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The Scope of Employer-Provided Training in the United States

Who, What, Where, and How Much?

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Only 12 years ago, former Secretary of Labor Ray Marshall and Marc Tucker (1992) suggested that frontline workers in the United States were the least skilled among all industrial nations. Sparked by this concern that U.S. workers lacked the skills to compete in an increasingly technological global economy, policymakers in the early 1990s called for increased investments in human capital. And although the rapid U.S. productivity growth of the late 1990s demonstrated that U.S. workers were, in fact, able to keep pace with their foreign competitors, improving education and training is still a key ingredient in achieving long-term economic growth (Hanushek 2002; Griliches 1997). Not only is a well-trained workforce better able to implement new technology (Bartel and Lichtenberg 1987), but the returns to education and training are high for workers themselves (Mincer 1994).

Encouraging or even requiring employers to sponsor more worker training is among the many proposals for dealing with skill shortfalls. Certainly, some firms are active trainers, but are they the exception or the rule? A *Wall Street Journal* article (Wessell 2001) featured the apparent exceptionally generous training subsidies provided by United Technologies Corporation. This large manufacturer not only covers the cost of college tuition and fees for any credit course its employees want to take, but it also offers up to three hours off each week—with pay—to study. The article suggested that United Technologies is the exception. But, are other firms so far behind? Are employers increasing the

amount of training they sponsor in response to their rising demand for skilled workers? Despite high returns and the rising demand for skill, employer investment in training may be falling short of the socially optimal level. Some firms (especially small ones) and workers face capital constraints that limit their ability to invest in training. Workers face the risk that the training will be poorly tailored to their careers and do little to raise their wages. For firms, a key problem is that spending to train workers might yield little reward if the trained workers are bid away by other employers or if their wages are bid up to reflect their added productivity. Still, firms like United Technologies offer employees substantial amounts of training and even sponsor education in fields not related to the worker's current or next job.

Theory offers clues about why firms may or may not sponsor training, and we briefly review the relevant hypotheses. Our focus, however, is empirical; we describe the actual amounts of employer-provided training using data from four different surveys. Guiding the analysis are the following questions:

- *How much*: What is the incidence and intensity of employer-provided training overall and by size of employer? Have employers increased the amount of training they sponsor over the last two decades?
- *Who*: Which workers receive employer-provided training?
- *Where*: Which employers provide the most training?
- *What*: What types of training do employers provide?

EXPECTATIONS OF EMPLOYER-PROVIDED TRAINING

Becker's (1964) classical view of human capital emphasizes the distinction between training for general and specific skills. General skills increase a worker's productivity at any firm, while specific skills raise the worker's productivity only for his or her current employer. Once workers receive general training, they become more valuable to all employers and can consequently demand a higher wage or opt to take their skills elsewhere. Because workers, not employers, will reap the full benefits from general training, Becker suggests that employers

have no incentive to pay for general training. In contrast, employers may well sponsor training in specific skills since they can reap at least some of the benefits of the training-induced productivity gains. Because the skills are specific to the individual firm, trained workers are no more valuable to outside firms than they would have been without the training.

Given the differences in returns to general and specific training, we would expect to see employers providing specific training, but not general training. If so, United Technologies is an obvious exception, since it pays for workers to get general training—they can take credit courses in any subject. But maybe United Technologies is not such an exception. Barron, Berger, and Black (1999) find that when firms were asked about the composition of the training they provide, nearly 70 percent claimed that most or almost all of the skills learned by new employees were general training. Veum (1999) also cites evidence that employers are paying for general training. Still, as Barron, Berger, and Black (1997) point out in an earlier study, firms may overstate the amount of training they provide, and some training that they claim is general may very well be specific.

If employers do provide general training, do their workers tend to leave the firm in search of higher wages, as Becker's theory suggests? When United Technology's go-back-to-college program began, managers were concerned that employees would be "educated on our nickel and then take off and go work for someone else" (Wessel 2001, p. 1). However, most workers who participated in the program stayed. In fact, attrition was much lower among those who received company-financed degrees—just 4 percent, compared to 9 percent among those who did not participate in the go-back-to college program (Wessell 2001).

So what is the role of general training? Might general training promote worker loyalty, as it seems to do in the case of United Technologies? Do workers regard access to general training a worthwhile fringe benefit? Or are there alternative explanations for the apparent employer funding of general training?

Acemoglu and Pischke (1999) challenge the applicability of Becker's theory to many employers and provide theoretical and empirical findings showing why employers often have incentives to offer general training. They argue that the presence of transaction costs in

the labor market, including matching and search costs, makes it difficult for workers to quit their jobs and costly for firms to replace their employees. By avoiding turnover, employers and workers reduce these transaction costs, allowing both to benefit when the training-induced addition to productivity exceeds the increase in the worker's wage.

Asymmetric information is another reason why general training may raise productivity faster than wages and thereby create a gain for employers. Firms providing the training may know more about the content and value of training than outside firms. As a result, outside firms will not be willing to compensate the newly trained workers by an amount equal to their increased productivity (Chiang and Chiang 1990; Katz and Ziderman 1990). A second form of asymmetry arises when high-ability workers benefit more from training than other workers (Acemoglu and Pischke 1999). As Barron, Berger, and Black (1999) argue, since firms are most likely to lay off the low-ability workers who receive occupational training, outside firms will assume that the trained workers available in the market are the least capable of those trained. High-ability workers will not be able to quit and demonstrate their high ability to outside firms. Thus, the firm providing the training can keep the highly productive worker without paying the full value of the enhanced productivity.

The complementarity between specific and general skills is another reason firms may sponsor training. The ability to benefit from general training (for example, knowing how to use a specific piece of software) may increase when the worker knows the strategy of the company (specific training). Thus, the higher the worker's general skills, the more valuable the employer-provided specific training is to the company.

The theory also sheds light on which workers we expect to receive the most training. Because specific and general skills are often complementary, employers are more likely to invest in those who already have a high level of general skills. Several studies have corroborated the latter point, finding that those with higher education levels receive more training (Lillard and Tan 1986; Brown 1990; Lynch 1992; Barnow, Giannarelli, and Long 1996; Barron, Berger, and Black 1997; Lynch and Black 1998; Holzer and Reaser 1999). In addition, these studies often have found differences by race and gender, with white males typically receiving more training than other groups.

