years. In computing response rates, we used 'RR3' as given in AAPOR 2004, which takes those with unknown eligibility and imputes some of them as equivalent to refusals and some of them as equivalent to ineligibles (splitting the difference, so to speak). The percentage used to allocate the unknown cases to eligible and ineligible is simply the eligibility rate among the cases with known eligibility. Table B-20 presents this imputation process done over the full sample (in generating the weights, this imputation is done separately within assigned cells, as discussed in later sections below).

[7]One record was recoded to "refused interview" when all other records associated with this sponsor were duplicates.

Table B-20. Calculations of response rates by imputing unknown eligibility cases.

Eligibility outcome	Sum of base weights	Percent of weighted total before imputation	Eligibility rate among known eligible	Impu-tations of unknown eligibility	Sum of base weights after impu-tation	Percent of weighted total after impu-tation	Percent among eligibles after impu-tation
1-Completed interviews	11,303	54.4%			11,303	54.4%	**71.3%**
2-Refused interviews	919	4.4%			4,543	21.9%	28.7%
(1+2)-Total confirmed eligible	12,221	58.9%	76.3%		15,846	76.3%	
3-Total confirmed ineligible	3,791	18.3%	23.7%		4,915	23.7%	
4a-Imputed as nonresponse				3,624			
4b-Imputed as ineligible				1,124			
4-Total unknown eligibility	4,748	22.9%		4,748		0.0%	
Total	20,760	100.0%			20,760	100.0%	

The first step is to compute the (base-weighted) eligibility rate among the cases with known eligibility ('1', '2', and '3'). This rate is 76.3%. The base weights for the total unknown eligibility cases add up to 4,748; among these, 76.3% is allocated to eligible (with such eligible non-respondents treated like a refusal), and 23.7% allocated to ineligible. The resultant breakdown is given in the column 'Sum of base weights after imputation.' In this column, the unknown eligibility numbers now become completed and refused eligibles, and ineligibles. The eligibility rate computed among these numbers is 76.3%, as expected. The response rate is then computed as 1/(1+2), with the '2' numbers augmented with the imputed unknown eligibility numbers. The resultant response rate is 71.3%.

It is clear that using 76.3% as the eligibility rate for the unknown eligibility numbers is simply a reasonable estimate (a "best guess"), though the true rate may be more or less. One can assign lower and upper bounds to the response rate by making the extreme assumptions that all of the unknown eligibility numbers are eligible (and thereby non-respondents) and that all of the unknown eligibility numbers are ineligible, respectively. These response rates are given in Table B-21, along with the best-practices response rate.

Table B-21. Response rate ranges, based on imputation rate assumptions

Upper bound response rate	92.5%
Best practices response rate	71.3%
Lower bound response rate	66.6%

At the end of this appendix, Tables B-29 and B-30 show the unweighted counts by response status across strata and state.

ADJUSTMENT FOR UNKNOWN ELIGIBILITY CASES

The overall (weighted) eligibility rate among sponsors with known eligibility was 75.9%. The first step in generating nonresponse adjustments is to allocate unknown eligibility cases to non-respondents and ineligibles. In the generation of cells, the Statistical Package for the Social Sciences (SPSS) Chi-squared Automatic Interaction Detector (CHAID) for Windows software package was utilized. CHAID is a classification algorithm that divides a population into homogeneous subgroups with respect to a target characteristic (dependent variable). The target characteristic must be a categorical variable with either nominal or ordinal categories. The analysis in CHAID begins by dividing the population into two or more groups based on the categories of the best predictor. Each of these groups is then divided into smaller subgroups based on the best available predictor at each level (predictors included stratum, census division, broad SIC category, program size, and sponsor type—see eligibility cell columns in Tables B-22 and B-23). The splitting process continues until either there is no significant predictor remaining or the minimum cell size requirement is met.

The first set of cells was generated based on differential unknown eligibility rates. Most of these cases are imputed as non-respondents, so that differential unknown eligibility rates will translate into differential response rates. The CHAID analysis was done separately within each of the four sampling strata. Table B-22 presents the results of the analysis. The first two strata were partitioned into two subcategories. Strata 3 and 4 were not partitioned (no significant predictors were found).

The adjustment for unknown eligibility is done separately within each cell, with the unknown eligibility aggregate base weight 'dispersed' over the eligible and ineligible units within the cell. The weights for the known eligibility units are all proportionately increased. In effect we are 'imputing' some of the unknown eligibility units as eligible and ineligible according to the weighted percentages of eligible and ineligible within the cell. The eligible and ineligible units are 'representing' the unknown eligibility units within the cell: if the unknown eligibility rate is high then the adjustment factor will be high. Writing each cell as c=1,…,C (where C=6 in this case) the set of unknown-eligibility units in the cell as $S_{UK}(c)$, the set of eligible units as $S_E(c)$ and the set of ineligible units as $S_I(c)$, (so that $S_{UK}(c)$, $S_E(c)$, and $S_I(c)$ are mutually exclusive and exhaustive of the cell) the adjustments for each cell are:

$$ELIG\_UNK(c) = \frac{\sum_{s \in S_E(c)} w_s + \sum_{s \in S_I(c)} w_s + \sum_{s \in S_{UK}(c)} w_s}{\sum_{s \in S_E(c)} w_s + \sum_{s \in S_I(c)} w_s}$$

The weights for each unit s after this step are as follows:

$$u_s = \begin{cases} w_s * ELIG\_UNK(c) & s \in S_E(c) \\ w_s * ELIG\_UNK(c) & s \in S_I(c) \\ 0 & s \in S_{UK}(c) \end{cases}$$

Table B-22. Cells with differential eligibility unknown rates.

Stratum	Eligibility cell	Response status	Sum of base weights	Percent of base weights	Eligibility rate
1-High-growth NC	Other than SIC 40-49	Eligible	1373	49.1%	65.5%
1-High-growth NC	Other than SIC 40-49	Ineligible	724	25.9%	
1-High-growth NC	Other than SIC 40-49	Unknown Elg	698	25.0%	
1-High-growth NC	Other than SIC 40-49	Total	2795	100.0%	
1-High-growth NC	SIC codes 40-49	Eligible	590	80.4%	90.9%
1-High-growth NC	SIC codes 40-49	Ineligible	59	8.0%	
1-High-growth NC	SIC codes 40-49	Unknown Elg	85	11.6%	
1-High-growth NC	SIC codes 40-49	Total	733	100.0%	
2-Construction	Other than PT Joint	Eligible	4365	60.7%	82.3%
2-Construction	Other than PT Joint	Ineligible	941	13.1%	
2-Construction	Other than PT Joint	Unknown Elg	1882	26.2%	
2-Construction	Other than PT Joint	Total	7187	100.0%	
2-Construction	Program type Joint	Eligible	1269	87.6%	95.5%
2-Construction	Program type Joint	Ineligible	60	4.1%	
2-Construction	Program type Joint	Unknown Elg	119	8.2%	
2-Construction	Program type Joint	Total	1449	100.0%	
3-NonConstr other	All	Eligible	4238	53.0%	69.1%
3-NonConstr other	All	Ineligible	1899	23.8%	
3-NonConstr other	All	Unknown Elg	1856	23.2%	
3-NonConstr other	All	Total	7993	100.0%	
4-NonConstr unk growth	All	Eligible	387	64.2%	78.2%
4-NonConstr unk growth	All	Ineligible	108	17.9%	
4-NonConstr unk growth	All	Unknown Elg	108	17.9%	
4-NonConstr unk growth	All	Total	603	100.0%	
All	All	Eligible	12221	58.9%	76.3%
All	All	Ineligible	3791	18.3%	
All	All	Unknown Elg	4748	22.9%	
All	All	Grand total	20760	100.0%	

ADJUSTMENT FOR NON-RESPONDENTS

The next step is adjustment for the non-respondents. The respondents are reweighted within nonresponse cells to represent both the respondents and the non-respondents in the cell. Ineligible units have their weights left alone. CHAID was done separately within each of the four sampling strata to choose a set of cells which were as heterogeneous as possible in these adjustment factors. Table B-23 presents the results of the analysis: nine cells across the four strata.

