

America's Workforce-
Based Training Data
Infrastructure

ASSESSMENT AND RECOMMENDATIONS

June 26, 2020



AMERICAN
WORKFORCE
POLICY ADVISORY BOARD

EXECUTIVE SUMMARY

America's workforce-based training data infrastructure is poorly suited to the challenges we face. Even before the COVID-19 pandemic upended the American labor market, Americans were facing a rising pace of skill acquisition. The pandemic has further emphasized the unpredictable nature of future skill requirements. As America gets back to work, America's employers and educational institutions will be on the front lines of training and retraining the labor force to meet the economy's emerging skill needs. The goal of public labor market policy in this new era should be to ensure that all Americans can access the skills and training necessary to compete in an evolving labor market. Without a clear and accurate assessment of the prevalence and successes of private training investments, such public policymaking cannot be successful.

The American Workforce Policy Advisory Board (AWPAB) has spent the last several months assessing the current federal data infrastructure on employer-provided training and options for future data collection. The current infrastructure is fragmented and incomplete, and we provide here recommendations for changes in the short and long term that will better inform federal labor market policymaking.

Our recommendations are in two parts. First, we provide a consensus definition of *skill-based training* to be used in any future data collection effort. Our proposed definition has been endorsed by the board's full membership and is broadly applicable to training activities at public and private employers of all sizes.

Second, we provide a set of recommendations to guide the path of future data collection efforts. Our recommendations include both the short-term expansion of current federal surveys, as well as recommendations for a new survey instrument to be implemented in the longer term. These recommendations are:

- [Short Run 1](#): Expand the Census Bureau's Annual Business Survey or Capital Expenditures Survey to Capture Prevalence of and Expenditures on Employer-Provided Training Among Firms
- [Short Run 2](#): Expand the Bureau of Labor Statistics's National Compensation Survey to Capture Incidence of Employer-Provided Training Among Workers
- [Long Run 1](#): Introduce a New Employer-Provided Training Survey to Capture Key Data Elements (laid out fully below)
- [Long Run 2](#): Optimize New Survey Sampling to Maximize Complementarities with U.S. Census Bureau Products and Ensure Long-Run View of Training Investments

Although these recommendations require direct action by the executive and legislative branches of the federal government, there is great scope for private-sector and non-profit engagement as well.

In particular, the AWPAB believes a new federally administered workforce-based training survey with private-sector or non-profit financial and organizational support would be even more successful in informing public policy than a wholly federally funded and organized instrument. We elaborate on this view at the end of the paper and encourage interested parties to reach out to the Census Bureau, Bureau of Labor Statistics, or to the AWPAB.

Finally, we highlight technology advances that are likely to increase the accuracy of survey responses and reduce the reporting burden for firms going forward.

I. The American Workforce Policy Advisory Board

On July 19, 2018, President Trump established, by [Executive Order 13845](#), the National Council for the American Worker (NCAW) to create a national workforce strategy to “ensure that America’s students and workers have access to affordable, relevant, and innovative education and job training that will equip them to compete and win in the global economy.” The NCAW is comprised of seven Cabinet secretaries and seven heads of White House offices. The Council seeks to cultivate an environment of lifelong learning, creating a demand-driven approach to workforce development that extends beyond the typical classroom.

Along with the NCAW, Executive Order 13845 also created the [American Workforce Policy Advisory Board](#) (AWPAB), a 25-member federal advisory council that held its first quarterly public meeting on March 6, 2019. The AWPAB is comprised of business, state government, non-profit, and distinguished academics from across the country. A full list of the board’s members and affiliations is available [here](#).

The AWPAB advises the National Council and is charged with developing recommendations in four key areas:

1. Develop a Campaign to Promote Multiple Pathways to Career Success
2. Increase Data Transparency to Better Match American Workers with American Jobs
3. Modernize Candidate Recruitment and Training Practices
4. Measure and Encourage Employer-led Training Investments

The last of these four areas is the focus of this white paper.

II. The Need for Data on Employer-Provided Training Investments

Human capital is America’s greatest asset. By any measure, America’s economic output is predominantly generated by the labor input of the U.S. population. Over time, the power of that labor input has grown, not just because the population has grown in size, but because of a rising capacity of the population to produce, including growth in worker health and both formal and informal skill acquisition. And America has a proud history of leading the world in population-wide education investments. The first country to make public primary and secondary schools a national priority, the United States now hosts the world’s most prestigious university system.

These education investments have paid dividends for the U.S. economy many times over. It is appropriate, then, that the federal government diligently measures the formal education

acquisition of Americans, the performance of American public and private education institutions, and education-related monetary investments economy wide. The National Center for Education Statistics (NCES) at the Department of Education is devoted to just this purpose. Other members of the Federal Statistical System (FSS), including the U.S. Census Bureau, the Bureau of Labor Statistics (BLS), and the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation measure the educational attainment of America's workers, alongside monetary investments in education by American households and various measures of the size of the public and private education system. These statistical efforts help guide U.S. education and labor market policy, and future evidence-based policymaking will require that these efforts continue.

But there is a gaping hole in the data, a hole that has had and will continue to have harmful effects on public policy effectiveness. Despite the infrastructure in place for measuring human capital investments through traditional educational institutions, the FSS has no current metrics of the training investments made by America's employers, and no comprehensive measure of the continuing education investments of incumbent workers, with or without employer support. Private estimates suggest that employer-provided training was a \$150 to \$200B industry in 2018 (Carnevale et al. 2015; Association for Talent Development 2018). Even these aggregate results are highly uncertain as they are based in part on statistical data from the 1990s and on non-random sampling from the Association for Talent Development (CEA 2018). These aggregate estimates reflect formal investments, but not informal investments, which the White House Council of Economic Advisers (CEA) reports may be nearly twice as large. Faced with the question "How much do America's employers invest in the human capital development of their workers?" the United States' answer would necessarily be, "We don't really know."

Just as there is no clear answer to how much America's employers and workers are investing in employer-provided training, there is little detail on the characteristics of participating employers and workers, or the conditions of their participation. The distribution of employer-provided training investments across industries; geographies; firm size; worker income levels, educational attainment, or ages; or any other worker or employer characteristic is fully unknown. Likewise, it is unclear how worker training responds to macroeconomic conditions (including our current pandemic-related economic slowdown), to changes in the technology environment, or to public policy designed to encourage the same.

This hole in our knowledge base is likely to become increasingly consequential over the next several years. Current predictions are that Americans' skills will become obsolete at an increasingly rapid pace, with enormous consequences for America's workers (McKinsey 2018). A key theme in the narrative on the future of work is that America's workers will have a rising need for retraining and later-in-life skill acquisition, sometimes referred to as "lifetime learning." As a result, the future of work is one in which skill acquisition will increasingly occur through sources other than the traditional K-12 to college pipeline, which typically ends for workers in their late teens or early twenties.