Which firms do we expect to provide the most training? According to Becker's theory, training levels should be sensitive to the turnover in the organization because the higher the turnover, the greater the chance that workers will leave before the firm can reap the benefits of the training—especially when it comes to general training. In addition, past studies typically find that large firms offer more training (Barron, Berger, and Black 1997; Lynch and Black 1998; Holzer and Reaser 1999), but there is no dominant theory as to why this is the case. Because larger firms pay higher wages, they typically have lower turnover and a more qualified workforce (Holzer and Reaser 1999; Leuven and Oosterbeek 1999). They may also face fewer capital constraints and can gain from economies of scale in the operation of formal training programs.

Other expectations relate to the connection between technical change and training. Firms trying to achieve high levels of technical change are most likely to invest in training. Indeed, Bartel and Sicherman (1998) find that rapid technical change causes companies to invest more in production workers, thereby narrowing the training gap between the more- and less-educated workers. As more companies pursued strategies to increase their rates of technical change, especially in the early to mid 1990s, we should observe an increase in the level of training and a narrowing of the training gaps between types of workers.

Expanding the amount of employer-provided training may or may not affect wage levels and wage differentials. If the benefits from training accrue largely to firms making the investments rather than the employees, differences in the receipt of training by groups of workers may not influence wage differentials.

This chapter adds to the empirical literature by compiling and analyzing estimates of the overall extent and composition of employer-sponsored training in the United States. Keeping in mind theoretical considerations, we describe the patterns and trends in employer-provided training, the distribution of training by type of worker, and differences in the types of employer-provided training across workers and firms.

RECENT SURVEYS WITH DATA ON EMPLOYER-PROVIDED TRAINING

The four recent surveys that yield empirical evidence on the total amount of employer-provided training in the United States are the 1997 National Employer Survey (NES), the 1995 Survey of Employer-Provided Training (SEPT), the 1995 Adult Education Component of the National Household Education Survey (NHES), and the 1996 Survey of Income and Program Participation (SIPP) topical modules. Before presenting results, we describe the four surveys and their training questions.

1997 National Employer Survey

The 1997 NES, administered by the U.S. Bureau of the Census, is a telephone survey of over 3,000 establishments. These establishments represent more than 5,400 private U.S. establishments with 20 or more employees (Shapiro and Goertz 1998). The survey provides information on the incidence and intensity of formal employer-provided training by worker occupation. It also provides detailed information on establishment characteristics. The 1997 NES asks each employer if they pay for or provide any formal training either on-the-job or at a school or technical institute. It defines formal training as any type of training activity with a pre-defined objective that may occur during or outside working hours.

1995 Survey of Employer-Provided Training

The 1995 SEPT is a personal interview survey of approximately 1,000 establishments and approximately 1,000 employees at those establishments. It provides information on both formal and informal training from private establishments with 50 or more employees.

The Establishment Survey portion of 1995 SEPT collected information on formal training using two survey instruments—an employer questionnaire and an employer training log. Like the 1997 NES, the 1995 SEPT Employer Survey defines formal training as training that is planned in advance and has a structured format and defined curriculum. Employer-provided training is formal training provided or

financed by the establishment. With its emphasis on financing, this measure should include tuition reimbursement programs and other training that takes place off-site and outside working hours.

The Employee Survey portion of the 1995 SEPT collects information from up to two employees from each establishment using survey instruments similar to those in the Employer Survey, but the training questions in the Employee Survey are quite different. The Employee Survey focuses on training that the employees received from the employer and does not mention training that the employer paid for. Also, the Employee Survey log provides information on hours of training that took place from May to October 1995, a time when many educational institutions are closed, rather than a full year period. For these reasons, the Employee Survey may not capture training that was paid for by the employer, but provided off-site and outside working hours. The SEPT Employee Survey also includes a broad measure of informal training. Informal training in the SEPT includes any unstructured and unplanned activities that taught a skill or provided information to help workers do their jobs better. Both informal and formal training activities need only have lasted five minutes to be recorded in employee logs.

1995 National Household Education Survey

The Adult Education component of the 1995 NHES is a cross-sectional telephone survey of approximately 20,000 adults age 16 and older who were not enrolled in elementary or secondary school. The survey emphasizes formal courses and programs since it first asks its respondents to focus on education and training programs, courses, workshops, and seminars that they took during the past 12 months. The survey then asks about English as a second language, basic skills and GED preparation, credential classes, apprenticeships, and career or job-related courses. For non-self-employed workers, the survey also asks whether the employer provided instruction for these courses and whether the employer supported the courses in various ways. We define employer-provided training to include all apprenticeships, and any type of training for which an employer provided instruction, gave time off from work with or without pay, provided classroom space, or paid all or part of the cost.

1996 Survey of Income and Program Participation Topical Modules

The 1996 SIPP is a national survey of approximately 36,000 households (including roughly 90,000 individuals) conducted by the U.S. Census Bureau. In addition to its core survey data, the SIPP includes a number of topical modules that ask about specific subjects of interest. The Education and Training History topical module administered in Wave 2 (August to November 1996) provides information on work-related training apart from high school or college, specifically training that 1) helps persons search for or be trained for a new job, and 2) training that helps improve skills in a person's current job. Both training types are included in our formal training definition. Next, the survey asks how many training activities of each type, lasting one hour or more, were received by the worker in the past 12 months. Only then is the respondent asked who sponsored or paid for their *most recent* training. If the current or previous employer sponsored or paid for this training, we include it in our measure of employer-provided training.

The 1996 SIPP School Enrollment and Financing topical module administered in Wave 5 (August through November of 1997), provides information specifically on employer-financed educational assistance. It asked persons enrolled in school in the past year if they received financial assistance from their employers. It also asked if students could take classes during work hours and if the student is paid for time spent in class. We use these questions to assess the level of and reasons for employer-financed educational assistance.

Differences in the samples and training questions in the four surveys are likely to affect estimates of employer-provided training. Survey results from the 1997 NES and the 1995 SEPT exclude training in establishments with fewer than 20 employees (NES) and fewer than 50 employees (SEPT). Moreover, definitions of employer-provided training vary and play a crucial role in estimates of the scope of employer-provided training. The 1995 NHES focuses more on courses, the 1995 SEPT captures more informal and very quick training activities, and the 1996 SIPP emphasizes only the most recent training activities lasting over an hour. But considered together, the 1997 NES, the 1995 SEPT, the 1995 NHES, and the 1996 SIPP offer a comprehensive picture of the status of employer-provided training in the United States.

