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ABSTRACT

This paper describes briefly the following surveys that have been conducted to determine the amount and thrust of employee training in the United States: (1) household surveys including the Current Population Survey, the National Longitudinal Surveys of Labor Market Experience, the Survey of Income and Program Participation, and the University of Michigan Time Use study; and employer surveys, including the 1974 survey by the Bureau of Labor Statistics, the National Institute of Education and National Center for Research in Vocational Education surveys, the Bureau of Labor Statistics Employee Benefit Survey, state and local surveys, the Battelle Human Affairs Research Center survey, and apprenticeship surveys. The paper also describes ways to determine costs and effects of training. The surveys provide the following information: (1) the likelihood of training declines with age, but increases with education; (2) men and whites are more likely to receive training than women and blacks; (3) the likelihood of training increases with firm size; (4) most training is informal; and (5) training increases future earnings of workers, but which kinds of training do so and how well training pays is uncertain. Information not provided by the surveys, however, includes the definition of training, the total amount of training received by workers, the cost of training, and changes in training over time. The report proposes that these questions be answered by a multistage survey. (25 citations) (KC)

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THE EDUCATION AND TRAINING OF AMERICAN WORKERS

Growing concern over the education and training qualifications of our current and future work force to meet the challenges of increasingly complex jobs has generated a number of studies and commissions. Intensive investigation over many years has led to a body of knowledge about the value of education to the work force, but surprisingly little is known of the value of occupational training. This paper provides a summary of what we do and do not know about the extent and cost of training in the United States. By looking at both household and employer-based surveys, we identify gaps in knowledge and suggest directions for future research.

Investments in skills

Human capital theory was the dominant paradigm in labor economics even before Gary Becker codified much of the theory in Human Capital. According to this theory, workers invest in schooling and job training to learn or improve skills.[1] Workers sacrifice current earnings by staying in school rather than working and by accepting lower initial earnings in jobs with large training components. Workers may also incur direct expenses for such items as tuition and books. After completion of school or training, more-educated workers receive higher wages than workers without as much schooling or training. Business pays higher wages for better trained or schooled workers because they also believe these workers to be more productive. Workers weigh the costs of foregone earnings and expenses against the higher wages received and choose to continue making these investments as long as they are profitable.

Employers also play a role. An employer may be willing to invest in training if the firm can benefit from the investment. Like the worker, firms continue to invest in training workers as long as it is profitable. Because workers are free to change employers, firms are more willing to pay for training that is specific to the firm rather than general training that may be highly portable.

The seminal work of Jacob Mincer, *Schooling, Experience, and Earnings*, provided a framework for estimating returns to human capital investments. Mincer's model measured the value and rate of return to schooling and work experience. Although a broader concept than training, the model provided a standard method for looking at returns to human capital.[2]

Many important education and training issues have been debated without hard data. Besides the basic issue of

measuring the rate of return to training, other issues include the value of retraining workers, training and pay differences by race and sex, the relationship between training and productivity, the amount of training of U.S. workers compared to our trading partners, and the effect of training on turnover and unemployment.

Available measures of training

Growing reliance on human capital theory and the paucity of training data led to several projects to measure the extent and cost of worker training. In the United States, household-based surveys include the Current Population Survey (CPS), the National Longitudinal Survey (NLS), the the Survey of Income and Program Participation (SIPP), and the University of Michigan's Time Use study. Employer-based surveys include the Employment Opportunity Pilot Project (EOPP) and a BLS survey of occupational training in selected metalworking industries. Studies that focus on developing national estimates of training costs include works by the American Society for Training and Development and Jacob Mincer.[3]

The word "training" encompasses many different activities. The training surveys discussed below ask different questions, and are often not comparable. Some of the surveys encompass all skill acquisition, whether by formal or informal means; others are limited to formal arrangements. One natural consequence of these differences in scope is the wide range of estimates of the incidence of training.

Household Surveys

The Current Population Survey (CPS) is the nation's most comprehensive survey of households. This survey is conducted monthly, and in March, data on the educational attainment of the work force are tabulated. Also, special supplements periodically identify workers' perceptions of the education and training they needed to obtain their present job.

A supplement to the January 1983 Current Population Survey asked whether workers needed specific skills or training to qualify for their current job, and whether they had taken any training to improve their skills on their present job. Workers who answered yes to either question were asked about where they had received the training, who had paid for it, and other related questions. The survey was funded by the Employment and Training Administration (ETA) and the results analyzed by the Bureau of Labor Statistics (BLS).[4]

The survey indicated that 55 percent of all workers required some skills or training to get their current job and 35 percent took some type of training to improve their skills while holding their current job. Half of all workers who indicated they required training to obtain their job received that training from employers.