Employers must play an active role in reskilling and upskilling their workforce. To develop a successful workforce strategy, the World Economic Forum (WEF) suggests that employers "recognize human capital investment as an asset rather than a liability" and that developing the next generation of workers will increasingly be a source of competitive advantage (WEF 2018). Such a shift in thinking may also necessitate that companies' human capital investments be

treated differently from an accounting perspective, for example by allowing firms to depreciate such investments. Doing so would simultaneously encourage further human capital investment and provide a disclosure-based method by which to measure the training investments of public companies operating in the United States.¹

From a policy perspective, the appropriate response to changes in the nature of work and the likely need to encourage additional skill acquisition cannot be adequately formed without employer-provided training data in place. If the optimal level of skill investment is moving higher, as the narrative of the future of work would indicate, then either private or public investments, or both, will need to rise accordingly. If policymakers cannot measure the contribution of the private sector to skill upgrading, and how it differs across workers, geographies, and industries, the appropriate role for public investment cannot be ascertained.

An illustrative example demonstrates the problem. In the 1990s, BLS developed and implemented the [Survey of Employer Provided Training](#) (SEPT). The SEPT, discussed in more detail below, was a twice-fielded survey upon which researchers still rely to provide broad outlines of the nature of employer-provided training investments (e.g., Carnevale et al. 2015).² One clear conclusion from this 24-year-old survey was that employer-provided training tapered off dramatically after age 40. Differential skill investments by age may be the result of differences in uptake rates by workers. But they may also reflect calculations by employers that either the rate of skill acquisition of older workers is weaker or that the time horizon over which the returns to investments in older workers accrue is shorter, or both. For employers, differential investment in the training of younger workers may be the optimal strategy. But public policy may reach a different conclusion. Perhaps skill investments in older workers have higher public returns (relative to the employer's and worker's private returns) because skill stagnation at older ages is particularly costly to society. This would be true if, for example, weak skill investments while employed make it less likely that laid-off older workers can find new employment, with associated public costs of non-work at older ages. Without detailed data on how the private market is, or is not, providing skills to workers, informed public policymaking is not possible.

The SEPT survey uncovered a similar pattern with respect to formal education. It is precisely the workers with more education who receive the most employer-provided training. Again, although this may be optimal from an employer's perspective, it may be suboptimal from the perspective of public policy. And, of course, it is highly uncertain whether the patterns detected in this decades old survey remain true.

It is not reasonable to expect a representative sample of American firms to publicize employer-provided training metrics voluntarily – either to a regulatory body, their investors, or the public at large. Like employee compensation, training is a strategic decision for firms and, for many, a competitive advantage, implying voluntary, self-reported metrics are unlikely to give an accurate picture of economy-wide training efforts. Training budgets and outcomes may also go unmeasured for many companies without a specific survey response or disclosure compliance effort in place. Moreover, U.S. firms are unlikely to report the complexities of skill investments by

¹ Without special tax treatment, the Board believes a tax form-based disclosure requirement for employer-provided training costs is unlikely to be accurate.

² Of course, much has changed since the survey was conducted that would make any conclusions derived from the survey and extrapolated over time unlikely to be fully accurate. For example, when the survey was conducted, full Social Security Retirement Age was 65 years, compared to 66 to 67 years today.

the demographic or employment characteristics of their workers without being required to do so; yet it is precisely these factors that will be important for developing policy responses.

Thus, nationally representative data collection will need to come from either (a) federally mandated reporting, for example, via Securities and Exchange Commission (SEC) reporting requirements and/or (b) through federally administered surveys. The Securities and Exchange Commission (SEC) is actively considering options on (a) with an eye towards whether the human capital management activities and expenditures of publicly traded corporations are material to investor decisions.³ But the SEC's efforts in this space will necessarily cover expenditures in addition to training and will only cover a partial subset of America's employers and America's workers. And of course, any SEC effort will not affect privately held firms.

The remainder of this white paper presents options for (b) above: collecting the necessary data through federally administered surveys.

III. Defining Skill-Based Training

One challenge to ongoing and future data collection of employer-led training efforts is the inconsistency in how companies, organizations, and the federal government are operationalizing, tracking, and reporting data around training. When attempting to collect information on training-related frequency, expenditures, and incidence, employers, as well as researchers, often struggle to identify what counts as training and to discern between types of training. Not all types of training may be tracked within an organization. Moreover, an organization may report only aggregate data for all of its training programs, which will make it difficult to disaggregate and analyze data to understand better the different types of training programs, not to mention the characteristics of workers being trained.

After reviewing different surveys of employer-led training, including a survey conducted by the Society for Human Resource Management (SHRM) to inform the AWPAB's work, it became clear that developing a standardized definition of skill-based training and a cohesive framework for categorizing the types of training firms provide were necessary first steps in deepening our understanding of employer-provided training investments.

To facilitate measurement, the AWPAB proposes the following definition of skill-based training and its differentiation from other types of organizational training. Furthermore, we establish a framework to categorize different types of skill-based training. These definitions are informed by internal discussions at the board and by academic training research (Noe, Clarke, & Klein, 2014; SHRM, 2019; Wolfson, Tannenbaum, Mathieu, & Maynard, 2018).

DEFINITION

Skill-Based Training: Activities, programs, or events offered by employers that provide employees with the necessary knowledge, technical skills, and professional skills to (1) perform and stay-up-to-date in their current job roles and/or (2) be able to perform new job roles or enter other professions.

³ See McCann (2019) for a summary of recent activities.

Skill-based training provided by employers can be further subdivided into four categories⁴:

- A. Initial skill training: Activities, programs, or events that provide employees with the knowledge or skills necessary to do the job into which they were hired, promoted, or transferred. Examples may include job shadowing and job rotation.
- B. Job maintenance training: Activities, programs, or events that ensure employees continue to be fully productive and able to succeed in their current job. Examples may include new product/services training and technology training.
- C. Up-skilling training: Activities, programs, or events that help employees gain new knowledge, skills, or tools that can enable them to perform new jobs roles or enter other future professions and fields. Examples may include cross-functional training, certification programs, educational courses, and apprenticeship programs.
- D. Employee development: Activities, programs, or events designed as processes to help employees expand individual capacity and enhance career-related professional skills, other than technical proficiency in their professions and fields. Examples may include formal mentoring, coaching, leadership development, and professional development programs.

For data collection, any training developed and offered in-house or reimbursed by the employer (even if provided externally or remotely, including tuition reimbursement programs) would be considered employer-provided.