HOW MUCH: THE INCIDENCE AND INTENSITY OF EMPLOYER-PROVIDED TRAINING

Incidence

Most establishments offer some type of formal training. The 1997 NES and the 1995 SEPT employer surveys find that 78 percent (NES) to 93 percent (SEPT) of establishments with 50 or more employees provided formal training over the past year. Considered with the additional NES finding that 72 percent of establishments with 20 or more employees provided formal training, the results suggest that approximately 85 percent of establishments with 50 or more employees provided formal training and approximately 70 percent of all establishments provided formal training.[1]

Turning to the incidence of employer-provided training among workers, rather than establishments, we find clear results for informal training but mixed results for formal training. Informal training is ubiquitous. The 1995 SEPT (the only one of our four focal surveys with this information) finds that over 95 percent of workers in establishments with 50 or more employees receive employer-provided informal training. Though this number sounds quite high, it makes sense when we consider the broad definition that the SEPT uses—a definition that includes training activities lasting just five minutes. Nonetheless, other studies have found similar incidences of informal training. Using the 1994 NES, Lynch and Black (1998) find that 97 percent of establishments with 20 or more employees provide informal training. Evidently, the networks of informal training are reaching most employees.

The incidence of formal training is less clear, with findings from the surveys varying substantially. The 1995 SEPT finds that 70 percent of workers in establishments with 50 or more employees receive formal employer-provided training, while the 1995 NHES finds that just 37 percent of all workers receive formal employer-provided training. But lower still is the 1996 SIPP. Though this survey asked respondents only if their most recent training was employer-provided (only 24 percent of workers received), adding in employer-provided educational assistance (another 2 percent) and the probabilistic incidence of employer-provided training for those whose most recent training was

not employer-provided over the past year would still only raise this figure to just over 26 percent.

Part of the difference between these results can be accounted for by samples—the SEPT includes only workers at larger firms, while the NHES and SIPP include all workers age 16 and over. And, as mentioned above, the NHES's focus on classes may result in a narrower measure of training than that used in the SEPT. Moreover, the SEPT's requirement that training activities last just five minutes, rather than the 1 hour required by the SIPP and the "programs, courses, workshops, and seminars" emphasized in the NHES, may account for the large difference in magnitude between these figures. The SIPP figure provides a lower bound (26 percent of workers reporting most recent training paid for by their employer), and the SEPT yields an upper bound (up to 70 percent of workers in large establishments received at least some short formal training).

Intensity

How many hours of training do workers receive? Averaged over all workers, whether they received training or not, the hours per worker of employer-sponsored training vary widely by survey. As with incidence, the amount of training is highest for informal training. The SEPT Employee Survey reports an average 31 hours of informal training per worker over six months. But average amounts of formal training are much less. The 1995 SEPT Employer and Employee Surveys yield estimates of 11–13 hours of training per worker over the six-month period from May to October 1995. The SIPP, which measures only the most recent training activity, yields an average of 14 hours per worker. The proximity of these figures is no surprise. Both the SEPT and the SIPP typically omit coursework from the employer-provided training definition and the SEPT's six-month focus is likely to capture a measure of intensity similar to that of the most recent training in the SIPP, since the most recent training likely occurred in the past six months. The slightly higher SIPP number makes sense because the SIPP survey takes place a year after the SEPT and we expect that training is growing over time. The 1995 NHES finds a much higher number—an average of 33 hours per worker per six-month period. This is likely due to

its emphasis on coursework, activities that tend to have much higher intensity.

These modest levels of mean intensity across all workers do not reflect the extent of training among workers actually trained.[2] On average, trained workers engaged in 15–19 hours of training in the 1995 SEPT over a six-month period, 60 hours in the SIPP during the most recent training, and 89 hours of training in the 1995 NHES over a six-month period.

The effectiveness of training would be questionable if almost all workers received very few hours of training. But, as shown in Figure 7.1, about 21 percent of all workers (57 percent of trained workers) participated in more than one full week of training over the past year.[3] A small percentage, about 10 percent of workers, report more than one month of training. These are likely to be workers enrolled in courses and degree programs. The Figure 7.1 results come from NHES data, but we find a very similar distribution using the SIPP data. Holzer and Reaser (1999) also find that a small but significant percentage of firms (about 5 percent) report providing more than one month of training to their most recent hire.

Training over Time

How has the incidence of employer-provided training changed over time? Have employers responded to the increased importance of skill by sponsoring more training? Figure 7.2 presents the incidence of employer-provided training over time by data source. The evidence within surveys shows large increases in employer-provided training in the past two decades.

According to the NHES, the percentage of workers receiving training appears to have doubled, from 19 percent in 1990 to 37 percent in 1994. However, the gains may be overstated because of differences in the training questions in the two years. The 1991 initial training question asked: "Not counting full-time school or courses taken toward a degree . . . have you been involved in . . . educational or training activities given by an employer or labor organization . . . in the past 12 months?" (Barnow, Giannarelli, and Long 1996). On the other hand, the 1995 questions, as discussed above, enable us to measure any type of training (including English as a second language, basic skills and

Figure 7.1 Distribution of Training by Hours of Training Received in One Year (1995 NHES)

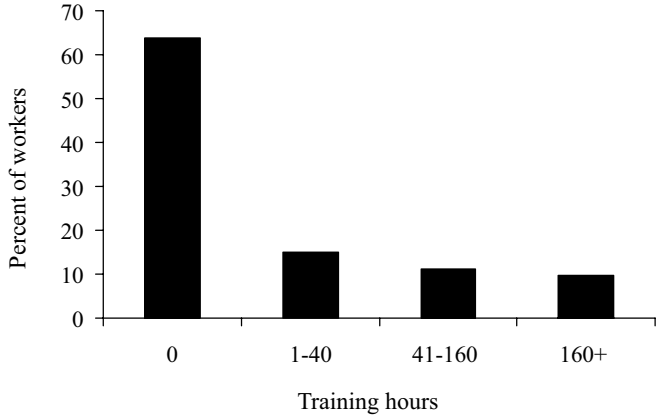
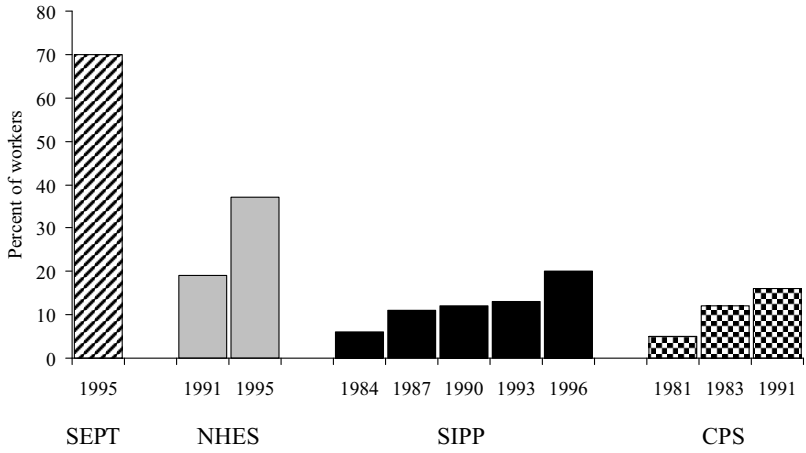


