

Employer-Provided Training and Public Policy

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ABSTRACT

Education and training investments are critical to the continuation of healthy US productivity growth and to attaining adequate incomes for workers. Unfortunately, employer investments in worker training often fall short of the socially desirable level. This paper begins with a discussion of selected theoretical issues regarding private sector training then examines actual trends. We compare data on the incidence and intensity of employer-provided training from the 1997 National Employer Survey, the 1995 Survey of Employer-Provided Training, and the 1995 National Household Education Survey. We find that in general, a large percentage of establishments—approximately 70 percent—provide some form of formal training and between 35 and 65 percent of all workers receive formal training—numbers higher than those found in previous literature. We find some evidence for the commonly cited result that workers with higher levels of education and higher earnings receive more training. On the other hand, we find that the intensity of training is higher for young, part-time, and less-experienced workers. The paper concludes with a brief discussion of the implications for policy.

I. Introduction

Education and training investments are critical to the continuation of healthy US productivity growth and to attaining adequate incomes for workers. Empirical evidence documents high rates of return to education and training (Mincer, 1994), the contribution of education and training to economic growth (Griliches, 1997), and gains in implementing new technologies associated with a trained work force (Bartel and Lichtenberg, 1987). But the broad consensus about the positive impacts of education and training does not extend to such questions as: Who should supply and finance the education and training? What share of workers should obtain training in a typical year? To what extent should employers pay for the training of their workers? What role (if any) should the government play to encourage worker training, especially employer-financed training among workers who otherwise receive little training?

Certainly, workers have their own incentives to obtain education and training, given the high returns to training and the substantial wage differentials between well-trained and less trained workers. But, the investments by workers may be inadequate for several reasons. Workers may lack access to the resources to finance their training and living expenses. Training may convey benefits to employers and others, benefits ignored when workers choose whether or not to invest. Some workers may be averse to risks that the expected gains from training do not materialize.

Employer investments in worker training also fall short of the socially desirable level, mostly because the gains to workers rarely enter the firm's calculations.¹ Moreover, employers generally limit quality training opportunities to the skilled categories of workers. Since some of

¹ A recent story on United Technologies Corporation presents a remarkable exception. Beginning six years ago, UTC chose to provide all workers with tuition and fees for any college courses as well as three hours per week of

the gains to employer-funded training accrue to workers, the lack of training opportunities for less-skilled workers ends up widening the already large earnings differences between more and less-educated workers.

The issues surrounding employer-financed training are relevant to several policy areas. First, differences in the receipt of training may increase the inequality in the wage distribution. The lack of training may limit the capacity of less-educated workers to earn adequate wages and thereby stimulate government programs to supplement their wages and offset part of the gap between the well-trained and untrained. Concerns over the distribution of employer-financed training have led to proposals to mandate that employers spend at least two percent of their payroll on training and that employers equalize access to training across all wage groups.

Second, existing practices in the labor market may cause employers and workers to underinvest in training (Acemoglu and Pischke, 1999). Consider the role of work-based training in the school-to-work transition of young workers. In Japan, employers screen new workers carefully and provide extensive training for their new hires (Mitani, 1999). This approach gives students an incentive to perform well so they can obtain a rewarding job with training and job ladders, and helps firms reduce turnover partly because other firms hire and train only entering workers out of school. Alternatively, when employers do not offer serious training for entry level workers, then young workers have less at stake in their first employer and less incentive to achieve in school so as to obtain a job offering training. Public policies in the US to promote work-based training as a component of the school-to-work initiative assumes the availability of a considerable amount of employer-financed informal and formal training.

paid study time. Although no one has evaluated the impact on retention, its overall effects have encouraged UTC management to continue the program (Wessel 2001).

Third, limited information, liquidity constraints, accounting rules, and externalities may also keep employer-provided training below socially optimal levels. Some employers may be unaware of the gains in productivity and reduced turnover that are likely to flow from providing training. Others may believe that investments in training will do less for their balance sheets than investments in machines because human capital is not treated as physical capital.

Fourth, investments in training often go together with policies that emphasize new forms of organizing work, including heavy investments in information technology, devolving responsibility to the line level, wide use of work teams, and a reliance on workers to understand all phases of the work process. These practices not only empower workers, but they appear to raise productivity and wages. On the other hand, low training levels may go together with the pursuit of a low road strategy of low pay, high turnover, and little worker voice or responsibility.

Fifth, training decisions can interact with immigration policy. To the extent that migration policies permit skilled workers from other countries to work in the US, employers may end up spending fewer resources to train US workers. Concerns of this sort led the US Congress to impose a \$1,000 fee for each worker entering the US under the H-1B temporary worker program as a way of financing training for American workers.

Addressing these questions requires both a theoretical and empirical perspective. This paper begins with a discussion of selected theoretical issues and then examines the actual trends in employer-provided training. The empirical sections focus on the following questions:

- What is the incidence of employer-provided training overall and by size of employer? Are employers increasing the amounts of training they sponsor?
- Which workers receive employer-provided training?
- What kinds of training do employers provide?
- What types of employers provide the most training?

Our definition of employer-provided training (sometimes referred to as employer-supported training or employer-financed training) includes any training that is provided by and/or paid for by employers.

The paper concludes with a brief discussion of the implications for policy. In particular, we ask about whether public training programs can complement and not substitute for employer-provided training.

II. Expectations about Employer-Provided Training

The classical view of human capital developed by Gary Becker (1964) emphasizes the distinction between training for general and specific skills. General skills are those that add value to a worker's productivity when working for a range of employers. Specific skills increase the worker's productivity only for his or her current employer. Once workers receive general training, they become more valuable to all employers. Competition for their services will raise their wages up to their new, higher productivity level; only if their current employer meets the competition and pays the higher wages will workers stay. Because workers and not employers will reap the full benefits from general training, employers have no incentive to bear the costs of training. Workers still obtain employer-provided general training and pay the costs by accepting lower wages. In fact, the Becker theory suggests that barring constraints on credit or imperfect information, workers will make the optimal level of investment in training.

In contrast, employers may well sponsor training in specific skills since they are likely to reap the benefits of the productivity gains resulting from training. Because the skills are specific to the individual firm, the workers are no more valuable to outside firms than before the training; unlike the case of general training, specific training will not set off a bidding war for the newly trained workers. When the employers can recoup the costs of training in the form of added

productivity that is greater than any added wages, they may have an incentive to invest, but only in specific training. By contrast, workers have little incentive to invest in specific training because they have no assured way of recouping the costs through higher wages.