Although employers offer many types of training that are essential to employers and employees, we distinguish between skill-based training and other types of training. The following types of training offered by employers may be essential to organizational function, but to measure skill-based training, *we deliberately exclude* the following types of training from renewed data collection efforts:

- A. Compliance training: Activities, programs, or events provided by the organization to educate employees on laws, regulations, and company policies that are applicable to their job function, organization, or industry. In the board's view, measured differences in compliance training across firms would not inform workforce policy meaningfully.
- B. Onboarding information training: Activities, programs, or events provided by the organization to new employees as part of their onboarding process as they enter the organization or assume new job roles. Onboarding training is disproportionately composed of gaining knowledge of firm-specific processes and operations (e.g., how to request reimbursements, initial technology training, how to use performance management systems) that are distinct from skills related to performing their specific job tasks. This type of training is unlikely to inform workforce policy meaningfully.
- C. Informal learning: Self-directed learning *on the part of the employee and/or at the employee's expense* aimed at acquiring work-oriented knowledge or skills outside of a formal employer-sponsored training program such as experimentation, on-the-job

⁴ These categories are intended to be mutually exclusive.

learning, or observational learning. Employee-directed learning is outside the scope of the employer-provided training focus.

IV. Key Principles for Data Collection

The AWPAB is making specific recommendations regarding the data elements to be collected and the conditions of that data collection. The proposed data elements do not necessarily have to be gathered in a single survey, and a hybrid approach may be preferable for cost, coverage, and respondent burden reasons. Because policy-making surrounding employer-provided training is intimately related to technology adoption, **AWPAB strongly recommends that the essential data elements below be collected in conjunction with measures of firm technology investments, including investments in robotics and artificial intelligence.**⁵

ESSENTIAL DATA ELEMENTS

1. Incidence of employer-provided training
 - a. Share of workers receiving training
 - b. Share of employers providing training
 - c. By industry (at least 2-digit NAICS)
 - d. By employer size
2. Intensity of employer training
 - a. \$ spent per worker annually
 - b. Annual average number of employee hours spent in training
 - c. Employer assessments of the impact of training investments
3. Financial metrics of firms, to be correlated with investment in employer-provided training
4. Demographics of workers trained, including but not limited to:
 - a. Worker classification: full-time, part-time, seasonal, contract
 - b. Remote or on-site worker (or both)
 - c. Age
 - d. Gender
 - e. All workers versus production and non-supervisory workers
 - f. Educational attainment
 - g. Annual salary or hourly wage
 - h. Organizational tenure
 - i. Urban/rural/MSA population
 - j. Other geography measures if not already captured with firm/employer information
 - k. Occupation

⁵ In the Annual Business Survey, technology investments are categorized into Artificial Intelligence (AI), Cloud-based Computing and Applications, Specialized Software Outside of AI, Robotics, and Specialized Equipment Outside of Robotics. The relevant categories will almost certainly evolve over time.

To generate data that can be compared over time and to create a nationwide assessment, the board recommends that **skill-based training investment data be collected at least every other year from a nationally representative sample.**

KEY PRINCIPLES FOR DATA COLLECTION

1. Data should be collected at least every other year in nationally representative samples.
2. Data should be released within a year of collection.
3. Essential Data Elements should be gathered and disseminated in conjunction both with each other (i.e., employer and worker characteristics linked together) and with measures of employer investments in technology to most effectively inform policy-making. In 2020 these technologies would include robotics and artificial intelligence.
4. Data should be released with important cross-tabulations, including industry, worker education level, and firm size, in place.

Moreover, the data should be collected in a **survey vehicle to which the public and policymakers have ready access** and that is large enough to allow meaningful cross-tabulations by industry, education level, size of firm, etc. Occupation-based metrics, which will necessarily be derived from smaller sample sizes, are also desirable, even if those metrics are only accessible through restricted access data.⁶

V. Existing and Prior Infrastructure

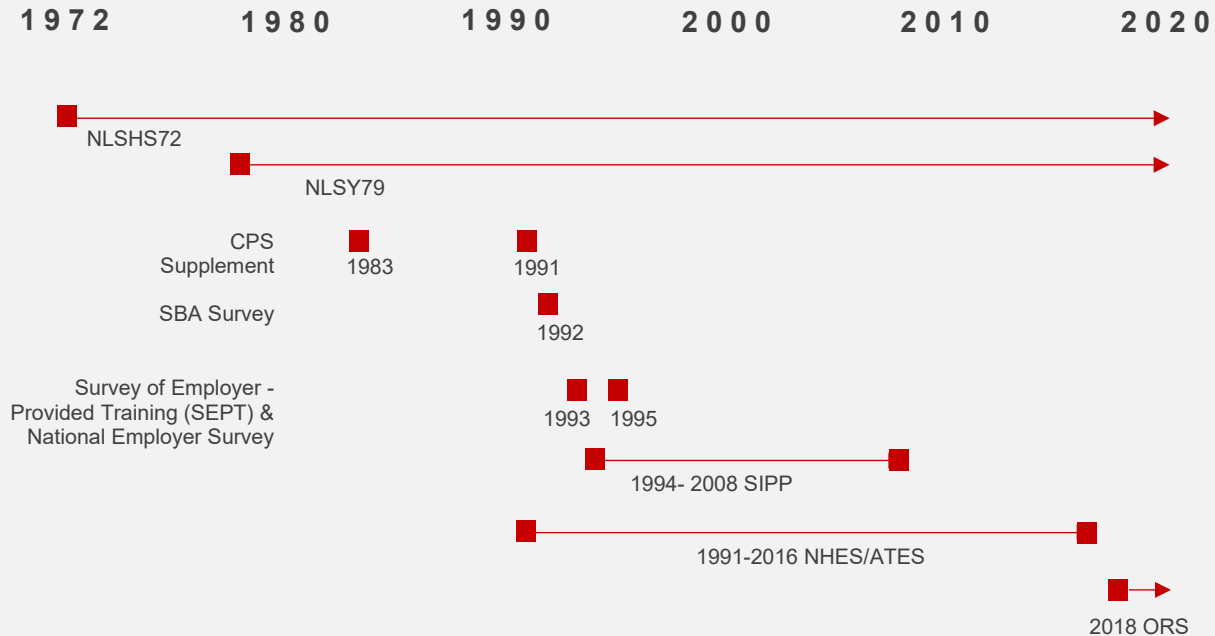
The federal government and other parties have previously gathered limited information on employer-provided training. Each of the previous efforts was limited in duration, in scope, or both. We describe these efforts here both to highlight the various options for gathering these data and to provide a backdrop for recommendations in the next section.⁷ We first describe ongoing or recently ended federal data collection efforts before reviewing the history of federal data collection in this area. We conclude this discussion with a brief discussion of non-federal surveys.