The final adjustment for nonresponse is done separately within each cell, with the non-respondents' aggregate weights 'dispersed' over the respondents within the cell. The weights for the respondent units are all proportionately increased. The responding units are 'representing' the nonresponding units within the cell: if the nonresponse rate is high then the adjustment factor

will be high. Writing each cell as d=1,…,D (where D=9 in this case), the set of responding units in the cell as $S_R(d)$, the set of nonresponding units as $S_{NR}(d)$ and the set of ineligible units as $S_I(d)$, (so that $S_{UK}(d)$, $S_E(d)$, and $S_I(d)$ are mutually exclusive and exhaustive of the cell) the adjustments for each cell are:

$$NRADJ(d) = \frac{\sum_{s \in S_R(d)} u_s + \sum_{s \in S_{NR}(d)} u_s}{\sum_{s \in S_R(d)} u_s}$$

The final weights for each unit s after this step are as follows:

$$W_s = \begin{cases} u_s * NRADJ(d) & s \in S_R(d) \\ u_s & s \in S_I(d) \\ 0 & s \in S_{NR}(d) \end{cases}$$

Table B-23 presents the selected cells and the 'cooperation rates' within the cells. The terminology 'cooperation rate' is used here as these adjustments only reflect respondents vs. known-eligibility non-respondents (not the imputed portion of the unknown-eligibility non-respondents).

Table B-23. Cells with differential cooperation rates.

Stratum	Eligibility cell	Response status	Sum of base weights	Percent of base weights	Cooperation rate
1-High-growth NC	SIC 40-49 small size	Ineligible	110	14.7%	94.0%
1-High-growth NC	SIC 40-49 small size	Nonrespondent	38	5.1%	
1-High-growth NC	SIC 40-49 small size	Respondent	598	80.1%	
1-High-growth NC	SIC 40-49 small size	Total	746	100.0%	
1-High-growth NC	SIC 40-49 large size	Ineligible	0	0.0%	100.0%
1-High-growth NC	SIC 40-49 large size	Nonrespondent	0	0.0%	
1-High-growth NC	SIC 40-49 large size	Respondent	294	100.0%	
1-High-growth NC	SIC 40-49 large size	Total	294	100.0%	
1-High-growth NC	Other than SIC 40-49	Ineligible	922	37.0%	87.2%
1-High-growth NC	Other than SIC 40-49	Nonrespondent	200	8.0%	
1-High-growth NC	Other than SIC 40-49	Respondent	1367	54.9%	
1-High-growth NC	Other than SIC 40-49	Total	2489	100.0%	
2-Construction	Other than NY, NJ, PA	Ineligible	1016	15.1%	93.6%
2-Construction	Other than NY, NJ, PA	Nonrespondent	364	5.4%	
2-Construction	Other than NY, NJ, PA	Respondent	5339	79.5%	
2-Construction	Other than NY, NJ, PA	Total	6719	100.0%	
2-Construction	NY, NJ, PA	Ineligible	324	16.9%	98.7%
2-Construction	NY, NJ, PA	Nonrespondent	20	1.1%	
2-Construction	NY, NJ, PA	Respondent	1573	82.1%	
2-Construction	NY, NJ, PA	Total	1917	100.0%	
3-NonConstr other	Manuf, service no appr	Ineligible	1124	56.3%	82.8%
3-NonConstr other	Manuf, service no appr	Nonrespondent	150	7.5%	
3-NonConstr other	Manuf, service no appr	Respondent	722	36.2%	
3-NonConstr other	Manuf, service no appr	Total	1996	100.0%	
3-NonConstr other	Manuf, service <=1 appr	Ineligible	1049	23.0%	94.1%
3-NonConstr other	Manuf, service <=1 appr	Nonrespondent	206	4.5%	
3-NonConstr other	Manuf, service <=1 appr	Respondent	3317	72.5%	
3-NonConstr other	Manuf, service <=1 appr	Total	4572	100.0%	
3-NonConstr other	Not manuf, service	Ineligible	300	21.0%	81.7%
3-NonConstr other	Not manuf, service	Nonrespondent	206	14.5%	
3-NonConstr other	Not manuf, service	Respondent	919	64.5%	
3-NonConstr other	Not manuf, service	Total	1425	100.0%	
4-NonConstr unk growth	All	Ineligible	132	21.8%	95.3%
4-NonConstr unk growth	All	Nonrespondent	22	3.6%	
4-NonConstr unk growth	All	Respondent	450	74.5%	
4-NonConstr unk growth	All	Total	603	100.0%	
All	All	Ineligible	4977	24.0%	92.4%
All	All	Nonrespondent	1206	5.8%	
All	All	Respondent	14577	70.2%	
All	All	Total	20760	100.0%	

TABLES OF FINAL WEIGHT TABULATIONS

The tables in this section present weighted percentages of sponsors by size, state, program type, and industry. These are aggregated over the responding sponsors, using as weights their final nonresponse-adjusted weights. If the weighting process has successfully adjusted for differential response patterns, then one should see that these final nonresponse-adjusted percentages are close to the corresponding percentages from the original sample. These percentages (as well as the frame percentages) are included in the tables. As can be seen in all tables, the final respondents have percentages close to those of the frame and weighted sample, when the nonresponse-adjusted final weights are used. There is no evidence of potential for bias if the final weights are utilized.

Table B-24. Frame, sample, and final sample percentages by stratum.

Sampling stratum	Frame percent	Weighted sample percent	Final respondents weighted sample percent
Stratum 1	17.23	17.23	17.00
Stratum 2	42.09	42.09	41.60
Stratum 3	37.85	37.85	38.50
Stratum 4	2.83	2.83	2.90
Total	100.00	100.00	100.00

Table B-25. Frame, sample, and final sample percentages by size.

Subgroup	Frame percent	Weighted sample percent	Final respondents weighted sample percentage
Sponsors with no apprentices	20.44	20.44	20.37
Sponsors with 1 to 4 apprentices	57.54	57.53	56.51
Sponsors with 5 or more apprentices	22.02	22.03	23.12

Table B-26. Frame, sample, and final sample percentages by program type.

Joint Program/ Nonjoint Program	Multiple program/ Single program	Frame percent	Weighted sample percent	Final respondents weighted sample percentage
Missing	Missing	7.73	7.77	7.91
J	Missing	2.84	3.18	3.30
J	M	5.41	5.17	5.69
J	S	7.14	6.71	6.89
N	Missing	7.37	7.18	6.30
N	M	2.64	2.80	2.58
N	S	66.86	67.20	67.34
Total	Total	99.99	100.01	100.01

Table B-27. Frame, sample, and final sample percentages by SIC industry area.

Industry area	Frame percent	Weighted sample percent	Final sample percent
Agriculture 01-09	0.19	0.06	0.22
Mining 10-14	0.18	0.25	0.24
Construction 15-17	35.81	35.81	33.97
Manufacturing 20-39	18.24	18.18	20.36
Transportation and Communication 40-49	4.28	4.26	3.63
Wholesale Trade 50-51	0.53	0.61	0.83
Retail Trade 52-59	3.7	3.7	3.76
Financial Services 60-67	0.44	0.45	0.46
Services 70-89	16.69	16.7	17.31
Government 90-99	2.37	2.28	2.74
Missing SIC2	17.57	17.66	16.48
Total	100.00	100.00	100.00

Table B-28. Frame, sample, and final sample percentages by state.