Figure 7.2 Percentage of Workers Receiving Training across Surveys and over Time



GED preparation, credential courses, career or job-related activities, and apprenticeships) provided or *supported* by the employer. But if we focus only on employer-provided or -supported career or job-related courses in the 1995 NHES, we find that the percentage of workers receiving training in 1995 falls from 37 percent to 27 percent. The additional questions in the 1995 NHES instrument that enable us to include employer support may account for a few more percentage points, further lowering the comparable 1995 NHES estimate to 25 percent of workers. This would leave a lower, though still respectable, six-percentage-point change between 1991 and 1995.

The SIPP provides more accurate data over time by using the same universe and questions in each survey. It shows the percentage of all persons age 18–64 that receive training rising from 6 percent in the 1984 SIPP, to 20 percent in the 1996 SIPP—with the largest jump between 1993 and 1996.[4] The CPS also shows increases in employer-provided training over time, from 5 percent in the 1981 CPS to 16 percent in the 1991 CPS.[5] These steady increases add up to a 14 percentage point increase over a 12-year period in the SIPP and a comparable 11-point increase over a 10-year period in the CPS.

Previous research also has found evidence that training increased over this period. Lynch and Black (1998) find that 57 percent of firms reported that they increased the amount of training they offered between 1991 and 1994, and only 2 percent of firms reported decreases over that period (all others presumably experienced no changes in the amount of training offered). Rapid technological change is responsible, as Bartel and Sicherman (1998) find. This is especially plausible given the boom in personal computing and Internet technology in the early 1990s. Or, perhaps the increase is due to higher corporate profits with a good economy, or simply a shift in corporate culture that now emphasizes lifelong learning.

WHO: THE WORKERS RECEIVING EMPLOYER-PROVIDED TRAINING

Who is receiving employer-provided training? Table 7.1 presents tabulations on the incidence and intensity of employer-provided train-

ing by various worker characteristics for each of the three surveys. Despite absolute differences in the numbers due to survey design and universe, as discussed in previous sections, we find patterns of training common to all three surveys, together with some important exceptions. Although the data show that employer-provided training does not reach all types of workers equally, many disadvantaged groups are apparently receiving higher amounts of training than previously thought.

In all surveys, the incidence of employer-provided training increases with education—a finding consistent with other empirical studies (Lillard and Tan 1986; Lynch 1992; Brown 1990; Barnow, Giannarelli, and Long 1996; Barron, Berger, and Black 1997; Holzer and Reaser 1999). Figure 7.3a confirms this common view that training levels rise with formal education. In all three employee surveys, workers with a high school diploma or less are the least likely to receive training of any educational group while those with a bachelor's degree or higher are the most likely to receive training. This tendency suggests the worker's existing stock of training may raise the benefits to employers of additional training.

More surprising are the data on the intensity of training in Figure 7.3b. The NHES, which captures substantially more educational activities than the other surveys, shows that the "some college" group has by far the highest intensity of training, suggesting that employers are helping these workers go back to school.

To further investigate this hypothesis, we examine data from the SIPP School Enrollment and Financing topical module, data not included in our SIPP measures of employer-provided training. These data provide further evidence that more-educated workers do not necessarily receive more employer-provided training, when the training comes in the form of educational assistance. In the SIPP, workers with some college experience almost exactly the same incidence of employer-provided educational assistance as workers with at least a bachelor's degree.

Similar variations by data set arise with regard to training by earnings level, age, and job characteristics. Both the SEPT and the SIPP report that workers with the lowest earnings receive the least amount of employer-provided training—both in incidence and intensity. This finding again supports the findings of past research. All three surveys reveal that the incidence of employer-provided training is positively

Figure 7.3a Incidence of Employer-Provided Training, by Education

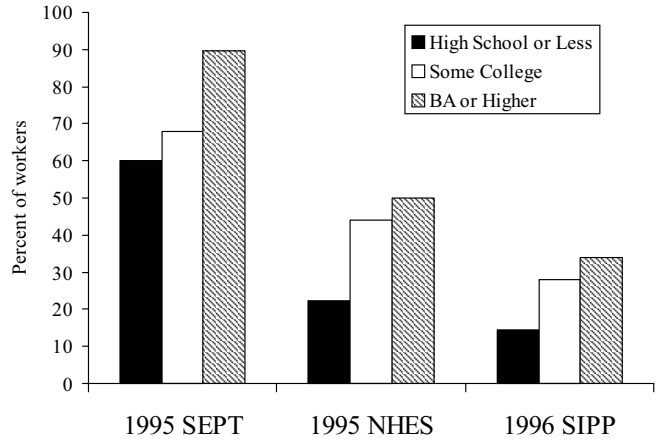


Figure 7.3b Intensity of Employer-Provided Training, by Education

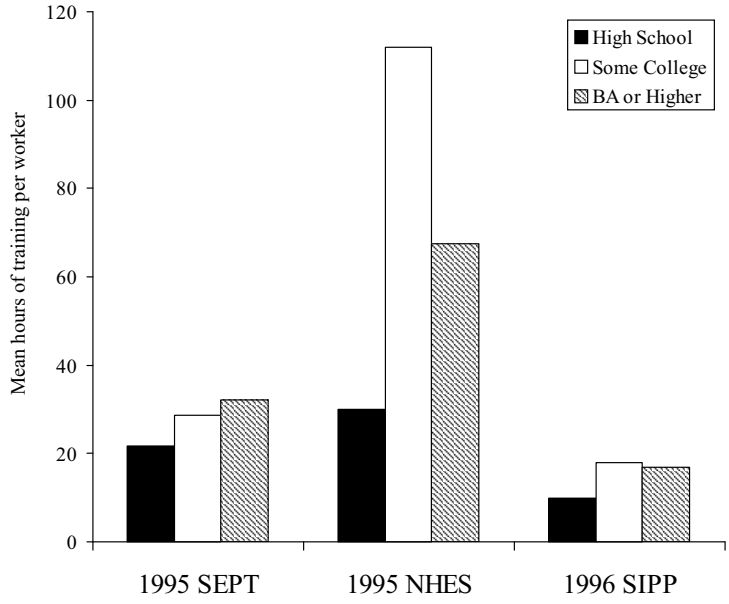


Table 7.1 Incidence and Intensity of Employer-Provided Formal Training, by Worker Characteristics