A timeline of the introduction of these surveys is Figure 1.

⁶ When the sample sizes underlying tabulation are too small, disclosure policies require that federal data are only accessible to pre-approved researchers in secure data environments. For example, when disclosure policies require, the Census Bureau and BLS data provide access to approved researchers through [Federal Statistical Research Data Centers](#).

⁷ A similar catalogue for certifications and licensing attainment by American workers is available at <https://nces.ed.gov/surveys/gemena/>. Constructed by the Interagency Working Group on Expanded Measures of Enrollment and Attainment (GEMEnA), the catalogue contains an exhaustive list of all Federal surveys and questions that inquire about certifications and licenses, regardless of the source of the training. Because employer-provided training does not necessarily result in a certification or license, and because we are interested in employer-provided training rather than all training activities, the GEMEnA catalogue is a complement to the infrastructure list contained here.

FIGURE 1: TIMELINE OF U.S. EMPLOYER PROVIDED TRAINING SURVEY DATA



A. Ongoing or Recent Federal Surveys

The National Household Education Surveys Program (NHES), directed by the NCES, conducted the [Adult Training and Education Survey \(ATES\)](#), a household-based survey that focused on noninstitutionalized adults ages 16 to 65 not presently enrolled in high school. The ATES collected cross-sectional data pertaining to the “completion and key characteristics of work experience programs, such as apprenticeships and internships,” in addition to detailed employment and demographic characteristics. The ATES focused on formal training programs that lead to a certificate or other recognized credential, and is specifically focused on measuring the prevalence of internships. The survey was last conducted in 2016 with no plans for a follow-up. Previous surveys under the NHES, beginning in 1991, also contained information on adult education and training, including employer-provided training.

Recently, NCSES, in partnership with NCES and the Census Bureau, has initiated an effort to conduct a nationally representative survey that continues the survey content goals of the ATES to measure non-degree credentials and work experience programs. While this proposed survey is similar to the ATES in its coverage of noninstitutionalized adults, the new design focuses on the skilled technical workforce, defined as individuals in occupations that require science and engineering knowledge and skills, but do not require a bachelor’s degree.⁸ This survey, referred

⁸ For more information on the skilled technical workforce, see <https://nces.nsf.gov/pubs/nsb20198/the-skilled-technical-workforce>. For a listing of occupations included in the STW, see Table SA3-5 at <http://nces.nsf.gov/pubs/nsb20198/technical-appendix/#tableCtr1636>.

to as the [National Training, Education, and Workforce Survey](#) (NTEWS), is designed to capture the prevalence of non-degree credentials and work experience programs, and to examine the role of these credentials and programs in an individual's career pathway. The NTEWS is currently in its development stage.

The [Occupational Requirements Survey](#) from BLS surveys employers regarding the skill requirements of particular occupations, as well as the nature of both education and training for workers in these occupations. Training pre- and post-hire is included in the questionnaire. The survey also inquires about required certifications or licenses. The unit of observation in this survey is an occupation, and worker demographics are not surveyed, although some key characteristics of employing firms are available.

The [Survey of Income and Program Participation](#) (SIPP), conducted by the U.S. Census Bureau, is a household-based panel survey focused on the income and experiences of participants in public social assistance programs. Although recent waves of the survey inquire about training participation, the questions are not as detailed as in previous waves. In the 1994 through 2008 waves of the survey, SIPP inquired about:

- Who paid for the training (i.e., government, employer, or employee)
- What was the training designed to accomplish (i.e., improve skills for current job, improve skills for new job, general employee development, etc.)
- Time spent in training
- Where the training took place (i.e. on the job or away from the job)

In keeping with the survey's mission, SIPP currently inquires about training activity only from respondents with household income less than 200 percent of the poverty line and with education levels below a bachelor's degree.

The [National Longitudinal Survey of the High School Class of 1972](#) (NLSHS72), conducted by the Department of Education, surveyed a group of 1972 high school seniors about employer-led training, following the respondents over a number of years after 1972. The survey asks the respondent to provide the number of hours per week and the number of weeks for which they participated in various training types. The survey's primary limitation is that it follows a single cohort over time and therefore gives only a narrow snapshot of the experience of the U.S. workforce.

The [National Longitudinal Survey of Youth 1979](#) (NLSY79), conducted by the Bureau of Labor Statistics, also surveyed respondents regarding their enrollment in training programs, work-based and otherwise. Participants in this survey were born between 1957 and 1964 and have been surveyed continuously since the survey's inception in 1979. Although the collection of training data is ongoing, many of the survey participants have entered retirement as their current age is 56 to 63.

B. Previous Federal Surveys

The hallmark 1993 [Survey of Employer-Provided Training](#) (SEPT), conducted by BLS, and its 1995 follow-up is the most comprehensive survey of employer-provided training. The 1995 survey collected information on the size of training investments, as well as details regarding the

demographics of trained workers and on the content and subject matter of the training itself. The survey was conducted through the use of both a household and an employer questionnaire.

Survey questions on the household questionnaire addressed the following topics:

- Demographic characteristics
- Employment characteristics (i.e., income, full- or part-time, hours worked, etc.)
- Employer characteristics
- Benefits employee received from training (i.e., promotion, pay raise, intangible, etc.)
- Nature of employer-provided training (i.e., type of training, such as occupational safety, leadership, industry specific, etc.)
- Training classification (i.e., formal, informal, or on-the-job)
- Time spent in training

The employer-side module inquired about:

- Type of training practices or programs provided
- Subject, nature, and content of the training
- Who conducted the training? (i.e., supervisor, trade association, local community college, etc.)
- 3-year trends for how much training has been provided by the employer
- Other employee benefits provided by the employer.

Despite its age, results from the 1995 SEPT survey are often used as the bases for conjectures about current employer-provided training patterns in the United States (e.g., Carnevale 2015; CEA 2018).

SEPT's enduring popularity and comprehensive design have attracted policy interest in its revival. In 2018, the United States Senate directed BLS to prepare a report on the cost and design options for a new Survey of Employer-Provided Training. (See Appendix for the proposal.) The proposed redesign would mimic the original survey in that it would collect data from both the employee and employer, but would be updated to reflect current training practices. Employers would be asked "to indicate the formal training that their company sponsored, funded or provided for its employees in the prior 12 months, as well as the training delivery method, training topic, and training source." Employees would be asked similar questions, in addition to questions about the prevalence and nature of any informal training they may have received. BLS estimated that a new SEPT would cost upwards of \$12 million and would take four years to finish survey development activities, field the survey, and produce estimates. (See Appendix for additional information.)