State	Frame percent	Weighted sample percent	Final weights sample percent
AK	0.94	0.90	0.75
AL	0.45	0.40	0.31
AR	4.31	4.64	3.16
AZ	0.57	0.63	0.62
CA	2.27	2.37	2.12
CO	1.41	1.41	1.69
CT	6.53	6.39	6.63
FL	1.28	1.41	1.56
FM	0.01	0.00	0.00
GA	0.82	0.64	0.48
GU	0.18	0.12	0.00
HI	0.07	0.03	0.05
IA	1.92	1.69	1.47
ID	1.24	1.30	1.50
IL	2.48	2.12	2.46
IN	3.72	3.34	3.46
KS	1.28	1.26	1.13
KY	1.35	1.41	1.43
MI	6.18	6.60	7.65
MO	2.59	2.74	2.98
MS	0.44	0.39	0.46
NC	1.24	1.31	1.23
ND	0.33	0.29	0.37
NH	2.97	2.96	2.49
NJ	6.76	6.82	6.96
NV	1.01	1.04	0.83
NY	3.01	2.76	2.83
OH	4.98	5.22	5.49
OK	0.40	0.33	0.41
PA	5.93	5.84	6.28
SC	0.30	0.54	0.56
SD	1.15	1.19	1.37
TN	1.35	1.28	1.02
TX	1.97	2.01	2.26
UT	2.25	2.37	2.42
VA	15.17	15.22	15.01
VT	0.01	0.00	0.00
WI	8.24	8.21	7.74
WV	2.42	2.27	2.49
WY	0.49	0.53	0.36
Total	100.02	99.98	100.00

Table B-29. Unweighted counts by response status and strata

	Strata				
Response Status	1-High-Growth, Non-Construction	2-Construction	3 – Other	4- NonConstr unk growth	All
Respondent	277	363	266	41	947
	49.20%	60.40%	47.42%	61.19%	52.85%
Non-respondent	28	20	30	2	80
	4.97%	3.33%	5.35%	2.99%	4.46%
Ineligible	138	84	136	12	370
	24.51%	13.98%	24.24%	17.91%	20.65%
Eligibility Unknown	120	134	129	12	395
	21.31%	22.30%	22.99%	17.91%	22.04%
All	563	601	561	67	1792
	100.00%	100.00%	100.00%	100.00%	100.00%

Table B-30. Unweighted counts by response status and state.

State	Response Status				
	Respondent	Non-respondent	Ineligible	Eligibility Unknown	Total
AK	6	1	3	4	14
	42.86%	7.14%	21.43%	28.57%	100.00%
AL	2	2	2	2	8
	25.00%	25.00%	25.00%	25.00%	100.00%
AR	17	4	42	8	71
	23.94%	5.63%	59.15%	11.27%	100.00%
AZ	9	0	2	2	13
	69.23%	0.00%	15.38%	15.38%	100.00%
CA	25	0	15	10	50
	50.00%	0.00%	30.00%	20.00%	100.00%
CO	17	0	7	5	29
	58.62%	0.00%	24.14%	17.24%	100.00%
CT	66	5	2	23	96
	68.75%	5.21%	2.08%	23.96%	100.00%
FL	17	1	3	6	27
	62.96%	3.70%	11.11%	22.22%	100.00%
GA	3	0	3	5	11
	27.27%	0.00%	27.27%	45.45%	100.00%
GU	0	0	0	4	4
	0.00%	0.00%	0.00%	100.00%	100.00%
HI	1	0	0	0	1
	100.00%	0.00%	0.00%	0.00%	100.00%

State	Response Status				
	Respondent	Non-respondent	Ineligible	Eligibility Unknown	Total
IA	17	1	10	8	36
	47.22%	2.78%	27.78%	22.22%	100.00%
ID	14	1	3	3	21
	66.67%	4.76%	14.29%	14.29%	100.00%
IL	20	0	15	7	42
	47.62%	0.00%	35.71%	16.67%	100.00%
IN	37	3	10	10	60
	61.67%	5.00%	16.67%	16.67%	100.00%
KS	15	0	4	10	29
	51.72%	0.00%	13.79%	34.48%	100.00%
KY	11	2	6	5	24
	45.83%	8.33%	25.00%	20.83%	100.00%
MI	62	9	36	18	125
	49.60%	7.20%	28.80%	14.40%	100.00%
MO	41	1	11	10	63
	65.08%	1.59%	17.46%	15.87%	100.00%
MS	4	1	2	1	8
	50.00%	12.50%	25.00%	12.50%	100.00%
NC	15	1	3	8	27
	55.56%	3.70%	11.11%	29.63%	100.00%
ND	6	0	1	0	7
	85.71%	0.00%	14.29%	0.00%	100.00%
NH	22	2	4	16	44
	50.00%	4.55%	9.09%	36.36%	100.00%
NJ	60	2	20	30	112
	53.57%	1.79%	17.86%	26.79%	100.00%
NV	6	1	4	6	17
	35.29%	5.88%	23.53%	35.29%	100.00%
NY	34	3	3	8	48
	70.83%	6.25%	6.25%	16.67%	100.00%
OH	46	3	21	22	92
	50.00%	3.26%	22.83%	23.91%	100.00%
OK	6	0	0	1	7
	85.71%	0.00%	0.00%	14.29%	100.00%
PA	52	1	32	23	108
	48.15%	0.93%	29.63%	21.30%	100.00%
SC	6	0	0	3	9
	66.67%	0.00%	0.00%	33.33%	100.00%
SD	13	1	7	4	25
	52.00%	4.00%	28.00%	16.00%	100.00%

State	Response Status				
	Respondent	Non-respondent	Ineligible	Eligibility Unknown	Total
	9	1	4	8	22
TN	40.91%	4.55%	18.18%	36.36%	100.00%
	22	1	9	6	38
TX	57.89%	2.63%	23.68%	15.79%	100.00%
	16	2	15	9	42
UT	38.10%	4.76%	35.71%	21.43%	100.00%
	143	16	34	63	256
VA	55.86%	6.25%	13.28%	24.61%	100.00%
	84	13	23	36	156
WI	53.85%	8.33%	14.74%	23.08%	100.00%
	18	0	13	8	39
WV	46.15%	0.00%	33.33%	20.51%	100.00%
	5	2	1	3	11
WY	45.45%	18.18%	9.09%	27.27%	100.00%
	947	80	370	395	1792
Total	52.85%	4.46%	20.65%	22.04%	100.00%

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American Association for Public Opinion Research. 2004. *Standard Definitions: Final Dispositions of Case Codes and Outcomes Rates for Surveys, 3rd edition.* Lenexa, KS: AAPOR.