Given the distribution of returns to general and specific training, we would expect to observe employers providing specific training without imposing costs on workers and providing general training only when workers are willing to bear the costs by accepting lower wages. A recent challenge to the Becker theory put forward by Acemoglu and Pischke (1999) provides both a theoretical justification and empirical findings suggesting employers may well provide general training to workers. The authors point out that while skills in operating various types of machines may be industry specific, they are nevertheless general to the firms in the industry using similar equipment. Evidence from the German apprenticeship system strongly suggests that employers sometimes bear a significant share of the costs of training young people for occupations that are valuable to other employers.

The incentive to employers to provide general training arises largely because of the presence of transaction costs in the labor market, including matching and search costs that make it difficult for workers to quit their jobs and costly for firms to replace their employees. Acemoglu and Pischke argue that these search costs create a potential surplus that can be gained by employers and/or workers when they avoid turnover. The ability of firms to obtain some part of this surplus causes the productivity gain from added skills to rise faster than wages. This wage-productivity gap presents an opportunity for employers to profit from their investments in training, even general training.

Asymmetric information is another reason why training may raise productivity faster than wages. 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. A second form of asymmetry arises when high ability workers benefit more from training than other workers. Since firms are most likely to lay off the low ability workers who received 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 interaction between specific and general skills is another reason firms may sponsor training. The ability to benefit from general training (use a specific piece of software) may increase when the worker knows the goals of the company (specific training). As a result, the higher is the worker's general skills, the more valuable is the specific training provided by employers who recoup some of the benefits from specific training.

These arguments do not imply that employers will necessarily invest in general training. Only a small percent of workers report receiving any basic skills training, despite the high share requiring such training and the low cost of providing this training. Still, the answer based on human capital theory—that employers do not invest because other employers could then hire the newly trained workers without having to pay for the costs of training—is apparently generally not correct. Fewer than one in six employers cite high employee turnover as a major reason for not providing training.

While the new thinking suggests an employer role in the financing of general training, we would still expect to see much of the employer-financed training as specific training. In addition, we would expect to find that training levels are sensitive to the turnover in the

organization. Because specific and general skills are usually complementary, employers are more likely to invest in those who already have a high level of general skills.

Another set of expectations relates 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 and thereby narrow the training gap between the more and less educated workers. As more companies pursue strategies to increase their rates of technical change, we should observe an increase in the total level of training and a narrowing of the training gaps between types of workers.

It is important to bear in mind that expanding the amount of employer-provided training may or may not affect wage levels and wage differentials. Just as firms expect to reap most of the benefits from their outlays on physical capital, so may firms gain most from their investments in human capital. If the benefits from training accrue largely to firms making the investments, differences in the receipt of training by groups of workers may not influence wage differentials.

For these reasons, a full analysis of the impact of employer-provided training would require estimates of the extent to which workers and employers bear the costs and reap the benefits of training. Such an analysis is beyond the scope of this paper. Instead, we examine 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.

III. Recent Patterns of Employer-Provided Training

In this section we present detailed empirical evidence comparing three recent surveys of employer-provided training. We also present historical evidence from over ten other surveys.

Using this current and past evidence, we explore recent patterns and trends of employer-provided training in the United States.

A. Recent Surveys with Data on Employer-Provided Training

The most recent nation-wide surveys with detailed data available on employer-provided training in the United States include the 1997 National Employer Survey (NES), the 1996 Survey of Income and Program Participation (SIPP) Topical Modules, the 1995 Survey of Employer-Provided Training (SEPT), the 1995 Adult Education Component of the National Household Education Survey (NHES), and the 1994-1995 International Adult Literacy Survey (IALS). More data are on the way. Plans are underway to link additional employer data gathered in the 2000 National Employer Survey with information gathered from their employees (Institute for Research on Higher Education, 1999). And, an additional Adult Education Component is planned for the 2001 National Household Education Survey.

We closely examine three of the five recent surveys for empirical evidence of employer-provided training: the 1997 NES, the 1995 SEPT, and the 1995 NHES. We also discuss selected results from the 1994-1995 IALS.² The 1996 SIPP Topical Modules were not released in time to be included in this analysis.³ A brief description of the three surveys that are the focus of the analysis follows.

The 1997 National Employer Survey (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,

² The 1994-1995 IALS is geared for cross-country comparisons and so has a relatively small sample (3,045) of individuals from the United States (OECD, 1999).

³ The 1996 SIPP Topical Modules were released in December, 1999.

1998).⁴ The 1997 NES survey is a follow-up to the 1994 NES and the sample includes approximately 1,000 employers who had participated in the 1994 NES. As mentioned, a third administration of the NES is planned for 2000. 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 1995 Survey of Employer Provided Training (1995 SEPT) is a personal interview survey conducted by the Bureau of Labor Statistics for the Employment Training Administration of the U.S. Department of Labor. It surveys approximately 1,000 establishments and approximately 1,000 employees at those establishments in order to provide information on both formal and informal training for private establishments with 50 or more employees. The 1995 SEPT is the second employer-provided training survey conducted by the Bureau of Labor Statistics. The first—the 1993 Survey on Employer Provided Training (1993 SEPT)—is a mail survey of over 8,000 establishments and is nationally representative of all establishments, not just those with 50 or more employees. The 1993 SEPT covered only formal training (Frazis, Herz, and Horrigan, 1995), while the 1995 SEPT covered both formal and informal training.

The 1995 SEPT Establishment Survey collected information on formal training using two survey instruments—an employer questionnaire and an employer training log. The employer questionnaire provides establishment characteristics, types of formal training provided, and selected costs of training for 1,062 establishments. The employer training log, used to obtain records on every formal training activity that took place over a two-week period, provides information on the intensity of formal training for 949 employers.

⁴ The 1997 NES is jointly supported by the National Center for Postsecondary Improvement (NCPI) and the Consortium for Policy Research in Education (CPRE). The survey's response rate was 78 percent.