	Survey					
	1995 SEPT		1995 NHES		1996 SIPP	
Worker characteristics	% workers in estabs. w/50+ employees (past year)	Mean hours per worker in estabs. w/50+ employees (6 months)	% workers in all estabs. (past year)	Mean hours per worker in all estabs. (6 months)	% workers in all estabs. (most recent)	Mean hours per worker in all estabs. (most recent)
Total (formal training)	69.8	13.4	36.7	32.7	23.6	14.2
Educational attainment						
High school graduate or less	60.1	10.9	22.2	15.0	14.5	9.9
Some college	67.8	14.3	44.1	55.6	28.1	18.0
Bachelor's degree or higher	89.7	16.1	50.0	33.8	33.9	16.9
Earnings quartile						
First	61.8	4.1	27.1	41.6	10.9	6.2
Second	74.5	11.6	31.3	25.9	17.8	12.9
Third	62.0	15.9	42.1	27.6	29.6	18.3
Fourth	84.0	22.8	49.3	27.7	35.4	18.6
Age						
25 and younger	63.4	2.7	43.1	83.9	16.4	12.6
25–34	78.5	14.0	37.3	32.5	26.5	17.0
35–44	74.7	15.4	39.5	23.8	27.3	15.7
45–54	64.7	17.2	36.9	17.7	26.2	14.4
55+	50.7	5.7	20.3	7.9	14.3	6.5

Usual hours worked per week						
Under 35	56.1	4.8	34.8	52.7	14.7	7.5
35 or more	71.6	14.6	38.6	25.4	28.6	17.5
Tenure with current employer						
Up to 2 years	67.5	8.9	32.8	35.1	—	—
More than 2 years and up to 5 years	56.8	4.5	36.5	36.7	—	—
More than 5 years and up to 10 years	79.7	19.5	36.7	32.3	—	—
More than 10 years	75.3	21.1	39.4	20.9	—	—
Gender						
Men	66.5	12.2	36.0	34.1	22.1	14.3
Women	73.1	14.6	37.5	31.2	25.3	14.0
Race and origin						
White	70.4	13.6	37.8	31.7	24.2	14.1
Black	70.6	13.8	32.5	35.3	20.9	16.2
American Indian/Alaskan Native		—	36.5	29.9	22.3	13.3
Asian/Pacific Islander		—	36.3	44.9	17.2	10.0
Hispanic	73.7	11.0	24.6	52.5	14.5	9.2

NOTE: — = data unavailable.

SOURCE: 1995 Survey of Employer-Provided Training (SEPT) figures are from Frazis et al. (1998). 1995 National Household Education Survey (NHES) figures are from authors' weighted tabulations of the 1995 NHES publice-use data. 1996 Survey of Income and Program Participation (SIPP) figures are from authors' weighted tabulation of the 1996 SIPP public-use data.

related to earnings, but the results on intensity differ for the NHES. The SEPT and SIPP both show a lower training intensity among workers in the lowest earnings quartiles while the NHES shows a higher training intensity—the lowest earnings quartile report obtaining far more training than higher earning workers in the NHES. Workers earning below $15,000 per year were receiving 42 hours of training on average over six months, well above the 28 hours of training reported by workers earning over $39,000. This reversal of expected patterns is apparently explained by the NHES's emphasis on credit courses. Workers taking advantage of employer-sponsored tuition often have lower than average earnings, are younger and less-experienced, and spend less time at work.

The estimates by age follow similar patterns. In the SEPT and SIPP data sets, workers 25 years old and younger are less likely to participate in employer-provided training than all other age groups except the 55 and older group. The youngest cohort also engages in far fewer hours of training than most older cohorts in these two surveys. The NHES, on the other hand, shows that workers age 25 and younger are experiencing a higher incidence and intensity of training than any other age group. The survey reports that 43 percent of workers age 25 and younger receive employer-sponsored training compared to 37 percent of workers age 25–34. Moreover, according to the NHES, this youngest cohort is averaging 84 hours of training per six months, compared to 33 hours for workers age 25–34.

The pattern is even the same by job characteristics. Full-time workers and workers with longer tenure have a higher incidence of training in all surveys, but the NHES reports that part-time workers and those with less tenure have a much higher intensity of training. According to the NHES, workers who put in less than 35 hours per week receive more than double the number of hours of training than their full-time counterparts—53 hours per week compared to 25.

All of these results for education level, earnings, age, and job characteristics are likely attributable to the NHES's measure of training. As the survey includes for-credit vocational and college programs in its definition of training, it includes workers who are receiving employer support to attend school full or part time. These students are likely to be 25 years old or younger and recent high school graduates with "some college." The hours of training they receive are likely to be

much higher than those of other workers as they are enrolled in formal college or vocational classes, often for several weeks at a time.

Unlike past research, we find no significant differences in the receipt of training by sex or race and ethnicity in any of the surveys.

In general, we find a more mixed picture of differences in training by worker characteristics than reported in most other studies. On one hand, we find evidence for the commonly cited result that employer-provided training is disproportionately reaching more-educated workers and higher-income workers. Data from SEPT and NHES confirm this pattern with regard to the incidence of training. However, in an important departure from other studies, we find average hours of training per worker are generally higher (rather than lower) for young, part-time, and less-experienced workers in the NHES—presumably because these characteristics are common to workers enrolled in credit courses. Still, overall, less advantaged workers average fewer hours of training across all workers than more advantaged workers because their higher NHES intensity figures do not fully compensate for their lower incidence of training.