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APPENDIX C

SURVEY RESPONSES WITH WEIGHTED SAMPLE SIZES AND STANDARD ERRORS

SURVEY RESPONSES WITH WEIGHTED SAMPLE SIZES AND STANDARD ERRORS

Q1: Industry that best describes sponsor's company or organization

Industry	Percentage of Sponsors	Weighted N	Standard Error
Aerospace	0.529	82	0.2110
Automotive Repair	1.15	182	0.2904
Automotive Manufacturing	3.80	599	0.6312
Construction	35.50	5,597	1.6731
Energy – Gas / Electric / Water Services	10.56	1,666	0.9803
Health Services	1.44	227	0.3133
Hospitality (Hotel, Restaurants, and Lodging)	1.35	212	0.3127
Information Technology – Manufacturing	0.65	102	0.2757
Information Technology – Communication Services	0.52	82	0.2299
Retail Trade	10.37	1,635	1.0757
Transportation	0.57	90	0.2493
Combine - Biotechnology; Energy - Mining/Extraction, Finance, Insurance, and Real Estate; or Homeland Security	1.10	174	0.3264
Other	32.46	5,118	1.6145
Total	**100.00**	**15,767**	**.**

Q2: Sponsor's program serves:

Program serves:	Percentage of Sponsors	Weighted N	Standard Error
One employer only	60.22	9,495	1.6818
Multiple Employers	39.46	6,221	1.6794
Don't Know	0.18	28	0.1357
Missing	0.15	23	0.1455
Total	**100.00**	**15,767**	**.**

Q2a: Organized labor involved in sponsor's program

Organized labor involved in sponsor's program	Percentage of Sponsors	Weighted N	Standard Error
Yes	26.04	4,105	1.4595
No	72.83	11,483	1.4824
Don't Know	0.88	138	0.3089
Missing	0.26	40	0.1810
Total	**100.00**	**15,767**	**.**

Q4: Number of years organization has been sponsoring registered apprenticeship programs

Number of years	Percentage of Sponsors	Weighted N	Standard Error
Less than 1 year	3.18	502	0.5864
1 to 5 years	30.61	4,826	1.5962
6 to 10 years	17.15	2,704	1.2967
More than 10 years	47.81	7,538	1.7149
Don't Know	1.25	198	0.3686
Total	**100.00**	**15,767**	**.**

Q5: Number of apprentices your program currently sponsors

Number of apprentices program currently sponsors	Percentage of Sponsors	Weighted N	Standard Error
0	17.00	2,614	1.3164
1 -4	52.65	8,093	1.7336
5 - 9	8.46	1,301	0.9662
10 - 19	6.20	952	0.8053
20 - 39	4.75	731	0.7065
40 - 59	2.11	324	0.4700
60 - 99	2.25	346	0.4732
100- 199	3.02	465	0.5827
200 - 499	2.17	333	0.4964
500 or more	1.38	212	0.3999
Total	**100.00**	**15,371**	**.**

Q6: Last time sponsor's program had an apprentice

Last time sponsor's program had an apprentice	Percentage of Sponsors	Weighted N	Standard Error
2003 or earlier	11.31	294	2.7293
2004	13.67	355	2.9432
2005	22.35	581	3.5797
2006	40.67	1,056	4.2072
2007	12.00	312	2.7613
Total	**100.00**	**2,598**	**.**

Q6a: Number of apprentices last time sponsor's program had an apprentice

Number of apprentices last time sponsor's program had an apprentice	Percentage of Sponsors	Weighted N	Standard Error
Less than 5	93.88	2,407	1.9931
5 or more	6.12	157	1.9931
Total	**100.00**	**2,564**	**.**

Q7: Sponsor plans to continue apprenticeship program next year

Sponsor plans to continue apprenticeship program next year	Percentage of Sponsors	Weighted N	Standard Error
Yes	88.35	13,930	1.0970
No	7.39	1,166	0.8886
Don't Know	4.08	644	0.6854
Refused	0.00	0	.
Missing	0.18	28	0.1381
Total	**100.00**	**15,767**	**.**

Q7a: If sponsor plans to continue apprenticeship program next year, how many registered apprentices do they expect

Number of apprentices expected if sponsor anticipates continuing program next year	Percentage of Sponsors	Weighted N	Standard Error
1 -4	63.40	8,698	1.7627
5 - 9	8.36	1,146	1.0311
10 - 19	7.61	1,044	0.9601
20 - 39	5.27	723	0.7925
40 - 59	2.54	348	0.5585
60 - 99	5.98	821	0.8513
100- 199	2.72	373	0.5881
200 - 499	2.54	348	0.5649
500 or more	1.60	219	0.4593
Total	**100.00**	**13,719**	**.**

Q8: Sponsor has plans to expand the number of apprentices in program

Sponsor has plans to expand the number of apprentices in program	Percentage of Sponsors	Weighted N	Standard Error
Yes	46.83	7,384	1.7150
No	45.13	7,116	1.7087
Don't Know	7.84	1,236	0.9151
Refused	0.00	0	.
Missing	0.19	30	0.1445
Total	**100.00**	**15,767**	**.**

Q9a: Views on apprenticeship: Helps meet sponsors demand for skilled workers

Helps meet demand for skilled workers	Percentage of Sponsors	Weighted N	Standard Error
Very important	82.59	13,022	1.3162
Somewhat important	13.63	2,149	1.1936
Not important	3.10	489	0.5957
Don't Know	0.40	63	0.2175
Refused to answer	0.15	23	0.1455
Missing	0.13	20	0.1300
Total	**100.00**	**15,767**	**.**

Q9b: Views on apprenticeship: Helps with employee recruitment and retention

Helps with employee recruitment and retention	Percentage of Sponsors	Weighted N	Standard Error
Very important	54.78	8,636	1.7137
Somewhat important	33.82	5,332	1.6323
Not important	9.81	1,547	1.0426
Don't Know	1.32	207	0.4060
Refused to answer	0.15	23	0.1455
Missing	0.13	20	0.1300
Total	**100.00**	**15,767**	**.**

Q9c: Views on apprenticeship: Reliably shows which workers have the skills to do the job

Reliably shows which workers have the skills to do the job	Percentage of Sponsors	Weighted N	Standard Error
Very important	70.36	11,094	1.5752
Somewhat important	23.25	3,666	1.4522
Not important	5.14	810	0.7768
Don't Know	0.70	110	0.2933
Refused to answer	0.15	23	0.1455
Missing	0.40	63	0.2289
Total	**100.00**	**15,767**	**.**

Q9d: Views on apprenticeship: Adds to productivity or high quality services

Adds to productivity or high quality services	Percentage of Sponsors	Weighted N	Standard Error
Very important	69.87	11,016	1.5840
Somewhat important	24.21	3,849	1.4779
Not important	4.90	772	0.7611
Don't Know	0.55	87	0.2743
Refused to answer	0.15	23	0.1455
Missing	0.13	20	0.1300
Total	**100.00**	**15,767**	**.**

Q9e: Views on apprenticeship: Saves money on workers' pay

Saves money on workers' pay	Percentage of Sponsors	Weighted N	Standard Error
Very important	30.97	4,882	1.5931
Somewhat important	33.40	5,266	1.6167
Not important	32.43	5,113	0.6064
Don't Know	2.83	446	0.5789
Refused to answer	0.00	0	.
Missing	0.38	60	0.2051
Total	**100.00**	**15,767**	**.**

Q9f: Views on apprenticeship: Good for worker morale/pride

Good for worker morale/pride	Percentage of Sponsors	Weighted N	Standard Error
Very important	68.59	10,814	1.5941
Somewhat important	24.51	3,864	1.4706
Not important	5.74	905	0.8156
Don't Know	0.75	119	0.2974
Refused to answer	0.15	23	0.1455
Missing	0.26	41	0.1836
Total	**100.00**	**15,767**	**.**

Q9g: Views on apprenticeship: Leads to fewer safety problems

Leads to fewer safety problems	Percentage of Sponsors	Weighted N	Standard Error
Very important	66.53	10,489	1.6273
Somewhat important	23.82	3,756	1.4641
Not important	8.46	1,333	0.9747
Don't Know	0.78	123	0.3100
Refused to answer	0.15	23	0.1455
Missing	0.27	42	0.1887
Total	**100.00**	**15,767**	**.**