The 1995 SEPT Employee Survey collected information from up to two employees from each establishment and used a similar survey design. An employee questionnaire obtained data on demographic characteristics and general information on past training received, while an employee log, documenting all formal and informal training for 10 calendar days, captured the number of hours of training received and the opportunity cost of employees time. The use of personal interviews, logs, and short recall periods mean that the 1995 SEPT will likely have higher quality data than the larger scale telephone and mail surveys, but it also means that the samples are smaller and the time-frame of measurement shorter. The hours of training collected from the logs in the 1995 SEPT represent hours of training that took place during May-October 1995 rather than a full year period (Frazis, Gittleman, Horrigan, and Joyce, 1998).⁵

The Adult Education component of the 1995 National Household Education Survey (1995 NHES) is a cross-sectional telephone survey of 19,722 adults age 16 and older who were not enrolled in elementary or secondary school. The NHES was previously administered in 1991. The 1995 NHES provides information on the incidence and intensity of employer-provided formal training for 13,634 non-self-employed workers in the following areas: English as a second language (for non-native English speakers), basic skills (for persons with less than high school or GED), credential programs, apprenticeships, and career or job-related courses.

The different samples represented in the three surveys will affect estimates of employer-provided training. Survey results from the 1997 NES and the 1995 SEPT do not describe training for the whole economy because the surveys excluded establishments with fewer than 20 employees (NES) and fewer than 50 employees (SEPT). Measures of employer-provided formal training will be higher in these surveys than in the economy as a whole because, as discussed

⁵ The response rates for the 1995 SEPT were about 74 percent for the employer questionnaire, 66 percent for the employer logs, 51 percent for the employee questionnaire, and nearly 48 percent for the employee log (Frazis,

below, employers in smaller establishments provide much less formal training than those in larger establishments. The 1995 NHES represents measures of employer-provided training for all non-self-employed workers age 16 and older, and thus represents training in all establishments.

Training Questions

The wording of questions in a survey and the definition of employer-provided training also affect estimates of employer-provided training. Table 1 presents selected training questions from the 1995 SEPT, the 1997 NES, and the 1995 NHES. Definitions of training from each survey are discussed below.

The 1995 SEPT defines employer-provided training for establishments as training that is provided or financed by the establishment, and for employees as training that teaches skills or gives information to help workers do their jobs better. The Employer Survey measure of employer-provided training should include tuition reimbursement programs and other training that took place off-site and outside working hours, because its definition of training includes training *financed* by the establishment. The wording and timing of the Employee Survey, however, may mean that training paid for by the employer, but provided off-site and outside working hours, was not included in the survey. 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 during May-October 1995, a time when many educational institutes are closed, rather than a full year period. In both the Employer and Employee Surveys, formal training is defined as training that is planned in advance and has a structured format and defined curriculum. Informal training information comes only from the employee logs and has a very broad definition: informal

Gittleman, Horrigan, and Joyce, 1998).

training in the SEPT includes any unstructured and unplanned activity (easily adapted to situations and individuals) that taught a skill or provided information to help workers do their jobs better.

The 1997 NES definition of employer-provided training is similar to that of the 1995 SEPT employer survey. Employer-provided training is training that is paid for or provided by the establishment, either-on-the-job or at a school or technical institute, and may occur during working hours or at other times. Formal training includes all types of activities that have a pre-defined objective.

The 1995 NHES mentions education and training programs, courses, workshops, and seminars, and specifically asks about all classes, tutors, or apprenticeships that the respondent took or had during the past 12 months. Types of education and training programs include English as a second language, basic skills and GED preparation, credential classes, and career or job-related courses. For non-self-employed workers, the survey also asks whether instruction for these courses was provided by the employer, and whether the employer supported the courses in various ways. We define employer-provided training to include all apprenticeships, and any type of training that an employer provided instruction for, gave time off from work for with our without pay, provided classroom space for, or paid all or part of the cost of.⁶

Unlike the 1995 SEPT Employee Survey, our definition of employer-provided training in the 1995 NHES includes *all* types of employer-provided training, not only employer-provided training that helps workers do their jobs better. For this reason, the NHES has a more inclusive

⁶ Not all employed persons in the 1995 NHES were asked about English as a second language courses or basic skills and GED preparation classes. In order to define employer-provided training over a common universe of all employed persons, a few assumptions are necessary. We assume that employed persons who speak mostly English at home did not take an English as a second language class, and so did not receive employer-provided English as a second language training. We also assume that employed persons with more than an associates degree and who graduated from high school or have a high school diploma (unless they have a non-U.S. diploma or their diploma

definition of training. On the other hand, the NHES focus on *classes* as opposed to any form of training may result in a narrower definition of training than the SEPT. Almost all measures of training documented in the 1995 NHES are measures of formal training, so the survey cannot be used for measures of informal training.⁷

As discussed, the definitions of employer-provided training do differ slightly across the three surveys. They also have some important features in common. All three surveys provide some measure of training that is provided by or paid for by employers. Considered together, the 1997 NES, 1995 SEPT, and 1995 NHES provide information on the percentage of establishments providing employer-provided formal training, the percentage of workers receiving employer-provided formal and informal training, and the hours of employer-provided formal and informal training that workers receive.

B. Amount of Training Provided

Recent Data

Table 2 presents the findings on the incidence of employer-provided training from the three focal surveys. It is clear that most establishments offer some type of formal training. Results from the 1997 NES indicate that 72 percent of establishments with 20 or more employees provide formal training, and that 78 percent of establishments with 50 or more employees provide formal training. The 1995 SEPT findings show that nearly 93 percent of establishments with 50 or more employees provide formal training. Considered together, the results suggest that approximately 85 percent of establishments with 50 or more employees

was provided in the last year), did not take basic skills or GED preparation classes, and so did not receive employer-provided basic skills or GED preparation training.

⁷ The one exception is a question regarding hours of on-the-job training scheduled for apprenticeships. We do not include this question in our analysis.

provide formal training, and approximately 70 percent of all establishments provide formal training.⁸

Findings regarding the percentage of workers receiving training in the past year are not in total agreement. 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 37 percent of all workers aged 16 and over receive formal employer-provided training. Part of the difference between the SEPT and NHES results can be accounted for by samples—the SEPT includes only workers at larger firms, while the NHES includes all workers. Another part of the difference may be due to the wording of training questions in the surveys. As mentioned, the NHES’s focus on classes may result in a narrower measure of training than that used in the SEPT.

Results from the 1994-1995 International Adult Literacy Survey (IALS, not show in the table) fall between the 1995 SEPT and 1995 NHES measures. The IALS finds that approximately 45 percent of workers aged 25 to 54 years receive employer-provided training (OECD, 1999 p. 141).⁹ However, the IALS training question also refers to “on-the-job training” and so may include informal training.

In general, recent results from the SEPT, NHES, and IALS suggest that a wide range of workers receive training. Both the SEPT and the especially the NHES are likely to miss some forms of formal training, but it may not be plausible to believe that the percentage of workers receiving training is greater than 65 percent. We estimate that employer-provided formal training reaches 35 to 65 percent of all workers within a given year.