WHERE: THE EMPLOYERS OFFERING THE MOST TRAINING

The 1997 NES and both the 1995 SEPT Employer and Employee Surveys provide information on which employers offer the most training. As shown in Table 7.2, the estimates for all three of these surveys indicate that the amount of training steadily increases with establishment size and number of workplace benefits. According to the 1997 NES, 69 percent of small establishments (20–50 employees) provided formal training, while 93 percent of large establishments (1,000 or more employees) provided formal training. And though the magnitudes of the SEPT surveys are different, the pattern is the same as in the NES—larger establishments provide more training. Measures of the intensity of training indicate the same result—workers in large establishments receive considerably more hours of training than workers in small establishments. These findings are consistent with the literature

Table 7.2 Incidence and Intensity of Employer-Provided Formal Training, by Establishment Characteristics

Establishment characteristics	Survey: 1997 NES: % estabs. w/20+ employees (past year)	1997 NES: % estabs. w/50+ employees (past year)	1995 SEPT employer: % estabs. w/50+ employees (past year)	1995 SEPT employer: Mean hours per worker in estabs. w/50+ employees (6 months)	1995 SEPT employee: % workers in estabs. w/50+ employees (past year)	1995 SEPT employee: Mean hours per worker in estabs. w/50+ employees (6 months)
Total (formal training)	72.4	77.6	92.5	10.7	69.8	13.4
Number of employees						
20–50	69.2	—	—		—	
50–99	72.4	—	90.8	5.7	61.6	8.2
100–249	82.3	—	—		—	
250–999	86.5	—	—		—	
100–499	—	—	94.4	12.1	73.0	13.5
500 or more	—	—	98.1	12.0	71.0	16.6
1,000 or more	93.0	—	—		—	
Turnover						
Low	71.5	73.4	92.7	10.8	78.3	27.3
Medium	73.0	81.9	96.0	12.5	74.7	15.6
High	72.6	72.9	88.6	7.2	60.7	7.6
Union presence						
No employees represented	72.3	78.3	92.9	11.0	71.6	14.0

Some employees represented	74.2	73.7	90.6	9.7	65.7	12.1
Number of selected benefits						
Six or fewer	63.6	63.6	89.5	7.1	62.9	10.2
Seven or more	84.3	87.0	99.6	14.8	76.9	16.7

NOTE: — = data unavailable.

SOURCE: 1997 National Employer Survey (NES) figures are from authors' weighted tabulations of the 1997 NES public-use data. 1995 Survey of Employer Provided Training (SEPT) figures are from Frazis et al. (1998).

(Lynch and Black 1998; Barron, Berger, and Black 1997; Holzer and Reaser 1999) and with expectations from theory.

Employer-provided training rises with the number of benefits a firm offers. Benefits may include perks such as paid vacation, paid sick leave, health insurance, pension plans, family leave, and child care. Establishments that provide more of these types of benefits also provide more formal training, both in incidence and intensity. According to the SEPT, the percentage of establishments providing training and the percentage of workers receiving training is at least 10 percentage points higher in establishments that provide seven or more selected benefits, than in establishments that provide six or fewer of these benefits.

A powerful expectation is that employers provide less training in establishments with high turnover, because of the greater chance that workers will leave before the firm can recoup their investment in training. But surprisingly, the evidence on training by turnover is mixed. The 1995 SEPT incidence and intensity measures presented in Table 7.2 generally support the expected negative relationship between turnover and training. Fewer high-turnover establishments report providing formal training and fewer workers in high-turnover establishments receive formal training than workers in low-turnover establishments. On the other hand, the 1997 NES reports that the percentage of establishments providing training does not vary significantly with turnover.[6]

Previous studies find mixed results on differences in training by union presence. Using the 1992 Small Business Administration–funded survey, Barron, Berger, and Black (1997) find that newly hired workers receive more training if they belong to a union. But the authors find no significant difference for firms with and without unions when using the 1982 Employment Opportunity Pilot Project survey. We also find that employer-provided training varies little by union status in both the 1997 NES and the 1995 SEPT. There is a small difference of two percentage points by union status in both the NES and the SEPT Employer Survey, but this difference is not statistically significant. The same is true of intensity measures.

WHAT: THE TYPES OF TRAINING EMPLOYERS PROVIDE

So far, the surveys suggest the importance of looking not only at employer-provided general versus specific training, but at a particular form of general training—employer-sponsored educational assistance. Is this form of general training widespread? When fully accounting for educational assistance, is the mix of training still in accord with Becker's theory and with the common view that that lower-earning, younger, and less-educated workers have limited access to employer-sponsored training?

In Table 7.3, where we report the scale of various types of employer-provided training, there is evidence for Becker's theory that firms choose to provide more specific than general training. The 1997 NES, 1995 SEPT, and the 1995 NHES all find that employers emphasize occupational safety training (66 percent, 72 percent, and 43 percent, respectively), which is generally firm-specific, and provide little basic or remedial skill training (17 percent, 9 percent, and 2 percent, respectively), which is general. Lynch and Black (1998) find similar results in the 1994 NES. They find that roughly three-fourths of employers provide specific training, but only one-quarter of establishments provide remedial skills.

In our focal surveys, the high percentage of establishments offering computer training might be an exception to this pattern and to Becker's theory, but some computer training could involve a combination of specific and general training. In any event, note that the NES finds that 73 percent of firms with more than 50 employees offered computer skills training in the past year—the highest incidence of any type of training. Similarly, training intensity measures are highest for computer skills in both the SEPT Employer and Employee Surveys. More information on the specific versus general content of computer training would be necessary before judging whether the high levels of this form of training constitute employer-provided general training. Nonetheless, these findings on computer training suggest that rapid technological growth may have played a large role in encouraging increased employer investments in training over the 1990s.