Q9h: Views on apprenticeship: Helps sponsors meet government requirements

Helps meet government requirements	Percentage of Sponsors	Weighted N	Standard Error
Very important	52.19	8,229	1.7158
Somewhat important	25.09	3,955	1.4875
Not important	19.36	3,052	1.3567
Don't Know	2,24	353	0.4938
Refused to answer	0.26	40	0.1824
Missing	0.87	137	0.3346
Total	**100.00**	**15,767**	**.**

Q9i: Views on apprenticeship: Helps sponsors meet licensing requirements

Helps meet licensing requirements	Percentage of Sponsors	Weighted N	Standard Error
Very important	53.22	8,391	1.7114
Somewhat important	20.92	3,298	1.3958
Not important	21.79	3,436	1.3961
Don't Know	3.07	484	0.5715
Refused to answer	0.15	23	0.1455
Missing	0.86	136	0.3160
Total	**100.00**	**15,767**	**.**

Q9j: Views on apprenticeship: Some other benefit

Some other benefit	Percentage of Sponsors	Weighted N	Standard Error
Very important	73.21	149	14.5095
Somewhat important	4.90	10	5.1338
Not important	10.62	22	10.4685
Refused to answer	11.27	23	11.0307
Total	**100.00**	**204**	**.**

Q10: Sponsor would recommend to others that they use registered apprenticeship to train their workers in skilled occupations

Recommend to others that they use registered apprenticeship to train workers	Percentage of Sponsors	Weighted N	Standard Error
Yes, strongly	83.69	13,195	1.2816
Yes, with reservations	10.51	1,656	1.0553
No	2.90	458	0.5933
Don't Know	2.11	333	0.5030
Refused to answer	0.25	39	0.1758
Missing	0.54	86	0.2715
Total	**100.00**	**15,767**	**.**

Q11a: Costs or possible drawbacks in regard to registered apprenticeship: Cost of related instruction

Cost of related instruction	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	62.83	9,906	1.6653
Minor problem	30.18	4,759	1.5794
Significant problem	6.18	975	0.8485
Don't Know	0.37	59	0.2020
Refused to answer	0.14	22	0.1370
Missing	0.29	46	0.2041
Total	**100.00**	**15,767**	**.**

Q11b: Costs or possible drawbacks in regard to registered apprenticeship: Cost of experienced workers' time

Cost of experienced workers' time	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	56.36	8,885	1.7052
Minor problem	34.47	5,434	1.6331
Significant problem	7.63	1,202	0.9247
Don't Know	1.26	199	0.3841
Refused to answer	0.00	0	.
Missing	0.29	46	0.2041
Total	**100.00**	**15,767**	**.**

Q11c: Costs or possible drawbacks in regard to registered apprenticeship: Takes too long to produce skilled workers

Takes too long to produce skilled workers	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	56.66	8,933	1.7056
Minor problem	30.73	4,845	1.5884
Significant problem	11.26	1,776	1.1010
Don't Know	0.68	107	0.2853
Refused to answer	0.25	39	0.1758
Missing	0.43	67	0.2456
Total	**100.00**	**15,767**	**.**

Q11d: Costs or possible drawbacks in regard to registered apprenticeship: Too much effort to manage a program

Too much effort to manage a program	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	66.29	10,452	1.6287
Minor problem	26.48	4,176	1.5188
Significant problem	6.08	958	0.8260
Don't Know	0.59	93	0.2755
Refused to answer	0.00	0	.
Missing	0.56	88	0.2776
Total	**100.00**	**15,767**	**.**

Q11e: Costs or possible drawbacks in regard to registered apprenticeship: Too many apprentices drop out before completion

Too many apprentices drop out before completion	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	43.51	6,859	1.6950
Minor problem	29.75	4,691	1.5760
Significant problem	23.48	3,701	1.4811
Don't Know	2.44	384	0.5401
Refused to answer	0.00	0	.
Missing	0.83	131	0.3377
Total	**100.00**	**15,767**	**.**

Q11f: Costs or possible drawbacks in regard to registered apprenticeship: Competitors poach apprentices when they become fully skilled

Competitors poach apprentices when they become fully skilled	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	45.17	7,121	1.7063
Minor problem	28.38	4,474	1.5533
Significant problem	24.26	3,825	1.4840
Don't Know	1.36	214	0.3959
Refused to answer	0.14	22	0.1370
Missing	0.70	111	0.3129
Total	**100.00**	**15,767**	**.**

Q11g: Costs or possible drawbacks in regard to registered apprenticeship: Too much paperwork

Too much paperwork	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	60.50	9,538	1.6824
Minor problem	29.84	4,705	1.5733
Significant problem	8.79	1,385	0.9823
Don't Know	0.32	51	0.1992
Refused to answer	0.00	0	.
Missing	0.56	88	0.2776
Total	**100.00**	**15,767**	**.**

Q11h: Costs or possible drawbacks in regard to registered apprenticeship: Some other cost or drawback

Some other cost or drawback	Percentage of Sponsors	Weighted N	Standard Error
Not a problem	31.93	139	9.6143
Minor problem	17.20	75	8.1983
Significant problem	45.91	200	10.4060
Don't Know	4.96	22	4.9076
Refused to answer	0.00	0	.
Missing	0.00	0	.
Total	**100.00**	**436**	**.**

Q12a: Potential changes to apprenticeship important to sponsor: More help in finding and screening applicants

More help in finding and screening applicants	Percentage of Sponsors	Weighted N	Standard Error
Yes	50.62	7,981	1.7172
No	49.38	7,786	1.7172
Total	**100.00**	**15,767**	**.**

Q12b: Potential changes to apprenticeship important to sponsor: Faster registration of apprentices

Faster registration of apprentices	Percentage of Sponsors	Weighted N	Standard Error
Yes	36.12	5,696	1.6588
No	63.88	10,071	1.6588
Total	**100.00**	**15,767**	**.**

Q12c: Potential changes to apprenticeship important to sponsor: Simpler process for setting up a new program

Simpler process for setting up a new program	Percentage of Sponsors	Weighted N	Standard Error
Yes	37.14	5,856	1.6666
No	62.86	9,910	1.6666
Total	**100.00**	**15,767**	**.**

Q12d: Potential changes to apprenticeship important to sponsor: Better "due process" for delayed or rejected program approvals

Better "due process" for delayed or rejected program approvals	Percentage of Sponsors	Weighted N	Standard Error
Yes	25.78	4,065	1.5156
No	74.22	11,702	1.5156
Total	**100.00**	**15,767**	**.**

Q12e: Potential changes to apprenticeship important to sponsor: Easier multi-state registration

Easier multi-state registration	Percentage of Sponsors	Weighted N	Standard Error
Yes	31.90	5,029	1.6098
No	68.10	10,737	1.6098
Total	**100.00**	**15,767**	**.**

Q12f: Potential changes to apprenticeship important to sponsor: More help in finding related instruction

More help in finding related instruction	Percentage of Sponsors	Weighted N	Standard Error
Yes	40.78	6,430	1.6913
No	59.22	9,337	1.6913
Total	**100.00**	**15,767**	**.**

Q12g: Potential changes to apprenticeship important to sponsor: More information on laws such as the Davis-Bacon Act

More information on laws such as the Davis-Bacon Act	Percentage of Sponsors	Weighted N	Standard Error
Yes	17.95	2,830	1.3721
No	82.05	12,937	1.3721
Total	**100.00**	**15,767**	**.**

Q12h: Potential changes to apprenticeship important to sponsor: Other important change