⁸ As shown in Table 4, the 1993 SEPT also found that approximately 70 percent of all establishments provided formal training.

⁹ Also see OECD (1998) for other 1994-1995 IALS measures of the incidence and intensity of job-related (but not necessarily employer-provided) training in the United States and other countries.

The 1995 SEPT is one of few recent surveys to specifically measure informal training.¹⁰ The SEPT finds that over 95 percent of workers in establishments with 50 or more employees receive employer-provided informal training. The finding that nearly all workers receive informal training is not surprising, given the broad definition of informal training in the 1995 SEPT.

Table 3 presents recent measures of the intensity of employer-provided training. Results from the 1995 SEPT Employer and Employee Surveys both indicate that employers provided on average 11-13 hours of training per worker during the six month period from May through October, 1995. The 1995 NHES finds a much higher number – an average of 33 hours per worker over a six month period. The differing incidence rates for the SEPT and NHES obscure the results. When we remove the zeros averaged in for workers who did not receive training, the difference between the surveys is even larger.¹¹ Workers trained received on average 15 to 19 hours of training in the 1995 SEPT over a six month period, and 89 hours of training in the 1995 NHES over a six month period.¹²

Differences in measures of intensity in the SEPT and the NHES may be due to the focus on formal schooling in the NHES, but not in the SEPT, and the dissimilar time periods that intensity is measured over in the two surveys: an entire year in the NHES, but only May through October in the SEPT. Workers who receive employer-provided training provided by educational

¹⁰ The 1994 NES also measures informal training. Using the 1994 NES, Lynch and Black (1995) find that 97% of establishments with 20 or more employees provide informal training.

¹¹ In order to compare our results from the 1995 NHES with Frazis, Gittleman, Horrigan, and Joyce's (1998) results from the 1995 SEPT, we present results for all workers in the tables, not just workers trained (i.e., we average in the zeros for workers who did not receive training). As illustrated below, results for workers trained can be derived by dividing the average hours of training for all workers by the incidence rate.

¹² Average hours per worker trained can be backed out from measures of the percentage of workers receiving training and the average hours of training per worker presented in Tables 1 and 2. For the SEPT: hours per worker trained is given by $13.4/0.698 = 19$ hours and $10.7/0.698 = 15$ hours. For the NHES: hours per worker trained is $32.7/0.367 = 89$ hours.

institutes may receive a greater number of hours of training than workers who receive employer-provided training provided by other sources. Many of these hours could be missed in the SEPT because most educational institutes are closed during much of the time period from May through October.

Again, results from the 1994-1995 IALS fall between the SEPT and NHES: average hours over the previous 12 months is 135 hours per person trained (OECD, 1998 p. 106), and over a six month period (the 12 month period divided by two) is 68 hours per person trained. The IALS numbers are not directly comparable because they measure job-related training, not necessarily employer-provided formal training. Nonetheless, the IALS numbers provide additional evidence that the 1995 SEPT measures of the intensity of employer-provided training may be too low.

It is also important to look at the distribution of hours. Training may not be very beneficial if almost all workers receive very few hours of training. Frazis, Gittleman, Horrigan, and Joyce (1998) do not present the distribution of hours for the SEPT. We are able to tabulate the distribution of hours in the NHES and include it with the results presented in Table 3. Over the past year, fifteen percent of workers received one week of training, six percent of workers received two weeks of training, five percent received three to four weeks of training, and nearly 10 percent of workers received more than one month of training. These results suggest that a small but important group of workers—15 percent—receive more than two weeks of employer-provided training per year.¹³ If a different group of workers is trained each year, over a three to four year period a much larger share of the population would have received such intensive training.

¹³ 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.

The 1995 SEPT provides our only recent national measure of informal training. The SEPT finds an average of 31 hours of employer-provided informal training per worker for the six month period from May through October, 1995. In the Holzer and Reaser (1999) study of 800 firms in four cities, informal training of newly hired workers averaged 81 hours, with 10 percent of workers obtaining over 160 hours and 42 percent obtaining over 40 hours.

Training Over Time and Across Data Sources

Tables 4 and 5 present the incidence of employer-provided training over time and across data sources. These numbers can be used to compare measures across surveys and to examine trends of employer-provided training over time.

The percentage of establishments providing formal training is consistently high, over 70 percent across the four data sources presented in Table 4. The empirical evidence presented provides some indication that the percentage of establishments providing training may be slightly decreasing over time. The NES results indicate that the percent of establishments providing training is lower in 1996 than in it was in 1993 (72 percent versus 81 percent). And, the SEPT results indicate that the percentage may have fallen slightly between 1994 and 1993 (from 98-99 percent to 93 percent). We cannot confidently conclude, however, that the percent of establishments offering training is falling, because we have few points over time to compare, and the differences we do see may not be statistically significant.

Table 5 reports the percentage of workers receiving formal training over a 13 year period and across 10 data sources. The results for the recent (1995) surveys are strikingly different from the results for earlier surveys. As discussed above, results from the recent surveys indicate

that employer-provided training reaches 35 to 65 percent of all workers. Results from the earlier surveys put the number much lower, at between five and 19 percent of workers.

Certainly, genuine and large increases in training over time explain at least part of the difference between the recent and earlier results. Since training questions, employer-provided definitions, and universes are often similar within surveys, we can conclude that the percentage of workers receiving formal training is increasing. In the NHES, the percentage of workers receiving training doubled, from 19 percent in 1990 to 37 percent in 1994. The SIPP shows steady increases in the percentage of all persons age 18-64 that receive training: from 6 percent in the 1984 SIPP, to 11 percent in the 1987 SIPP, to 12 percent in the 1990 SIPP, and finally to 13 percent in the 1993 SIPP. It will be interesting to see if this trend continues in the 1996 SIPP. The CPS results also show increases over time: from five percent in the 1981 CPS, to 11 or 12 percent in the 1983 CPS, and to 16 percent in the 1991 CPS. These steady increases add up to a seven percentage point increase over a nine year period in the SIPP, and an 11 point increase over a 10 year period in the CPS.

Data from the 1997 NES (not shown in the table) provide additional evidence that the percentage of workers receiving training is increasing over time. The proportion of firms providing training to at least 10 percent of workers in each occupation increased by five to 10 percentage points for all occupations over a three year period. Interestingly, the largest increase was in the proportion of firms providing at least 10 percent of technicians with training.