Table 7.3 Incidence and Intensity of Formal Employer-Provided Training, by Type of Training

	Survey							
	1997 NES		1995 SEPT Employer		1995 SEPT employee		1995 NHES	
Type of training	% estabs. w/20+ employees (past year)	% estabs. w/50+ employees (past year)	% estabs. w/50+ employees (past year)	Mean hours for workers in estabs. w/50+ employees (6 months)	% worker in estabs. w/50+ employees (past year)	Mean hours for workers in estabs. w/50+ employees (6 months)	% of all workers (past year)	Mean hours for all workers (6 months)
Total (formal training)	72.4	77.6	92.5	10.7	69.8	13.4	36.7	32.7
Type of training								—
Management	—	—	66.8	0.8	16.3	0.6	—	—
Professional and technical skills	—	—	49.4	1.3	21.4	1.9	—	—
Computer skills	63.5	72.8	65.5	2.1	23.5	5.1	—	—
Clerical and administrative support			38.1	0.5	8.4	0.6	—	—
Sales and customer relations	58.9	58.5	50.5	0.8	15.1	0.6	—	—
Service-related	—	—	27.0	0.6	5.9	0.3	—	—
Production and construction-related	—	—	29.6	1.1	11.3	2.0	—	—
Basic or remedial skills	16.4	17.3	9.4	0 .1	2.3	0.0	—	—

Occupational safety	58.5	65.8	71.7	1.2	42.8	0.6	—	—
Communication, employee	—	—	45.7	1.4	22.8	1.5	—	—
Development and quality								
Employee wellness	—	—	37.3	0.1	—	—	—	—
Orientation	—	—	72.5	0.2	—	—	—	—
Awareness	—	—	51.7	0.6	—	—	—	—
Other	—	—	0.3	0.1	1.4	0.2	—	—
Teamwork and problem solving	62.8	69.4	—	—	—	—	—	—
English as a second language	—	—	—	—	—	—	0.2	0.1
Basic skills or GED prep	—	—	—	—	—	—	0.4	0.3
Credit courses/ programs	—	—	—	—	—	—	10.3	20.7
Apprenticeship	9.1	9.9	24.4	—	—	—	1.6	1.9
Career or job-related courses	—	—	—	—	—	—	27.1	9.7
Mentoring programs	9.5	10.1	44.1	—	—	—	—	—

NOTE: — = data unavailable.

SOURCE: 1997 National Employer Survey (NES) figures are from authors' weighted tabulations of the 1997 NES public-use data. 1995 Survey of Employer Provided Training (SEPT) figures are from Frazis et al. (1998) and (1997). 1995 National Household Education Survey (NHES) figures are from authors' weighted tabulations of the 1995 NHES public-use data.

The NHES provides a different breakdown of training—one that helps explain the wide variation in incidence and intensity figures between the SEPT and the NHES and gives us an insight into the incidence and intensity of employer-supported education. The NHES's nearly exclusive focus on courses and the SEPT's lack of focus on courses mean that the NHES misses many of the higher incidence, but lower intensity types of training captured in the SEPT (e.g., occupational safety), and the SEPT misses many of the lower incidence, but higher intensity types of training captured in the NHES. For example, the NHES reports that 10 percent of workers were enrolled in employer-supported credit courses or programs in the last year. Though the incidence of this type of training is low, the intensity is high. Workers engaging in this employer-sponsored training attend an average of 21 hours of class time in six months. Adding this type of training to the equation nearly triples the number of hours of training for all workers in the NHES figures.

Taking workers receiving employer-supported credit courses out of the NHES calculations would lower the number of hours of training for all workers to 12 hours—almost equal to the SEPT figure of 13 hours, which is based on a sample of only large firms. We are not advocating omitting employer-supported credit courses from the definition of employer-provided training, but think it worthwhile to distinguish employer-supported education from other forms of employer-provided training.

As suggested above, keeping employer-supported credit courses in the calculations appears to modify the conventional conclusions about training patterns that appear in the literature and are present in the SEPT data. Because many of the workers who take advantage of credit courses are likely more traditional college students or only slightly older, they tend to be younger, less-educated, in a lower earnings quartile. They also may work fewer hours per week, as they are likely to be spending more time in the classroom. As discussed above, the NHES reports both higher levels of employer-sponsored education and much higher amounts of training for younger, less educated, and low earning workers than does the SEPT.

The 1996 SIPP offers additional insights about the levels and reasons for employer-financed educational assistance in its School Enrollment and Financing topical module. First, the topical module shows

employer-provided educational assistance as affecting only 2 percent of workers, far less than the 10 percent found in the NHES. Part of the reason is that the NHES uses a broader definition, one that includes any type of employer support (such as time off to go to school), while the SIPP includes only those whose employer actually paid directly for some part of the education.

The low share of workers reporting employer-provided educational assistance in the SIPP does not mean that employers are not offering tuition support. In a separate question in the NES (not included in our prior tabulations of employer-provided training), firms were asked if they reimburse the cost of tuition for an approved course. Surprisingly, more than 82 percent of firms reported offering this type of tuition reimbursement to managers, supervisors, and administrators and 69 percent offered the same support to frontline workers. Data from other employer surveys reported by Cappelli (2002) confirm the high shares of employers offering tuition subsidies.

Although only a minority of workers use the tuition and paid leave subsidies in a given year, the impact on adult education is substantial. Of all adults enrolled in postsecondary degree–granting programs, 24 percent received an employer-provided tuition subsidy and 53 percent obtained employer support either from tuition or paid leave.[7]

The SIPP School Enrollment and Financing topical module yields information on why employers might sponsor educational assistance. Of workers taking courses with employer support, almost 50 percent are required to enroll in courses to maintain skills (25 percent), retrain (3 percent), or receive a promotion or salary increase (21 percent). And only 27 percent of those employees are paid for their time spent in class. According to Cappelli (2002), a major reason employers offer the apparently general training is the reduction in turnover and the ability to attract above average workers. Employers believe workers stay longer with the firm because of the chance to use the educational subsidies.

The picture based on the observed types of training is only partly consistent with Becker's theory. Employers are indeed providing a significant amount of specific training, such as orientation and occupational safety, but the widely prevalent computer skills training is likely to have a significant general component. Finally, a large percentage of establishments offer employer-provided educational assistance and a

small but significant proportion of workers use this support for courses related to jobs or careers.

SUMMARY AND IMPLICATIONS OF EMPLOYER-PROVIDED TRAINING PATTERNS

What generalizations can be made about recent patterns and trends in employer-provided training? First, employer-provided training increased substantially over the 1980s and early 1990s. The percentage of workers receiving training grew about one percent per year with even more rapid growth in the mid 1990s. The question remains, however, as to what drove this increase. Rapid technological growth, a booming economy, or a shift in corporate culture that now emphasizes lifelong learning, may all be possible explanations. Whether we can sustain this growth in employer-provided training through an economic downturn remains to be seen.

Second, alternative data sets yield similar estimates concerning the large percentages of establishments (about 85 percent of establishments with 50 or more employees and 70 percent of all establishments) providing formal training. But, the data sets differ on the share of workers participating in employer-sponsored formal training; the range runs from 26 to 65 percent of workers.