Other important change	Percentage of Sponsors	Weighted N	Standard Error
Yes	11.38	1,794	1.0744
No	88.62	13,972	1.0744
Total	**100.00**	**15,767**	**.**

Q12i: Potential changes to apprenticeship important to sponsor: Don't Know

Don't Know	Percentage of Sponsors	Weighted N	Standard Error
Yes	4.08	643	0.6603
No	95.92	15,124	0.6603
Total	**100.00**	**15,767**	**.**

Q12j: Potential changes to apprenticeship important to sponsor: Refused

Refused	Percentage of Sponsors	Weighted N	Standard Error
Yes	1.84	291	0.4639
No	98.16	15,476	0.4639
Total	**100.00**	**15,767**	**.**

Q12k: Potential changes to apprenticeship important to sponsor: Missing

Missing	Percentage of Sponsors	Weighted N	Standard Error
Yes	1.95	308	0.4607
No	98.05	15,459	0.4607
Total	**100.00**	**15,767**	**.**

Q13: Sponsor ever used the Registered Apprenticeship website found at http://www.doleta.gov/atels_bat/

Ever used the Registered Apprenticeship website	Percentage of Sponsors	Weighted N	Standard Error
Yes	24.04	3,760	1.4472
No	74.61	11,763	1.4751
Don't Know	1.01	160	0.3324
Refused to answer	0.00	0	.
Missing	0.34	54	0.2080
Total	**100.00**	**15,767**	**.**

Q14: Sponsor has interest in learning about, or how to use, competency-based apprenticeship training

Has interest in competency-based apprenticeship training	Percentage of Sponsors	Weighted N	Standard Error
Yes	55.39	8,733	1.7056
No	41.82	6,594	1.6906
Don't Know	2.31	364	0.5276
Refused to answer	0.14	22	0.1370
Missing	0.34	54	0.2080
Total	**100.00**	**15,767**	**.**

Q15a: Rate apprenticeship registration agency on the following factor: Timeliness in processing applications and responding to inquiries

Timeliness in processing applications and responding to inquiries	Percentage of Sponsors	Weighted N	Standard Error
Poor	6.12	964	0.8173
Fair	11.11	1,752	1.0873
Good	41.41	6,528	1.6930
Excellent	36.23	5,713	1.6469
Don't Know	2.68	422	0.5691
Refused	0.00	0	.
No Answer / Not Applicable	2.46	387	0.5355
Total	**100.00**	**15,767**	**.**

Q15b: Rate apprenticeship registration agency on the following factor: Clear guidance on program registration and requirements

Clear guidance on program registration and requirements	Percentage of Sponsors	Weighted N	Standard Error
Poor	5.90	930	0.7980
Fair	13.05	2,057	1.1693
Good	42.44	6,692	1.7005
Excellent	34.70	5,471	1.6267
Don't Know	1.89	298	0.4833
Refused	0.00	0	.
No Answer / Not Applicable	2.01	317	0.4817
Total	**100.00**	**15,767**	**.**

Q15c: Rate apprenticeship registration agency on the following factor: Use of on-line registration

Use of on-line registration	Percentage of Sponsors	Weighted N	Standard Error
Poor	5.71	901	0.7894
Fair	7.74	1,220	0.9268
Good	19.52	3,077	1.3728
Excellent	11.49	1,812	1.0610
Don't Know	13.84	2,183	1.2142
Refused	0.07	11	0.0730
No Answer / Not Applicable	41.62	6,562	1.6910
Total	**100.00**	**15,767**	**.**

Q15d: Rate apprenticeship registration agency on the following factor: Promoting and publicizing registered apprenticeship

Promoting and publicizing registered apprenticeship	Percentage of Sponsors	Weighted N	Standard Error
Poor	9.38	1,478	1.0166
Fair	18.91	2,981	1.3530
Good	34.47	5,435	1.6288
Excellent	16.88	2,662	1.2713
Don't Know	5.35	843	0.7877
Refused	0.07	11	0.0730
No Answer / Not Applicable	14.94	2,356	1.2265
Total	**100.00**	**15,767**	**.**

Q16a: Sponsor keeps records of: The number of apprentices

The number of apprentices	Percentage of Sponsors	Weighted N	Standard Error
Yes	93.86	14,799	0.8153
No	6.14	968	0.8153
Total	**100.00**	**15,767**	**.**

Q16b: Sponsor keeps records of: How many apprentices complete program

Number of apprentices who complete program	Percentage of Sponsors	Weighted N	Standard Error
Yes	86.00	13,560	1.2072
No	14.00	2,207	1.2072
Total	**100.00**	**15,767**	**.**

Q16c: Sponsor keeps records of: Reasons for non-completion

Reasons for non-completion	Percentage of Sponsors	Weighted N	Standard Error
Yes	65.67	10,353	1.6341
No	34.33	5,413	1.6341
Total	**100.00**	**15,767**	**.**

Q16d: Sponsor keeps records of: How many pass state licensing / certification examination

Number who pass state licensing / certification examination	Percentage of Sponsors	Weighted N	Standard Error
Yes	60.65	9,562	1.6765
No	39.35	6,205	1.6765
Total	**100.00**	**15,767**	**.**

Q16e: Sponsor keeps records of: How many stay with sponsor's organization once they complete their apprenticeship

Number who stay with organization once they complete their apprenticeship	Percentage of Sponsors	Weighted N	Standard Error
Yes	67.80	10,690	1.6049
No	32.20	5,077	1.6049
Total	**100.00**	**15,767**	**.**

Q16f: Sponsor keeps records of: Cost of related instruction

Cost of related instruction	Percentage of Sponsors	Weighted N	Standard Error
Yes	56.48	8,904	1.7006
No	43.42	6,862	1.7006
Total	**100.00**	**15,767**	**.**

Q16g: Sponsor keeps records of: Benefits of apprenticeship

Benefits of apprenticeship	Percentage of Sponsors	Weighted N	Standard Error
Yes	45.87	7,232	1.7107
No	54.13	8,535	1.7107
Total	**100.00**	**15,767**	**.**

Q16h: Sponsor keeps records of: Don't Know

Don't Know	Percentage of Sponsors	Weighted N	Standard Error
Yes	1.86	293	0.4477
No	98.14	15,474	0.4477
Total	**100.00**	**15,767**	**.**

Q16i: Sponsor keeps records of: Refused

Refused	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.41	65	0.2348
No	99.59	15,702	0.2348
Total	**100.00**	**15,767**	**.**

Q16j: Sponsor keeps records of: Missing

Missing	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.82	129	0.3185
No	99.18	15,638	0.3185
Total	**100.00**	**15,767**	**.**

Q17: Percentage of those who start an apprenticeship in sponsor's program and actually complete the program

Percentage who complete the program	Percentage of Sponsors	Weighted N	Standard Error
0 %	1.80	270	0.4688
1 – 9%	5.27	790	0.8239
10 – 19%	2.92	438	0.6149
20 – 29%	3.41	512	0.6503
30 – 39%	2.73	408	0.5997
40 – 49%	1.51	227	0.4450
50 – 59%	11.49	1,722	1.1398
60 – 69%	5.55	830	0.7938
70 – 79%	11.32	1,696	1.1325
80 – 89%	9.91	1,485	1.0554
90 – 100%	44.08	6,605	1.7411
Total	**100.00**	**14,984**	**.**

Q18a: Main reasons why apprentices didn't complete sponsor's program: Transferred to another apprenticeship program

Transferred to another apprenticeship program	Percentage of Sponsors	Weighted N	Standard Error
Yes	10.76	1,696	1.0671
No	89.24	14,070	1.0671
Total	**100.00**	**15,767**	**.**

Q18b: Main reasons why apprentices didn't complete sponsor's program: Gained craft license/took another job before completion