The 1983 and 1991 monthly [Current Population Survey](#) from BLS included a single-month supplement on job training. The survey asked respondents to identify the skills required to acquire their current job, as well as what training they had undertaken to improve their skills. The survey asks about formal "company program" training, informal on-the-job training, and training through an outside education provider, among other options. Output from the survey included tabulations

of training uptake by key demographic characteristics, including age, gender, race, education level, occupation, and industry.⁹

The [National Employer Survey](#), funded by the National Center on the Educational Quality of the Workforce and administered by the Census Bureau, collected data in 1993 and 1995 from employers on four topics: employees and employment, employee training, business characteristics, and equipment and technology. The employee training module includes questions related to organization, purposes, formal and informal programs, duration, trainees, and effectiveness.

In 1992, the Small Business Administration (SBA) sponsored a [survey](#) of 1,288 large and small firms attempting to measure employer-provided training. The SBA survey encompassed five measures of training: formal training programs offered by the firm on site; informal training with the worker's supervisor; informal training by co-workers; time that the worker spent watching others perform tasks; and the number of hours spent at off-site formal training programs. The survey's size has limited its usefulness for research purposes, although the depth of questioning has proven useful for some purposes.

C. Other Surveys and Data Sources

The Organisation for Economic Cooperation and Development (OECD) fields a cross-country survey known as the Program for the International Assessment of Adult Competencies (PIAAC). This employer-based survey centers on measuring adult literacy and numeracy skills as well as adaptive problem solving, and problem solving in technology-rich environments. In the past, the use of the PIAAC for employer-led training data was limiting, but an expanded survey is scheduled for 2020-2021. In the expansion, the new employee module will measure some characteristics of on-the-job training, variable pay systems, performance appraisal, autonomous teams, job rotation schemes, and worker replacement. The survey will ask, "a set of core questions on skill gaps; a set of desirable items on training, HR practices, work organization that would help gain insights from the core on skill gaps, which could be added based on each country's specific interests; and a set of essential firm characteristics, which are likely to be included already in the employer survey hosting the skills module."¹⁰ The skills ontology includes management, teamwork, customer service, office administration, foreign language, technical or practical skills, communication (oral or written), mathematics, reading, etc. The PIAAC's skills ontology differs from existing ontologies in the United States.

While the PIAAC's measurements fail to meet all the needs identified by the Board, it is unique in its ability to collect crucial information on skills gaps and their correlates by linking employer needs and employee deficits to household survey data. To do so, both the employer and employee modules must be deployed. (The U.S. does not currently plan to deploy the employer module.) The PIAAC's design also facilitates international comparisons. Still, the PIAAC is unlikely to meet all the needs of American stakeholders without substantial costs.

⁹ See BLS (1992).

¹⁰ OECD (2020).

D. Private Estimates

The [Association for Talent Development](#) is the world's largest professional membership organization that supports training and development. They provide an annual "State of the Industry" report that examines trends and key indicators of training and development, such as average direct expenditure per employee, direct expenditures, learning hours, cost per learning hour, and learning format. This survey provides longitudinal data on the key indicators mentioned above from 2010 as well as results broken down by industry and organizational size (e.g., 1-499 employees; 500-9,999; 10,000+). However, the sample size for these surveys typically ranges between 200 and 400 firms, which are not nationally representative.

An additional private estimate of employer-provided training comes from The Manufacturing Institute. A [newly deployed survey](#) of U.S. manufacturers asks manufacturers to detail ways they are addressing recruitment challenges in the industry. Responses include measures of the frequency and cost of internal and external training programs, along with broad measures of efficacy.

VI. AWPAB Recommendations for Future Data Collection

The Board considered many options for a new employer-provided training data collection effort. After discussing the options internally and with experts at the appropriate federal agencies, the following strategy emerged as the most likely path to generating usable data for federal policymaking.

EMPLOYER-PROVIDED TRAINING DATA COLLECTION STRATEGY

Short-Run Strategy

SR-1: Expand Census Bureau's Annual Business Survey OR Annual Capital Expenditures Survey to Capture Prevalence of and Expenditures on Employer-Provided Training (*Essential Data Elements 1-3*)

SR-2: Expand BLS's National Compensation Survey to Capture Prevalence of Employer-Provided Training among Workers (*Essential Data Element 4*)

Long-Run Strategy

LR-1: Introduce a New Employer-Provided Training Survey to Capture Full List of Essential Data Elements (*Essential Data Elements 1-4*)

LR-2: Optimize New Survey Sampling to Maximize Complementarities with Census Bureau Products and Ensure Long-Run View of Training Investments (*Essential Data Elements 1-3*)

The proposed strategy balances the need to collect and disseminate information quickly with the need for more thorough data by recommending a set of short-term and long-term activities. A series of add-on questions to existing surveys, which can be adopted relatively quickly, is a short-

term solution to data needs but do not provide the holistic view of employer-provided training the problem demands. The longer-term solution is to implement a new survey of employer-provided training that collects all essential data elements in one survey but would take several years to develop and deploy.

In our view, both the short- and long-term steps are critical, and we do not view the new survey as a substitute for the add-on questions to existing surveys for reasons we articulate more fully below.

In the short run, existing surveys at both the Census Bureau and BLS can be amended to inquire about employer-provided training. This approach would gather information on employer operations and characteristics from Census and on employer-provided benefits and worker pay through a BLS survey. The short-run strategy has the advantage of generating information quickly --- it allows for the relatively quick introduction of employer-provided training questions to surveys already in operation. But the short-run strategy is limited by the structure and length of these existing surveys. Training questions will necessarily be limited in number to minimize respondent burden, and the structure of the current surveys implies not all Essential Data Elements can be captured using this approach. In particular, a comprehensive measure of Essential Data Element 4 will require a broader strategy. In the long run, a stand-alone survey will allow for a more complete assessment of employer-provided training, including data elements that cannot be captured in the short-run strategy.

SR-1: Expand the Census Bureau's Annual Business Survey OR Annual Capital Expenditures Survey to Capture Prevalence of and Expenditures on Employer-Provided Training Among Firms

On the Census Bureau side, we recommend an expansion of either the Annual Business Survey or the Annual Capital Expenditures Survey to capture Essential Data Elements 1 through 3. Our recommendation on the Census Bureau survey expansion is intentionally imprecise; the Census Bureau has ongoing efforts to better measure innovation and technology investments, including robotics and artificial intelligence (AI). As a result, the optimal survey for future expansion to accurately capture Essential Data Elements in conjunction with data on technology investments may change over the next few months.