Part of the difference between the recent and earlier results is due to differences in survey instruments and definitions of employer-provided formal training. The 1995 NHES instrument differed from the 1991 NHES instrument. 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). The 1995 questions, presented in Table 1, enable us to measure *any* type of training (including English as a second language, basic skills and GED preparation, credential courses, career or job-related activities, and apprenticeships) provided *or supported* by the employer. 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 falls from 37 percent to 27 percent. As show in Table 10, 10 percent of workers in the 1995 NHES received employer-provided or -supported credential courses (courses taken toward a degree). These courses were not included in the 1991 NHES measure of employer-provided training.

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. We estimate that differences between the 1991 and 1995 NHES instruments account for roughly 12 of the 18 percentage point difference between the 1990 and 1994 estimates. This leaves a more reasonable six percentage point increase due to increases over the four year time period.

The CPS training questions differ in an important way from the other surveys. The CPS asks only "Since you obtained your present job did you take any training to improve your skills? Did you take the training in (a) school, (b) a formal company training program, (c) informal on the-job-training, or (d) other" (Loewenstein and Spletzer, 1996). Measures of employer-provided formal training based on the CPS include only training to improve skills that was taken in a formal company training program. This definition is much narrower than those used in the NHES (e.g., it excludes employer-supported formal schooling) and SEPT, so we would expect it

to result in much lower (at least 15 percentage points) incidence rates. The broader time period in the CPS (time with current employer) than in the NHES and SEPT (past year) would tend to offset the effect of the narrower definition.

Overall, we expect these definitional differences to account for at least 10 percentage points of the differences between the CPS and the NHES and SEPT incidence rates. Adding 10 percentage points to the most recent (1991) CPS estimate of 16, would move the estimate to 26 percent of workers. This leaves an 11 percentage point spread between the revised 1991 CPS estimate and the 37 percent 1995 NHES estimate, and a large 44 percentage point spread between the revised 1991 CPS estimate and the 70 percent 1995 SEPT estimate. Increases in the incidence of training over the four year time period could possibly account for most of the former, but not the latter.

It is more difficult to interpret and compare measures of employer-provided training from the SIPP with the other surveys. The SIPP asks all persons under 65 years of age if they “ever received training designed to help find a job, improve job skills, or learn a new job.” For those individuals responding affirmatively, additional questions were asked about the location of, and who paid for, the most recent training (Kominski and Sutterlin, 1992). The definition of training is broad in that it could include both formal and informal training, but narrow in that it might not include all employer-provided formal schooling. The percent of all persons age 18 to 64 receiving training ranges from 22 percent, in the 1984 SIPP, to 27 percent, in the 1993 SIPP (Kominski, 1987 and 1990; Kominski and Sutterlin, 1992; Bruno, 1995). When we narrow the proportion of all persons receiving training to those whose employer paid for their most recent training, the percentages fall to the six to 13 percent range presented in Table 5. But narrowing

the universe to employed persons, rather than all persons, would increase the percentages significantly.

By broadening the definition of employer-provided training used in the 1991 NHES and the CPS to include any employer-provided training, and by accounting for increases in training over time, we can reconcile differences between the 37 percent of workers receiving employer-provided formal training in the 1995 NHES and the five to 16 percent of workers receiving employer-provided formal training in the 1981-1991 CPS.

Reconciling the differences between 37 percent of workers receiving formal training and the 70 percent of workers found in the 1995 SEPT is more difficult. Part of the difference is certainly due to the difference in the universes. Including all establishments, rather than only the larger (50 or more employees) establishments that provide more training, could lower the 1995 SEPT by five to 10 percentage points. This leads us to conclude that, based now on both past and recent results, 35 to 65 percent of all workers receive employer-provided formal training in 1994. This range is somewhat higher than the 30 to 40 percent of workers ever receiving formal training found in Barnow, Giannarelli, and Long, (1996 p. 43), and much higher than the 10 percent of workers who participated in formal training on their current job found in Brown (1990 p. 15).

Amounts of Training Vary by Worker Characteristics

Tables 6 and 7 present tabulations on the incidence and intensity of employer-provided training by various worker characteristics for each of our three focal surveys—the 1997 NES, the 1995 SEPT, and the 1995 NHES.¹⁴ We are able to obtain comparable data for the 1995 SEPT

¹⁴ Much of the information on worker characteristics was not available for the 1997 NES because it was an establishment survey.

and 1995 NHES on variations in training levels by age, sex, race and origin, educational attainment, usual hours worked, earnings, and tenure; and for all three surveys on variations in training levels by occupation. Despite absolute differences in the numbers due to survey design and universe, as discussed in previous sections, we often find patterns of training common to all three surveys. We also find some important exceptions to general patterns of training. Based on these data, we find that employer-provided training does not reach all types of workers equally.

Age

The 1995 SEPT and the 1995 NHES reveal similar training patterns by age, with one important exception. Both surveys show that the incidence and (with one exception) intensity of employer-provided training decline above age 35 and drop dramatically for workers over age 55. The obvious difference between the two surveys lies in the figures for training for the youngest cohort. The SEPT finds that workers 25 years old and younger are least likely to receive employer-provided training—63 percent receive training compared to 79 percent of workers aged 25 to 34. The youngest cohort also receives far fewer hours of training than older cohorts—only three hours between May and October.

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 are receiving training compared to 37 percent of workers aged 25 to 34. Moreover, according to the NHES, this youngest cohort is receiving an average of 84 hours of training in a six month period, compared to just 33 hours for workers aged 25 to 34. These results are likely due to the measure of training used in the NHES. 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—recent high school graduates. 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.

The SEPT does not necessarily include workers receiving this kind of training in its calculations of incidence. And, by sampling hours of training between May and October, a time when many educational institutions are closed, the SEPT may exclude some employer-provided classes at educational institutions. This may lead to lower intensity numbers in the SEPT. A longer discussion about types of training measured in each survey follows in the next section.

Sex

Both the 1995 SEPT and the 1995 NHES show a higher proportion of women receiving training than men, but these differences are not significant in either survey. In the NHES, 38 percent of women reported receiving employer-provided training compared to 36 percent of men. The SEPT reveals a much larger difference between the sexes, with 73 percent of women receiving training, compared to 67 percent of men, but still these results are not significant at conventional levels. The measures of intensity for men and women are close in both surveys. In the NHES, women receive three hours less training than men. In the SEPT, women receive about two hours more training than their male counterparts.