Third, the surveys providing measures of intensity of training report widely different amounts. Among workers participating in employer-sponsored training, the average number of hours in training over a six-month period ranged from 15–19 hours in the 1995 SEPT to 89 hours in the 1995 NHES. The primary reason for these disparate estimates is apparently the inclusion of employer-supported formal schooling in the NHES, but not in the SEPT.

Fourth, the distribution of hours of formal training in the NHES and SIPP suggests that some workers are receiving intensive employer-provided training. Fifteen percent of all workers in the NHES received more than two full weeks of employer-provided formal training in 1994. Although 15 percent may sound like a low share obtaining training of at least moderate intensity, over a three- to four-year period, the share of the workforce participating in some intensive training could

reach 40–60 percent, depending on whether workers intensively trained in one year do so in the adjacent years.

Fifth, unlike formal training, informal training is ubiquitous. The 1995 SEPT finds that nearly all workers—over 95 percent—at establishments with 50 or more employees receive informal training. This finding is not surprising, given the SEPT's broad definition of informal training. The SEPT also finds that workers receive an average of 31 hours of employer-provided informal training per worker for the six-month period from May through October, 1995.

Sixth, how employer training varies by worker characteristics is sensitive to the inclusion of employer-sponsored educational assistance. Ignoring such educational assistance, the data support the commonly cited result that employer-provided training is disproportionately reaching more advantaged (e.g., well-educated, higher earnings) workers. However, the NHES survey, which best captures data on employer assistance in education, finds surprising evidence that the intensity of training is generally higher for young, part-time, and less-experienced workers.

Seventh, the amount of training received varies by employer characteristics. The 1997 NES, 1995 SEPT, and the 1995 NHES estimates indicate that the amount of training provided rises substantially with establishment size and number of work place benefits, but is only modestly affected by turnover and barely affected at all by union status.

Finally, the data support Becker's theory that employers emphasize specific training, but we also find evidence of a considerable amount of employer-supported general training, both in the form of computer training and employer-provided educational assistance.

What are the implications of these findings for policy? Certainly, employers are already receptive to training and, on average, are spending more on training than the one percent of payroll requirement proposed as a mandate by the Commission on the Skills of the American Workforce (Marshall and Tucker 1992). The spending covers a broad spectrum of workers, though it is least concentrated on the less-educated workers but more concentrated on workers in the middle than at the top. Not surprisingly, much employer-supported training is for tasks specific to the employer. However, almost all employers offer tuition subsidies or paid leave to workers taking an approved course in a postsecondary degree–granting institution—although only a minority

of workers take up these offers. The widespread availability of employer-subsidized tuition suggests that substantial increases in employer-sponsored training could take place if more workers chose to take advantage of existing offers.

With evidence pointing to substantial growth in employer-sponsored training and to widespread offers of employer-subsidized tuition, the case for a government training mandate receded somewhat in the 1990s. Although progress has been made, it is far from clear that employer-provided training on its own can achieve and sustain a socially optimal level of training or that current training practices are effective.

As the United States continues its transition from an industrial economy to an information economy, academic and technical literacy will become increasingly important for workers and for continued U.S. productivity growth. This growing need for training may well outpace increases in training opportunities provided by employers, especially in a recession, making the gap between the need and level of training ever wider. Rather than simply requiring firms to spend a percentage of their payroll on employee training, government policies should instead focus their efforts on increasing access to training for underrepresented groups, encouraging take-up of existing opportunities, and ensuring that training is of high quality to help U.S. workers keep their competitive edge. At the same time, the government should recognize that many if not most companies are, like United Technologies, willing to play an active role in raising the skills of American workers.

Notes

The authors would like to thank Kevin Hollenbeck, Harry Holzer, and other participants at the Conference on Job Training and Labor Exchange in the United States for their comments and suggestions. The authors are grateful to the U.S. Department of Labor for research support.

1. The 1993 SEPT also found that approximately 70 percent of all establishments provided formal training (Frazis, Herz, and Horrigan 1995).
2. To compare our results from the 1995 NHES with Frazis et al.'s (1998) results from the 1995 SEPT, we report results for all workers not just workers trained (i.e., we average in the zeros for workers who did not receive training). Results for

workers trained can be derived by dividing the average hours of training for all workers by the incidence rate.

3. These figures indicate higher hours of training than found by Holzer and Reaser (1999) for training provided to newly hired workers in Atlanta, Boston, Detroit, and Los Angeles.
4. The 20 percent incidence among all persons reported here for the 1996 SIPP differs from the 24–26 percent incidence among all workers because of the difference universes (all persons age 18–62 versus all workers age 16+) used in the calculations.
5. Note that the training questions in the CPS are much narrower than those in the other surveys and hence result in much lower and (not very comparable) figures of employer-provided training. The CPS includes only training to improve skills taken in a formal company training program. Moreover, the CPS asks about training with the current employer not training over the past year (NHES and SEPT) or the most recent training (SIPP).
6. Turnover in the 1995 SEPT is measured as the ratio of hires and separations to employment during a 3-month period. The low-, medium-, and high-turnover categories contain 7, 49, and 44 percent of establishments, respectively (Frazis et al. 1998). We measure turnover in the 1997 NES as the ratio of separations to employment during a one-year period. The low-, medium-, and high-turnover categories contain 19, 49, and 33 percent of the weighted establishments, respectively.
7. These data come from Hudson's report on the Adult Education Survey, as cited in Cappelli (2002).

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Job Training Policy in the United States

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Editors

2004

W.E. Upjohn Institute for Employment Research
Kalamazoo, Michigan

Library of Congress Cataloging-in-Publication Data

Job training policy in the United States / Christopher J. O'Leary, Robert A. Straits, Stephen A. Wandner editors.

p. cm.
Includes bibliographical references and index.
ISBN 0-88099-306-5 (pbk. : alk. paper)—ISBN 0-88099-307-3 (hardcover : alk. paper)
1. Occupational training—Government policy—United States. 2. Occupational training—United States—Evaluation. I. O'Leary, Christopher J. II. Straits, Robert A. III. Wandner, Stephen A.
HD5715.2.J626 2004
331.25'92'0973—dc22

2004007770

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Kalamazoo, Michigan 49007–4686

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Cover design by J.R. Underhill.
Index prepared by Nancy Humphreys.
Printed in the United States of America.
Printed on recycled paper.