The [Annual Business Survey](#) (ABS) began in 2017 and is conducted annually by the Census Bureau and NCSES. The survey measures demographic and economic information of business owners, research and development (for microbusinesses) activities, innovation technology, and other business characteristics; the survey is nationally representative. The ABS does not currently inquire about employer-provided training, but the survey is designed to evolve based on topics of relevance. Each year, questions are submitted for approval to the Office of Management and Budget and new modules are introduced. As an annual survey with built-in flexibility, the ABS has the potential to address data gaps identified by the AWPAB, especially under the umbrella of employer expenditures on robotics, AI, and similar innovations. The ABS survey already covers many of the other key employer-side data elements listed above; cross-tabulations of employer-provided training with employer technology investments would be inherent. The 2018 and 2019 ABS inquired about technology (2018) and technology adoption (2019), including robotics and AI, and implications for the number of skilled workers (2019). Inquiring about training investments is a natural extension for future versions of the survey.

Alternatively, the Census Bureau could expand the Annual Capital Expenditures Survey (ACES). ACES is a long-running survey measuring firm-level investments in structures and equipment, with detailed investment categories surveyed every five years. Detailed data collected in these 5-year increments include investments in key technology categories, in line with the Board's principles. The survey does not, however, currently gather information on other key employer metrics, including profitability and productivity metrics. We thus view this option less favorably than an ABS expansion but again acknowledge that the proper vehicle may change over time.

In either case, the surveys in question are already in operation and are serving multiple Census Bureau and NCSSES purposes. As such, they cannot be expanded substantially without increasing respondent burden beyond a reasonable limit. More importantly, there is not currently any natural way to incorporate employee-side questions into these surveys to address Essential Data Element 4. In the long-run, these short run expansions will not fully meet the data need described in this white paper.

SR-2: Expand BLS's National Compensation Survey to Capture Prevalence of Employer-Provided Training Among Workers

There is no natural way to gather data on the demographic characteristics of trained employees, Essential Data Element 4, in either of the surveys discussed in Short Run Strategy 1 (SR-1), and no obvious link to other federal data that would provide such information. Both the ABS and ACES can be linked to the Longitudinal Employer-Household Dynamics (LEHD) program. However, the LEHD could only provide summary characteristics of a firm's employees (for example, average income or average education level) and would not provide indicators of differential employee training investments within firms without additional information. Because the differential access of workers to skills training within firms is critical for policymaking, the firm-level LEHD link does not provide high value information.

Instead, the demographics of trained workers will need to be solicited separately from either the ABS or ACES. We propose that BLS expand the National Compensation Survey (NCS) to include questions about access to employer-provided training. The NCS already collects information on the provision of other employer-provided benefits, making training a natural addition. Many of the key demographic tabulations the Board seeks are already generated by the NCS, including worker wages and geography, along with broad industry and occupation categories. But because the NCS is an establishment survey conducted at the occupation level, and not the individual level, other key tabulations are not available. In particular, there would be no way to tabulate NCS results by age, sex, or race. These metrics will have to be gathered in a comprehensive survey we propose for the long run.

LR-1: Introduce a New Stand-Alone Employer-Provided Training Survey to Capture Full List of Essential Data Elements

To fully measure the demographic correlates of employees benefitting from employer-provided training and to allow more detailed information about employers, a different strategy is required. AWPAB recommends the development and deployment of a new training survey to capture these data. The short-run strategies outlined above are particularly ill-suited for capturing the incidence of employer-provided training by demographic characteristics of workers. Thus, the focus of the long-run strategy is to gather employee data on Essential Data Element 4 in a way that can be

easily matched to Essential Data Elements 1-3. We do not view a stand-alone question in existing household surveys to be a viable solution because respondents cannot be linked to the characteristics of their employers.¹¹

A new survey administered by the Census Bureau and BLS along the lines of the SEPT survey, last deployed in 1993 (with a 1995 follow-up), is the most obvious solution to achieve these data collection objectives. The original SEPT survey, by design, captured both the demographic characteristics of trained workers and the characteristics of their employing firms. As a stand-alone survey, a revised survey would not be limited by the sampling procedure, structure, or length of an existing survey. Short-run recommendations to expand existing surveys by adding new questions or new modules on employer-provided training will be somewhat constrained by survey capacity constraints.

In 2019, BLS provided Congress with a thorough proposal for a revised SEPT, including detailed topical areas. (See Appendix.) BLS envisions a survey in three parts: an online employer survey, an online household survey (not connected to the employer survey), and an employee time use survey to guarantee accurate measurement of time spent in training-related activities. Turnaround time on developing and deploying such a survey is estimated to be four years. BLS estimated the cost of the three-pronged approach at \$12.5 million per year, exclusive of the cost of the employee time use survey, which would need to be fully developed and field tested before being implemented.¹²

The Board recognizes that a revised employer-provided training survey would necessarily need to serve multiple constituencies. *However, it is our strong recommendation that the survey proposal sent to Congress be updated to reflect the priorities in this white paper.* Specifically, topics related to the specific skills imparted through training and to the delivery method or source of training should be *de-emphasized*, while additional demographic variables should be added, including the income level of trained workers, along with their classification (full-time, part-time, contractor, etc.), organizational tenure, and other demographic characteristics outlined in Essential Data Element 4 above. In short, a revised SEPT should be broadened to provide a more comprehensive view of *who* is being trained and by what type of employer, with relatively less emphasis on *how* they are being trained and on what topics. In our view, the former set of questions is far more vital for future policymaking, even if some measures of the latter are likely to be useful for certain constituencies and purposes.¹³ An additional change relative to the most recent proposal is that the employee/household survey should be implemented in conjunction with the employer survey so that surveyed workers are surveyed in parallel with their employers to provide a joint, holistic view of employee/employer characteristics.

Our recommendation to de-emphasize measurement of imparted skills is a reflection of the increasing complexity and occupation-specific nature of workforce skills and of emerging sources for this information. The original SEPT survey elicited broad categorizations of the types of training workers received, including “computer training,” “management training,” and “technical skills

¹¹ They also cannot, to our knowledge, be linked to the LEHD, which contains full work and salary histories for the universe of American workers covered by unemployment insurance.

¹² At the point of last year’s congressional update, the survey instruments and materials had not been fully developed. Given the shift in scope recommended here, the timeline for BLS may be extended.

¹³ For example, measures of imparted skills may be an important validation test to ensure firms are reporting skill-based training rather than all training, including those categories explicitly excluded.

training”. In our view, these broad categories are unlikely to be useful for designing policy. In other work, the AWPAB has emphasized the future role of interoperable learning records (ILRs) as a metric of specific imparted skills. With a fully functional ILR system, the skill capacities of America’s workers would be measured in real time and in detail. Moreover, the ILR system would endogenously define new skills as they emerged in the labor market. Thus, a functional ILR system would be a more flexible, detailed view of workforce skills and would likely obviate the need for survey data on skills imparted by employers.