Race and Origin

There is generally no substantial difference in training by race or ethnicity in either the 1995 SEPT or the 1995 NHES, with one exception. The NHES finds that people of Hispanic origin have a lower incidence of employer-provided training than any other race or ethnic group (25 percent receive training compared to 33 to 38 percent for all other groups), but a higher intensity of training (53 hours compared to 30 to 45 hours for all other groups). The SEPT, on

the other hand, finds a slightly higher incidence of training among Hispanics (three percentage points higher than all other groups) and a slightly lower intensity of training (three hours lower than all other groups).

Educational Attainment

The NHES and the SEPT both show that training increases with education. Both surveys report that workers holding bachelor's degrees or higher have a higher incidence of employer-provided training than less-educated cohorts. In the SEPT, 90 percent of workers with a bachelor's degree or higher report receiving formal employer-provided training, while only 68 percent of workers with some college and 60 percent of those with a high school diploma or less receive training. Intensity of training also increases with higher levels of education according to the SEPT, but these differences are not statistically significant. The NHES shows a similar pattern for incidence and intensity. Fifty percent of those with bachelor's degrees or higher receive training compared to just 22 percent of workers with a high school diploma or less. Intensity of training for the most educated group is also more than double the intensity of training for the least educated group. In both surveys, workers with a high school diploma or less are receiving the least training of any educational group.

The results for the some college group differ slightly in the two surveys. In the NHES, the incidence of training for this cohort is much closer to the incidence for the bachelor's degree or higher group—at 44 percent. In addition, the some college group reported more hours of training than the bachelor's degree or higher group. Again, we can attribute these differences between the surveys to the survey design. The NHES includes workers taking courses in college programs over the past year, while the SEPT, measuring intensity from May-October, might not

capture all of these students. The SEPT results could therefore be much lower for the some college group.

Occupation

All three of our focal surveys provide information on incidence and intensity of training by occupation, though the definitions of occupations vary somewhat across the surveys. The evidence they provide is mixed. The 1995 SEPT and the 1995 NHES both find that the incidence of training is highest for workers in managerial, professional, and supervisory roles. It is difficult to generalize about differences between these three groups, however, because the definitions overlap substantially.¹⁵ Definitions of occupations on the lower end of the career ladder—sales, clerical, and administrative support; service; and production, construction, operating, and maintenance—are more clearly defined and consistent across the surveys. Workers in these occupations are less likely to receive training than their managers and supervisors. For example, in the SEPT 50 to 73 percent of these workers receive training as compared with 80 of managers. And, in the NHES 24 to 33 percent of these workers are receiving training as compared with 50 percent of managers.

The 1997 NES finds less variation in training by occupation. Surprisingly, in the NES as many production workers (44 percent) receive training as managers (44 percent), and only a slightly higher percentage of supervisors receive training (47 percent). Technical workers (55 percent) are the most likely to receive formal training. Intensity of training does not vary considerably by occupation.

¹⁵ For example, the SEPT called one group of occupations “managerial and administrative” and another “professional, paraprofessional, and technical.” The NES labels its groups “managers and professionals,” “supervisors,” and “technical and technical support.” The NHES had a comparable set of occupations labeled “executive, administrative, and managerial” but we had to create our own groupings to match the SEPT’s “professional, paraprofessional, and technical” category. We grouped engineers, scientists and mathematicians, social scientists and lawyers, teachers, doctors, nurses and pharmacists, artists, entertainers, and athletes, health

Usual Hours Worked

It is expected that employers will spend more time and money training their full-time employees than their part-time employees. Both the SEPT and the NHES find that full-time workers are indeed more likely to receive employer-provided training than those who work part-time. But, the two surveys yield different patterns of intensity for these two groups. Workers who put in 35 hours per week or more have a higher incidence of training by 16 percentage points in the SEPT and by four percentage points in the NHES compared to part-time workers. The SEPT also shows that the intensity of training for workers who work more than 35 hours per week is greater than for workers who work less than 35 hours per week.

The NHES, however, reveals a dramatically different result. According to this survey, 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. Like the NHES results for age and educational attainment, this high intensity may again be due to the fact that the NHES includes workers who are enrolled in employer-supported credit courses. These workers are likely spending less time at work than their counterparts.

Earnings

The SEPT survey assigns workers to earnings quartiles by calculating what each worker's earnings would be if they worked 35 hours per week, then finding their position in the weekly earnings distribution of U.S. workers who work 35 hours per week. For the NHES we assigned earnings quartiles based on the distribution of workers by annual earnings.

technicians, and other technicians into the “professional, paraprofessional, and technical group.” For other occupations, the groupings were the same as the 1995 SEPT.

Both surveys show that the incidence of employer-provided training is positively related to earnings, but the results on training intensity differ across surveys. The 1995 SEPT and the 1995 NHES demonstrate that workers in the lowest earnings quartile are the least likely to receive employer-provided training while workers in the fourth quartile are most likely to receive training. The second and third quartiles have relatively similar incidence and intensities in both surveys. In the NHES, however, the lowest earnings quartile seems to be receiving by far the most hours of training. Workers earning below \$15,000 per year are receiving 42 hours of training on average over six months. Workers earning over \$39,000 are receiving only 28 hours of training. According to the SEPT, workers in the first quartile are receiving the least number of hours, four, compared to 23 hours for workers in the top quartile. The differences in intensity may again be explainable by the NHES' emphasis on credit courses. These students are likely to have lower earnings than others, as they tend to be younger, less-experienced, and spend less time at work.

Tenure

Training also varies by a worker's years of tenure with his or her current employer, especially in the SEPT. The SEPT yields a U-shaped relationship between tenure and training. Workers who have been with their current employer for less than two years had both a higher incidence and intensity of training than those who had worked between two and five years. But workers who have been with their employers longer than five years have a significantly higher incidence and intensity than either of the other groups. There is less variation between cohorts in the NHES. This survey finds that incidence of training increases steadily with tenure, but the number of hours of training is inversely related to tenure. Those with less than five years of

tenure receive more hours of training than workers with five or more years. Those with less than two years of tenure receive 35 hours while those with ten or more years received 21 hours.

In general, we find a more mixed picture of the distribution of training by worker characteristics than has been previously found. We find evidence for the commonly cited result that employer-provided training is disproportionately reaching more-educated workers (Brown, 1990; Barnow, Giannarelli, and Long, 1996) and higher-income workers. Patterns in the incidence of training in the 1995 SEPT and 1995 NHES surveys generally reveal that the most educated workers and those in the highest earnings quartile are more likely to receive training than their counterparts. Evidence on the incidence of training by occupation is mixed.