Gained craft license/ took another job before completion	Percentage of Sponsors	Weighted N	Standard Error
Yes	29.53	4,656	1.5734
No	70.47	11,110	1.5734
Total	**100.00**	**15,767**	**.**

Q18c: Main reasons why apprentices didn't complete sponsor's program: Problems with performance (on the job or in the classroom)

Problems with performance	Percentage of Sponsors	Weighted N	Standard Error
Yes	32.53	5,129	1.6054
No	67.47	10,638	1.6054
Total	**100.00**	**15,767**	**.**

Q18d: Main reasons why apprentices didn't complete sponsor's program: Personal issues (illness, family needs, drugs, alcohol)

Personal issues	Percentage of Sponsors	Weighted N	Standard Error
Yes	36.48	5,751	1.6587
No	63.52	10,015	1.6587
Total	**100.00**	**15,767**	**.**

Q18e: Main reasons why apprentices didn't complete sponsor's program: Other reason

Other reason	Percentage of Sponsors	Weighted N	Standard Error
Yes	28.67	4,521	1.5501
No	71.33	11,246	1.5501
Total	**100.00**	**15,767**	**.**

Q18f: Main reasons why apprentices didn't complete sponsor's program: Don't Know

Don't Know	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.00	0	0.0000
No	100.00	15,767	0.0000
Total	**100.00**	**15,767**	**.**

Q18g: Main reasons why apprentices didn't complete sponsor's program: Refused

Refused	Percentage of Sponsors	Weighted N	Standard Error
Yes	5.34	843	0.7897
No	94.66	14,924	0.7897
Total	**100.00**	**15,767**	**.**

Q18h: Main reasons why apprentices didn't complete sponsor's program: Missing

Missing	Percentage of Sponsors	Weighted N	Standard Error
Yes	2.64	417	0.5409
No	97.36	15,350	0.5409
Total	**100.00**	**15,767**	**.**

Q19: Sponsor ever used a One-Stop Center to post apprenticeship openings

Ever used a One-Stop Center to post apprenticeship openings	Percentage of Sponsors	Weighted N	Standard Error
Yes	16.82	2,651	1.2769
No	81.63	12,870	1.3161
Don't Know	1.34	212	0.3610
Refused to answer	0.11	17	0.1103
Missing	0.10	16	0.1046
Total	**100.00**	**15,767**	**.**

Q20: One-Stop Center or Job Service has sent applicants to the sponsor's apprenticeship program

One-Stop Center or Job Service sent applicants to the apprenticeship program	Percentage of Sponsors	Weighted N	Standard Error
Yes	16.10	2,538	1.2523
No	73.00	11,509	1.5127
Don't Know	10.14	1,598	1.0234
Refused to answer	0.00	0	.
Missing	0.76	120	0.7643
Total	**100.00**	**15,767**	**.**

Q21: One-Step Center or Job Service has contacted the sponsor about posting apprenticeship programs

One-Stop Center or Job Service contacted about posting apprenticeship openings	Percentage of Sponsors	Weighted N	Standard Error
Yes	13.83	2,181	1.1835
No	77.89	12,280	1.4182
Don't Know	7.63	1,204	0.8988
Refused to answer	0.0	0	.
Missing	0.64	102	0.2726
Total	**100.00**	**15,767**	**.**

Q22: Someone in sponsor's organization is a member of the local Workforce Investment Board

Someone in sponsor's organization is a member of the local Workforce Investment Board	Percentage of Sponsors	Weighted N	Standard Error
Yes	7.68	1,211	0.8978
No	82.46	13,001	1.2837
Don't Know	9.56	1,507	0.9887
Refused to answer	0.0	0	.
Missing	0.30	48	0.1835
Total	**100.00**	**15,767**	**.**

Q23a: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Newspaper want-advertisement

Newspaper want-advertisement	Percentage of Sponsors	Weighted N	Standard Error
Yes	34.77	5,482	1.6324
No	65.23	10,285	1.6324
Total	**100.00**	**15,767**	**.**

Q23b: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Internet listing

Internet listing	Percentage of Sponsors	Weighted N	Standard Error
Yes	18.20	2,870	1.2972
No	81.80	12,896	1.2972
Total	**100.00**	**15,767**	**.**

Q23c: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Referrals from local One-Stop Center / Job Service

Referrals from local One-Step Center / Job Service	Percentage of Sponsors	Weighted N	Standard Error
Yes	13.81	2,177	1.1754
No	86.19	13,590	1.1754
Total	**100.00**	**15,767**	**.**

Q23d: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Community-based organization

Community-based organization	Percentage of Sponsors	Weighted N	Standard Error
Yes	19.77	3,118	1.3606
No	80.23	12,649	1.3606
Total	**100.00**	**15,767**	**.**

Q23e: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: High schools

High schools	Percentage of Sponsors	Weighted N	Standard Error
Yes	34.07	5,371	1.6292
No	65.93	10,395	1.6292
Total	**100.00**	**15,767**	**.**

Q23f: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Community college or public technical school

Community college or public technical school	Percentage of Sponsors	Weighted N	Standard Error
Yes	40.50	6,385	1.6829
No	59.50	9,381	1.6829
Total	**100.00**	**15,767**	**.**

Q23g: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Private vocational school

Private vocational school	Percentage of Sponsors	Weighted N	Standard Error
Yes	22.16	3,494	1.4304
No	77.84	12,273	1.4304
Total	**100.00**	**15,767**	**.**

Q23h: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Pre-apprenticeship program

Pre-apprenticeship program	Percentage of Sponsors	Weighted N	Standard Error
Yes	17.60	2,774	1.3067
No	82.40	12,992	1.3067
Total	**100.00**	**15,767**	**.**

Q23i: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Current employees

Current Employees	Percentage of Sponsors	Weighted N	Standard Error
Yes	65.77	10,370	1.6278
No	34.23	5,397	1.6278
Total	**100.00**	**15,767**	**.**

Q23j: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Union

Union	Percentage of Sponsors	Weighted N	Standard Error
Yes	13.47	2,123	1.1251
No	86.53	13,643	1.1251
Total	**100.00**	**15,767**	**.**

Q23k: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Other source

Other source	Percentage of Sponsors	Weighted N	Standard Error
Yes	12.28	1,936	1.1354
No	87.72	13,831	1.1354
Total	**100.00**	**15,767**	**.**

Q23l: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Don't Know

Don't Know	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.00	0	0.0000
No	100.00	15,767	0.0000
Total	**100.00**	**15,767**	**.**

Q23m: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Refused

Refused	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.54	85	0.2522
No	99.46	15,682	0.2522
Total	**100.00**	**15,767**	**.**

Q23n: Potential sources for obtaining applicants for registered apprenticeship which sponsor has found effective in getting good applicants for their apprenticeship program: Missing

Missing	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.90	142	0.3158
No	99.10	15,625	0.3158
Total	**100.00**	**15,767**	**.**

Q24a: Organization which supplies the related instruction for your program: Community College

Community College	Percentage of Sponsors	Weighted N	Standard Error
Yes	30.99	4,887	1.5873
No	69.01	10,880	1.5873
Total	**100.00**	**15,767**	**.**

Q24b: Organization which supplies the related instruction for your program: Distance learning provider

Distance learning provider	Percentage of Sponsors	Weighted N	Standard Error
Yes	5.78	911	0.7879
No	94.22	14,856	0.7879
Total	**100.00**	**15,767**	**.**

Q24c: Organization which supplies the related instruction for your program: Public technical college