As discussed earlier, this survey should be administered at least every other year; employers’ workforce investments are likely to fluctuate with the business cycle. Measuring these outcomes at infrequent increments makes it difficult to measure these and other trends accurately.

LR-2: Optimize New Survey Sampling to Maximize Complementarities with Census Bureau Products and Ensure Long-Run View of Training Investments

One of the Board’s key principles for data collection is that the new data on employer-provided training should be collected in conjunction with, or linked to, data on employer technology investments. Without this additional information, implications of the survey’s findings for public policy will be incomplete.

A new survey could ask employers about their investments in each of these technology areas, alongside questions about productivity, profitability, etc. But an alternative is for the new survey to leverage Census and BLS products that are already asking these sorts of questions. The benefits of a complementary Census/BLS approach are (modest) cost and respondent burden reductions, as well as consistency in technology definitions and measurement. As technology adoption proceeds, differences in definitions and scope between agencies are likely to result in a lack of comparability between data. To ensure that data elements are comparable across surveys, a new employer-provided training survey could sample employers in a way to ensure they are cross-represented in a Census survey with technology-related questions. A final benefit to this approach is that Census has comparative expertise in surveying firms about production inputs and outputs (among other topics) while BLS has comparative expertise in surveying workers. The combined approach allows both advantages to be exploited.

For example, the Census Bureau and NCSES’s Annual Business Survey (ABS) already asks questions regarding technology adoption, while the Annual Survey of Manufacturers (ASM) asks about robotics adoption. The size of the ABS sample is far larger than the sample proposed by BLS for a revised SEPT, suggesting that a new training survey could be administered to an optimally selected sub-sample of ABS respondents, perhaps in the year following their ABS responses in order to minimize respondent burden. There is precedent for a supplement approach: the new Management and Organizational Practices Survey is a (full sample) supplement to the ASM.

The two-period design (e.g., ABS in year t and a follow-up training survey in year $t+1$) has several advantages over a single survey. First, the design reduces respondent burden by spreading the respondent’s investment over two years. Second, the design would keep the two survey instruments topically “pure.” The ABS would be answered by relevant individuals in the organization while the training survey would be answered by, perhaps, a different set of individuals with responsibility for workforce training. Finally, to the extent that workforce training

investments are not universally tracked, the one year delay in reporting would allow firms to make a more intensive effort to collect these data prior to the training survey's administration.

In addition to linking workers to the firms in which they are employed, an additional priority should be to ensure all workers who take part in a new survey module can be linked to their own employment histories as contained in the LEHD. This employee-level LEHD linkage would allow insights into how training investments affect employee wage growth, labor force attachment, tenure and turnover, etc., and allow for much more precise estimates of the return to employer-provided training investments than have heretofore been possible. Similarly, firms should be enumerated in such a way that they can be linked to themselves in various longitudinal databases maintained by the Census Bureau. If accomplished, these firm linkages would allow researchers to probe the rate of return on training investments.

Finally, to promote transparency and impact, linkages between the new survey instrument and existing federal data products should occur prior to the dissemination of results. Any resulting micro data should be made available through the Federal Statistical Research Data Centers (FSRDCs) so that researchers can use restricted access samples to provide deeper empirical insights beyond those made available by official public releases.¹⁴ This final recommendation may require legislative changes to the Confidential Information Protection and Statistical Efficiency Act (CIPSEA). Under the current CIPSEA statute, data sharing between BLS and the Census Bureau is limited in scope and specifically excludes federal tax information (FTI). Without a full complement of firm (or worker) FTI, the learnings from these data linkages will necessarily be limited.

VII. A Call for Private Sector or Non-Profit Involvement

Although we have motivated this discussion by highlighting data needs for proper federal policymaking, the federal data infrastructure will also inform the activities of labor market-oriented non-profits, not to mention the activities of for-profit entities. And, ultimately, these data will be used by researchers both inside and outside the government.

One way to ensure a new data collection effort recognizes the needs of all these constituencies is through extensive partnership with external stakeholders. That external involvement might come in many forms, but one proven model is (a) the appointment of a team of external researchers to assist in survey development and (b) the solicitation of external funding to ensure the ongoing delivery of the survey and to promote broader interest. The Census Bureau has an ongoing relationship of this nature in the Management and Organizational Practices Survey (MOPS), which is supported by an external research team consisting of faculty at various institutions of higher education. Federal funding for the MOPS survey is provided by the National Science Foundation with additional private support from the National Bureau of Economic Research, the Kauffman Foundation, and the Sloan Foundation.

AWPAB believes a similarly broad coalition of support could be available for an employer-provided training survey. We encourage interested parties to reach out to the AWPAB or to the relevant federal agencies (BLS, the Census Bureau, or NCSES) to express such an interest.

¹⁴ Census Bureau data are automatically available in FSRDCs.

VIII. New Technologies to Support Survey Response

This initiative to collect Federal survey data on employer-provided training is not occurring in a vacuum. In particular, other workstreams within the AWPAB have focused on data transparency issues related to the use of skill and competency frameworks and ontologies. These efforts will aspire to make more transparent what people know, what they will learn or be trained to do, and what is required to be qualified for a job or to be promoted within a career. The AWPAB has launched a [pilot project](#), joint with the U.S. Chamber of Commerce Foundation, to promote [Interoperable Learning Records](#) (ILRs), standardized, digital learning records unique to each individual and transferrable between and across employers and education institutions. Widespread adoption of ILRs are complementary to the employer-provided training data requirements discussed here. Employers who are building ILRs for and with their workers will have ready access to training data on those same workers.

In addition, the T3 Innovation Network, U.S. Chamber of Commerce Foundation, and the HR Open Standards Consortium are [working to develop](#) data standards for individual-level employment and earnings records (including data elements, definitions, and formats) for use in the public and private sectors. This project will explore the use of these data standards in enhancing state Unemployment Insurance (UI) wage records and improving federal statistical data collection. The project also will explore how these records could be used for other applications, including ILRs and program application and eligibility determination. These records could also be used to better capture information about employer training investments and the employment and earnings outcomes associated with those investments. If used in this way, the emerging technology would substantially streamline the response process for firms participating in the federal survey.

IX. Research Priorities

The data strategy described above will facilitate and spark new empirical work in the area of employer-provided training. The addition of research based on U.S. firms and workers is sorely needed in a literature currently dominated by results reflecting the experiences of European firms and workers.

We view the following research questions to be of critical importance and encourage their pursuit by federal and non-federal researchers alike.