We find an important departure from earlier findings in the intensity of training. Surprisingly, 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. But even the higher NHES' intensity figures cannot fully compensate for the relatively low incidence of training to disadvantaged groups.

Amounts of Training Vary by Employer Characteristics

Tables 8 and 9 present the incidence and intensity of employer-provided formal training by establishment characteristics. Overall, the 1997 NES, 1995 SEPT, and 1995 NHES estimates indicate that the amount of training received varies strongly by establishment size and number of work place benefits, varies somewhat by industry, turnover, and the presence of contract workers, but does not vary much by union status.

Establishment Size

The amount of training that establishments provide and that workers receive steadily increases with establishment size, and varies greatly between small and large establishments. Column 1 of Table 8 indicates a 24 percentage point difference in the percent of small and large establishments in the 1997 NES that provided formal training in the past year: 70 percent of small establishments (20 to 50 employees) provided formal training, while 93 percent of large establishments (1,000 or more employees) provided formal training.

The 1995 SEPT shows nearly a 10 percentage point spread between the smallest (50 to 100 employees) and largest (500 or more employees) firms included in the survey: the percent of firms providing formal training varies from 91 to 98 percent, and the percent of workers receiving formal training varies from 62 to 71 percent. Similarly, Table 9 indicates that workers in smaller establishments receive fewer hours of training than workers in larger establishments. Differences in the amount of training by establishment size would be even larger if the smallest establishments, those with fewer than 20 or 50 employees, had been included in the surveys.

Industry

The percentage of establishments providing formal training does not vary significantly by industry, but the percentage of workers receiving and the amount they receive do vary by industry. The percentage of establishments providing formal training is consistently high across industries in the 1997 NES and in the 1995 SEPT (above 64 and 88 percent for all industries in the NES and SEPT, respectively).

The percentage of workers receiving formal training varies more. Workers in mining (95 percent) and finance, insurance, and real estate (87 percent) receive the most formal training in the SEPT, while workers in wholesale trade (68 percent) and retail trade (49 percent) receive the

least. In the NHES, workers in the public administration, (52 percent, included in other category), health services (50 percent, included in other category), and again finance, insurance, and real estate (50 percent) receive the most training, while workers in wholesale trade (21 percent) and retail trade (25 percent, respectively) receive the least formal training.

The pattern of hours of formal training per worker by industry is less consistent across the two surveys. Workers in the mining industry receive the least amount of training (6 hours) in the 1995 NHES, but more than the total average amount of hours in the 1995 SEPT (14 hours in the employer survey and 17 hours in the employee survey). And the minority of workers in the retail trade industry that do receive training, receive more than the total average amount of training in the NHES, but less than the total average amount of training in the SEPT. However, both surveys show that workers in transportation, communications, and public utilities, and finance, insurance, and real estate, all receive at least the total average amount of training, and workers in wholesale trade all receive below the total average amount of training.

Turnover

There are incentives for employers to provide less training in establishments with high turnover, because there is a greater chance that workers will leave before the firm can reap the benefits of the training. Surprisingly, the evidence is mixed. The 1995 SEPT incidence and intensity measures presented in Tables 8 and 9 generally support this expected inverse relationship between turnover and training. Fewer high-turnover establishments than low-turnover provide formal training, but the difference is small (89 percent versus 93 percent). And, fewer workers in high-turnover establishments (61 percent) than in low-turnover establishments (78 percent) receive formal training. The SEPT also finds that workers in high- turnover firms receive less employer-provided formal training (seven to eight hours) than workers in low

turnover firms (11 to 27 hours). The percentage of establishments providing training does not vary significantly with establishment turnover in the 1997 NES.¹⁶

Union Presence

The incidence and intensity of employer-provided training vary very little by union status in both the 1997 NES and the 1995 SEPT. The first column of Table 8 indicates presents estimates from the NES for the percent of establishments with 20 or more employees. There is a small difference of two percentage points by union status, but this difference is not statistically significant. Similarly, the SEPT incidence and intensity estimates show small differences by union status.

Establishment Benefits

Tables 8 and 9 indicate that establishments that provide more benefits, also provide more formal training. 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 selected benefits. Examples of selected benefits include paid vacation, paid sick leave, health care benefits or health insurance, pension plans, family leave, and child care benefits.

Presence of Contract Workers

The 1997 NES and the 1995 SEPT also indicate that establishments with some contract employees provide more training than establishments without contract employees, though these differences are not statistically significant at the 95 percent confidence level in the NES. The SEPT finds that, for establishments with 50 or more employees, 99 percent of establishments

¹⁶ 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, Gittleman, Horrigan, and Joyce, 1998). We measure turnover in the 1997 NES as the ratio of

with some contract workers provide formal training, while 90 percent of those without contract workers provide formal training. Similarly, the SEPT finds that 77 and 64 percent of workers at establishments with and without contract workers receive formal training, respectively.

C. Types of Training Provided

Economic theory suggests that we should expect to see much of the employer-provided training as specific training rather than general training. Table 10, which presents the incidence and intensity of employer-provided training by type of training, provides some evidence for this theory. The 1997 NES, 1995 SEPT, and the 1995 NHES all find employers emphasizing occupational safety training (66 percent, 72 percent, and 43 percent), which is likely firm-specific, and providing little basic or remedial skill training (17 percent, nine percent, and two percent), which is likely general. A possible exception to the theory is found in the percentage of establishments offering computer training, which could be considered general training. As presented in Table 10, 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, the SEPT finds that 66 percent of firms in the same universe offer computer training.

Teamwork and problem solving skills also rank high in incidence among the types of training defined in the NES, with 70 percent of firms with more than 50 employees offering these types of classes. The SEPT, on the other hand, finds that only 46 percent of firms offer training in what it defines as “Communication, Employee Development, and Quality”—a similar set of soft skills.

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.

Intensity measures are highest for computer skills in both the SEPT Employer and Employee Surveys. The Employer Survey reported two hours spent on computer skills compared to just one hour spent on occupational safety. The gap between the number of hours of computer skills and safety training was even wider in the Employee Survey. Computer skills took up five hours while basic skills training had the next highest intensity with only two hours per six-month period.