Public technical college	Percentage of Sponsors	Weighted N	Standard Error
Yes	26.97	4,252	1.5243
No	73.03	11,514	1.5243
Total	**100.00**	**15,767**	**.**

Q24d: Organization which supplies the related instruction for your program: High school

High school	Percentage of Sponsors	Weighted N	Standard Error
Yes	10.59	1,669	1.0756
No	89.41	14,098	1.0756
Total	**100.00**	**15,767**	**.**

Q24e: Organization which supplies the related instruction for your program: Proprietary trade school

Proprietary trade school	Percentage of Sponsors	Weighted N	Standard Error
Yes	16.71	2,635	1.3041
No	83.29	13,131	1.3041
Total	**100.00**	**15,767**	**.**

Q24f: Organization which supplies the related instruction for your program: Sponsor-owned or operated training facility

Sponsor-owned or operated training facility	Percentage of Sponsors	Weighted N	Standard Error
Yes	23.55	3,713	1.4312
No	76.45	12,053	1.4312
Total	**100.00**	**15,767**	**.**

Q24g: Organization which supplies the related instruction for your program: Other organization

Other organization	Percentage of Sponsors	Weighted N	Standard Error
Yes	13.92	2,194	1.1782
No	86.08	13,572	1.1782
Total	**100.00**	**15,767**	**.**

Q24h: Organization which supplies the related instruction for your program: Don't Know

Don't Know	Percentage of Sponsors	Weighted N	Standard Error
Yes	1.85	293	0.4648
No	98.15	15,474	0.4648
Total	**100.00**	**15,767**	**.**

Q24i: Organization which supplies the related instruction for your program: Refused

Refused	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.14	22	0.1370
No	99.86	15,745	0.1370
Total	**100.00**	**15,767**	**.**

Q24j: Organization which supplies the related instruction for your program: Missing

Missing	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.38	60	0.2199
No	99.62	15,707	0.2199
Total	**100.00**	**15,767**	**.**

Q24aa: Rate the quality of related instruction received most recently by your apprentices

Quality of instruction received by apprentices (1= poor, 5= excellent)	Percentage of Sponsors	Weighted N	Standard Error
1	2.48	391	0.5509
2	2.86	450	0.5976
3	13.39	2,112	1.1887
4	40.83	6,437	1.6865
5	39.10	6,164	1.6714
Don't Know	1.35	213	0.3944
Total	**100.00**	**15,767**	**.**

Q25a: Instruction paid by: The employer

The employer	Percentage of Sponsors	Weighted N	Standard Error
Yes	71.89	11,334	1.5359
No	28.11	4,432	1.5359
Total	**100.00**	**15,767**	**.**

Q25b: Instruction paid by: The apprentice

The apprentice	Percentage of Sponsors	Weighted N	Standard Error
Yes	23.16	3,651	1.4730
No	76.84	12,115	1.4730
Total	**100.00**	**15,767**	**.**

Q25c: Instruction paid by: Joint labor-management training fund

Joint labor-management training fund	Percentage of Sponsors	Weighted N	Standard Error
Yes	10.74	1,693	1.0493
No	89.26	14,073	1.0493
Total	**100.00**	**15,767**	**.**

Q25d: Instruction paid by: Public funding (WIA, Pell grants, state aid)

Public funding (WIA, Pell grants, state aid)	Percentage of Sponsors	Weighted N	Standard Error
Yes	8.97	1,414	0.9729
No	91.03	14,353	0.9729
Total	**100.00**	**15,767**	**.**

Q25e: Instruction paid by: Other

Other source	Percentage of Sponsors	Weighted N	Standard Error
Yes	5.32	839	0.7472
No	94.68	14,928	0.7472
Total	**100.00**	**15,767**	**.**

Q25f: Instruction paid by: Don't Know

Don't Know	Percentage of Sponsors	Weighted N	Standard Error
Yes	1.21	191	0.3549
No	98.79	15,576	0.3549
Total	**100.00**	**15,767**	**.**

Q25g: Instruction paid by: Refused

Refused	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.00	0	0.0000
No	100.00	15,767	0.0000
Total	**100.00**	**15,767**	**.**

Q25h: Instruction paid by: Missing

Missing	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.19	30	0.1411
No	99.81	15,737	0.1411
Total	**100.00**	**15,767**	**.**

Q26a: Time when apprentices take related instruction: During working hours

During working hours	Percentage of Sponsors	Weighted N	Standard Error
Yes	25.44	4,011	1.4512
No	74.56	11,756	1.4512
Total	**100.00**	**15,767**	**.**

Q26b: Time when apprentices take related instruction: Evening

Evenings	Percentage of Sponsors	Weighted N	Standard Error
Yes	57.74	9,103	1.6791
No	42.26	6,664	1.6791
Total	**100.00**	**15,767**	**.**

Q26c: Time when apprentices take related instruction: Weekends

Weekends	Percentage of Sponsors	Weighted N	Standard Error
Yes	8.61	1,357	0.9669
No	91.39	14,409	0.9669
Total	**100.00**	**15,767**	**.**

Q26d: Time when apprentices take related instruction: Varies

Varies	Percentage of Sponsors	Weighted N	Standard Error
Yes	25.78	4,065	1.4860
No	74.22	11,702	1.4860
Total	**100.00**	**15,767**	**.**

Q26e: Time when apprentices take related instruction: Don't Know

Don't Know	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.60	95	0.2769
No	99.40	15,672	0.2769
Total	**100.00**	**15,767**	**.**

Q26f: Time when apprentices take related instruction: Refused

Refused	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.00	0	0.0000
No	100.00	15,767	0.0000
Total	**100.00**	**15,767**	**.**

Q26g: Time when apprentices take related instruction: Missing

Missing	Percentage of Sponsors	Weighted N	Standard Error
Yes	0.77	122	0.3034
No	99.23	15,645	0.3034
Total	**100.00**	**15,767**	**.**

Q27: Apprentices in sponsor's program receive pay for any time spent in related classroom instruction

Apprentices receive pay for any time spent in related classroom instruction	Percentage of Sponsors	Weighted N	Standard Error
Yes	30.20	4,761	1.5414
No	67.88	10,703	1.5742
Don't Know	1.66	262	0.4626
Refused	0.00	0	.
Missing	0.26	41	0.1577
Total	**100.00**	**15,767**	**.**

Q28: Sponsor has tried to register their program in another state

Tried to register program in another state	Percentage of Sponsors	Weighted N	Standard Error
Yes	3.87	611	0.6444
No	94.72	14,934	0.7452
Don't Know	0.64	101	0.2493
Refused	0.00	0	.
Missing	0.77	121	0.2999
Total	**100.00**	**15,767**	**.**

Q28a: If tried to register program in another state, was sponsor successful

Successfully registered program in another state	Percentage of Sponsors	Weighted N	Standard Error
Yes	66.65	555	6.8470
No	14.41	25	1.7817
Don't Know	41.86	114	4.9902
Refused	17.39	17	2.0866
Missing	44.97	121	5.2913
Total	**100.00**	**832**	**.**

Q28b: Number of states total sponsor's program registered

Number of states program registered	Percentage of Sponsors	Weighted N	Standard Error
1	58.07	342	8.6211
2	14.66	86	5.9008
3	27.27	160	7.9739
Total	**100.00**	**588**	**.**

Q29: In the last few years, company has hired workers who completed apprenticeships in other companies

Company hired works who complete apprenticeships in other companies	Percentage of Sponsors	Weighted N	Standard Error
Yes	34.75	5,424	1.6410
No	56.04	8,748	1.7126
Don't Know	6.07	947	0.8225
Refused	0.00	0	.
Missing	3.14	490	0.5917
Total	**100.00**	**15,609**	