- What are the productivity gains for trained workers/training firms?
- How do employer-provided training investments impact employee turnover and other non-productivity performance metrics?
- How do employer-provided training investments respond to external labor market and macroeconomic conditions?
- What groups tend to get “left behind” in employer-provided training efforts, and what are the barriers to their participation?

These questions are a handful of those that will likely prove critical to directing the actions of federal, non-profit, and private actors going forward.

X. Early Survey Testing

To inform the Board's recommendations, the Society of Human Resources Management, which is represented on the Board, developed and deployed a survey to 1,000 human resources professionals in the summer of 2019. The purpose of the survey was to gauge whether and how America's companies tracked training investments. A complete report on the survey's results is available [here](#).

These early results suggest that the data effort we propose here is feasible and likely to be successful. Eighty-nine percent of surveyed employers of all sizes reported tracking employee participation in skills programs. Measurement of financial costs was nearly as prevalent. More than 85 percent of large and medium-sized companies reported tracking the financial costs of employee training investments while 71 percent of smaller companies tracked these results. Note that this study utilized a nonprobability sample; however, it was weighted for firm industry and firm size to be representative of firms in the US. Nonetheless, more research, preferably using representative samples, is needed on this topic.

Other research suggests that tracking firm investments in workforce training is not as widespread as the SHRM evidence would indicate. (e.g., Edgar 2017.) If so, the two-step approach outlined above would be highly beneficial for ensuring compliance.

XI. Conclusion

Workers are the American economy's greatest asset. Ensuring that all American workers have the opportunity to maintain and upgrade their workforce skills is an important public policy objective at any juncture, but especially given current projections over the pace of skill upgrading required in the coming years. Without an accurate assessment of the training provided by America's employers, impactful public policy responses cannot be generated.

In this white paper, the AWPAB has outlined a set of principles to guide a renewed federal effort to measure employer-provided training investments and a specific path to implementing those principles in current and proposed federal surveys. These recommendations and the background information that supports them are intended to guide federal activity over the next several months and years. We invite other organizations with interests in these topics to join the effort.

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XIII. Appendix

Bureau of Labor Statistics Report to the Senate Appropriations Committee on a Survey on Employer Provided Training Design and Cost Options

The following report outlines cost and design options for a new Survey on Employer Provided Training (SEPT) in response to language included in the Senate Appropriations Committee report that accompanied the Consolidated Appropriations Act, 2018 (Pub.L. 115-141). The Senate report directed the Bureau of Labor Statistics (BLS) to “provide a report not later than 90 days after enactment of this act on the cost and design options for a new survey on employer-provided training.”

The design options laid out in this report build upon BLS research sponsored by the Department of Labor in Fiscal Year (FY) 2016 and FY 2017 for BLS to begin exploring the feasibility of developing an updated SEPT. Reports summarizing this research are available upon request. The SEPT development work recommended the following design options to collect incidence of training: an online employee survey and an online employer survey, as well as a recommendation to develop and test a survey using an employee log in order to collect information on the amount of time spent in training-related activities. While the employer and employee surveys could be done independently, all three surveys are required to provide a full picture of employer-provided training. The data would be collected over the course of a year, with results released annually in the year following collection.

At the end of the FY 2017 research, BLS developed draft employer and employee survey instruments, and proposed sample designs. Should funding be available to carry out these surveys, BLS estimates it would produce the first estimates within 4 years. Specifically, additional research is required to finalize the survey instruments, design and test the new employee log, complete the Office of Management and Budget clearance process as required by the Paperwork Reduction Act, collect the data over a 12-month period, and analyze and publish the results. Additionally, BLS will have to develop data collection procedures and materials, and program survey questions into electronic data collection instruments.

For the two survey designs detailed below, the sample sizes identified were selected to strike what BLS believes to be a reasonable balance between cost and publication objectives. The cost estimates are based upon fielding the surveys annually to ensure that the data are timely and to facilitate identifying changes and trends in employer-provided training. Reducing the level of detail or survey periodicity would reduce the estimated costs, but not proportionately, due to relatively fixed infrastructure and maintenance and development costs.

Data from employers

Employer Survey (Incidence – proportion of employers providing training)

To collect the incidence of employer provided training, BLS recommends an online survey sent to approximately 20,700 establishments, stratified by industry and employment size class. The survey will ask respondents to indicate the formal training that their company sponsored, funded or provided for its employees in the prior 12 months, as well as the training delivery method, training topic, and training source. Research results indicated the employers would not reliably be able to provide information about informal training, and that the records companies keep on training often are decentralized and vary dramatically by company type, company employment size, and training topic.

The survey aims to produce the following estimates within a margin of error of three percent:

- Proportion of employers providing formal training by industry (14 sectors)
- Proportion of employers providing formal training by employment size class (5 size classes, the largest being 500+ employees)
- Proportion of employers providing formal training by delivery method (traditional classroom, other in person, online, combination, other)
- Proportion of employers providing formal training by topic (13 topics)
- Proportion of employers providing formal training by source (within company, community college, other academic institution, private vendors, trade associations, labor unions, other)

The cost estimate for developing and then annually fielding an ongoing employer survey of this size is approximately \$7 million per year, with data to be published within 4 years.

Data from employees

Employee Survey (Incidence – proportion of employees receiving training)

To collect the incidence of employer provided training, BLS recommends an online survey sent to approximately 18,500 household respondents (those who indicate they are currently employed, from the Current Population Survey). The survey will ask respondents to indicate the formal training that their company sponsored, funded or provided for them in the last 12 months and the informal training they received from their company in the last one month.

The survey will aim to produce the following estimates within a margin of error of three percent:

- Proportion of employees receiving formal training by delivery method (traditional classroom, other in person, online, combination, other)
- Proportion of employees receiving formal training by occupation (5 categories)
- Proportion of employees receiving informal training by delivery method (mentoring, job shadowing, demonstrations)
- Proportion of employees receiving informal training by occupation (5 categories)
- Proportion of employees receiving formal or informal training by age, sex, race, Hispanic origin, and educational attainment

The cost estimate for developing and then annually fielding an ongoing employee survey of this size is approximately \$5.5 million per year, with data to be published within 4 years.

Employee Log (Intensity – amount of time spent in training-related activities)

Finally, BLS research indicated that neither employees nor employers were able to recall reliably the duration of training events, for either formal or informal training. To capture the amount of time spent in training, BLS recommends that after completing the online survey, employees be asked to keep a log of all training they receive during a specified period. This log has not yet been developed or tested; a feasibility test is needed to determine how many employees will complete the log after the survey and the ability of employees to complete the log accurately.

As noted above, previous development work did not include design or testing of an employee log. Estimated costs of fielding such a log would be dependent upon the results of testing once design is completed.