The NHES provides a slightly different breakdown of training—a breakdown that helps explain the wide variation in incidence and intensity figures between the SEPT and the NHES. 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 ten 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 disproportionately high. These workers 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, and justifiably a bit lower as the SEPT samples only large firms. It should be noted, however, that we are not advocating the removal of employer-supported credit courses from the definition of employer-provided training. Indeed, employer-

supported credit courses are integral part of any employee training program and a highly effective means of enhancing workers' skills and career prospects.

Keeping employer-supported credit courses in the calculations may mitigate some of the results of the SEPT. We would expect many of the workers who take advantage of credit courses to be more traditional college students. We would expect them to be younger, less-educated, lower on the career ladder, in a lower earnings quartile, and in a lower tenure category. We would also expect them to work fewer hours per week as they are likely to be spending more time in the classroom. Comparing the results of the NHES and the SEPT indicates that this might be true, as discussed in the previous section. The NHES reports a much higher number of hours of training for these groups of workers than the SEPT.

D. Summary of the Recent Patterns and Trends of Employer-Provided Training

What generalizations can be made about recent patterns and trends of employer-provided training? Based on the empirical evidence presented in this report, we summarize our findings regarding the incidence and intensity of employer-provided training, and identify areas where employers are providing a vigorous training effort.

A large percentage of establishments, approximately 85 percent for establishments with 50 or more employees and approximately 70 percent for all establishments, provide formal training. There is some inconclusive evidence that the percent of establishments offering training may be decreasing slightly over time.

While not all workers at establishments receive formal training, many do. The empirical evidence presented in this study indicates that approximately 35 to 65 percent of all workers received employer-provided formal training in 1994. This range is higher than estimates found

in Barnow, Giannarelli, and Long (1996) and Brown (1990). Evidence from the NHES, CPS, and SIPP surveys suggests that the percentage of workers receiving employer-provided formal training is increasing over time at an average rate of roughly one percentage point per year.

It is difficult to generalize about the intensity of training that workers receive, because the few surveys that provide measures find very different results. Workers trained received on average 15 to 19 hours of training in the 1995 SEPT over a six month period, and 89 hours of training per worker trained in the 1995 NHES over a six month period. These disparate estimates may be caused by the inclusion of employer-supported formal schooling that is not necessarily job-related in the NHES, but not in the SEPT.

The distribution of hours of formal training in the NHES suggests that some workers are receiving intensive amounts of employer-provided training. Fifteen percent of all workers received more than two weeks of employer-provided formal training in 1994. If a different group of workers is trained each year, over a three to four year period a much larger share of the population could be receiving intensive training.

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.

Amounts of training received varies by worker characteristics. We find some evidence for the commonly cited result that employer-provided training is disproportionately reaching more advantaged (e.g., well-educated, higher earnings) workers. However, we also find surprising evidence that the intensity of training is generally higher for young, part-time, and

less-experienced workers. This evidence comes from the 1995 NHES, a survey that captures employer-provided coursework toward degrees—a form of training not fully captured in other surveys.

The amounts of training received also vary by employer characteristics. The 1997 NES, 1995 SEPT, and the 1995 NHES estimates indicate that the amount of training received varies strongly by establishment size and number of work place benefits, and varies somewhat by industry, turnover, and the presence of contract workers, but does not vary much by union status.

IV. Implications for Training Policy

The empirical evidence on employer-provided training indicates that most firms provide training, that many workers receive training, and that some workers receive intensive amounts of training. We find the evidence on whether or not disadvantaged workers receive training is mixed. These findings have several important implications.

First, there is some evidence that if all training were left up to the private sector and these private sector training patterns continue, we can expect training gaps to widen between highly-educated and less-educated workers. Whether these training gaps cause wage gaps to widen depends on whether workers or employers reap the benefits of employer-provided training.

The potential gaps in private sector training for the disadvantaged and the implications that come with them, suggest that there is a role for public policy. The question is, what should that role be? Policy makers can either look to public programs to provide additional training, or create incentives for the private sector to do so. The answer depends on whether government is able to create incentives for the private sector to provide additional training and to whom, and on whether the private sector or government is better at providing training.

Currently, public programs do help fill employer-provided training gaps for low wage workers and for workers lacking basic skills. According to a recent survey of the government training program literature by Friedlander, Greenberg, and Robins (1997), there is consistent and strong evidence that government training programs have been effective for adult women, slightly less effective for adult men, and ineffective for youth.¹⁷ Public training programs for these disadvantaged workers, especially the adults, is least likely to substitute for private sector training programs and may be worthwhile. However, encouraging private sector training is also an option.

The second implication from the empirical evidence is that, even in the absence of a comprehensive vocational credential system in the US, many workers already receive employer-provided training, and some workers receive intensive training. Data suggest that employers spend approximately \$100 billion (Frazis, Gittleman, Horrigan, and Joyce, 1998) on training. Considering that the most comprehensive measure of compensation is 4.7 trillion (Economic Report of the President, 1999 p. 326), employers already spend the two percent of payroll mandated by some proposals.

The data offer hope that there is scope for additional training or for improving the benefits of training by improving structural foundations for training. There are already a fair number of people who are taking advantage of tuition reimbursement and similar programs. We need to find out more about the employers providing these benefits, the workers receiving them, and ways of encouraging both. Designing sound qualification systems may be one way of encouraging additional employer-provided training. Occupational qualifications are important to employers and can reduce the uncertainty many workers face when deciding on whether to

¹⁷ However, earnings effects, although substantial for women, are not large enough to lift most families out of poverty.

pursue training and what type of training to pursue. In countries with strong vocational credential systems, such as Germany, a higher proportion of younger and less educated workers receive more training (OECD, 1999).

On the other hand, firm investment in human capital (approximately \$100 billion) is far less than the \$661 billion that firm's investment in physical capital (Economic Report of the President, 1999 p. 326). This is evidence that firms stand a much better chance of reaping the returns to physical capital, than to human capital.

Additional questions remain. We don't know who bears the costs of employer-provided training, who reaps the benefits, how effective it is,¹⁸ or whether it could become more effective. Whether training is provided by the private sector or government programs, we also need to find the most effective training delivery method, and to determine what type of training should be provided. In a low unemployment rate context, the challenge for training policies is not simply to help people find jobs, but to improve the quality of careers both for those not currently employed as well as for incumbent workers.

Overall, employers are receptive to training. In fact, as seen in the empirical evidence, most employers already provide training. The key challenge is to stimulate more training by employers for all workers, but especially for the less-educated. A difficult challenge, but the potential is there.

¹⁸ Private sector training programs have not been subject to the same type of evaluation as government programs.

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