The 1983 survey is the most comprehensive survey of this nature and BLS's report has been used extensively.[5] A similar survey is being planned for early 1991; it will again be funded by ETA and will be a supplement to the CPS. The supplement is expected to include the 1983 questions and additional ones that focus on reading, writing, and math skills required on the present job, and whether respondents think that they could get a better job if they had more training in the "3 R's".

Another CPS supplement (last conducted in 1984 with funding from the Department of Education) focused on adult education, and obtained information on the incidence of training, whether it was work related, the kind of institution providing the training, and the source of payment. According to the Survey of Participation in Adult Education (SPAE), in the year ending in May 1984, 23 million persons 17 years and older took 41 million courses, of which 26 million were work-related.[6] Employers paid the entire cost for more than one-third of the work-related training, and they paid at least part of the cost for more than half of the work-related training.[7]

The National Longitudinal Surveys of Labor Market Experience obtain information from households on the occupational type, source, sponsor, and length of training received. These surveys are especially valuable because of their longitudinal nature. The National Longitudinal Surveys consist of four original cohorts--Young Men, Young Women, Older Men, and Mature Women--that began data collection in 1966, and a Youth cohort of both sexes that began in 1979.[8] Data collection from the Youth and the original female cohorts continues to the present, while that from the Young Men's cohort stopped in the early 1980s.[9]

The Youth cohort contains data on formal training programs lasting one month or more. Looking just at company training programs, nine percent of youth (14-21 years of age in 1979) had completed at least one such program between 1979 and 1986.

The Survey of Income and Program Participation (SIPP) began in 1984 to collect data similar to that in the 1983 CPS supplement. Only about 20 percent of the respondents indicated that they had ever received job training. The survey also obtained information on the location of

training. While the list of possible answers emphasized formal training programs such as vocational schools, junior colleges and sheltered workshops, the largest single source of training was the workplace. Nearly half of the respondents indicated that their most recent training had occurred several years earlier.[10]

Another household-based survey of training is the 1975-76 University of Michigan Time Use study, which asked 375 respondents to keep a diary of their activities, including time spent in on-the-job-training.[11] The Time Use study reported that 60 percent of the work force received training -- more than twice the likelihood of training reported by the CPS, NLS, and SIPP. One reason for the larger estimate may be due to the phrasing of the survey question. Respondents were asked, "Do you feel you are learning skills on your job that could lead to a better job or a promotion?" The question's reference to learning skills, a much broader topic than training, probably led to much larger training estimates.

Surveys of Employers

We know that employers play a major role in the training of workers, but comprehensive information about the extent of employer-provided training does not currently exist. Some attempts to measure the extent of employer-provided training through establishment surveys are described below.

One of the first attempts to obtain training information was conducted by the Bureau of Labor Statistics (with funding from the Employment and Training Administration) in 1974. The survey was designed to gather in-depth information on the training of 14 skilled manual occupations in metalworking industries.[12] The survey was conducted as an extension of a pilot survey effort to see if comprehensive information on employer training could be gathered at reasonable costs.

Information was obtained on enrollments and completions of training programs designed both to qualify workers for employment in the 14 specific occupations and to upgrade the skills of workers already employed in those occupations. Information was obtained on whether the training was given on the job or off the production site and on the length of the training. Data were also collected on why the training was provided and, for employers that did not provide training, why it was not offered. Respondents were asked about factors used to select trainees, benefits to those completing the training, and if training records were maintained, where they were kept in the establishment.

The survey, although narrow in scope, expensive to conduct, and more than 15 years old, provided some valuable insights into employer training. Some of the highlights of the survey include:

* Only 15 percent of the establishments covered by the survey provided structured training in the selected occupations.
* The proportion of establishments offering training generally increased as employment size increased.
* About 70 percent of the training was conducted to qualify employees for work in an occupation, whereas 30 percent was to improve skills of workers in current jobs.
* More than two-thirds of the training was provided on the job.
* Establishments provided training primarily because employers felt job skills could best be taught in their own training programs and because the education and/or training background of their employees was inadequate.
* Employee interest was the primary factor used to select employees for training.
* Only 2 percent of the training instructors taught full time.
* About five-sixths of the establishments did not have a specific budget for training.

In 1982, The National Institute of Education and the National Center for Research in Vocational Education sponsored a survey of firms to obtain records of on-the-job training for entry-level workers. The survey was designed to evaluate the Employment Opportunity Pilot Project (EOPP), and disproportionately sampled low-wage employers. Survey questions referred to the employers' most recent hires.[13] While the data was not representative of the entire work force, this study's strengths included detailed measures of the type of training received and the number of hours spent in training. Out of 2,625 firms, 1,901 provided usable responses to the questions on number of hours of training for the first three months of employment, as well as demographic characteristics. According to this study, about 30 percent of the time during the first three months of employment are spent in training, but less than 10 percent of this training is formal.

Data on training as a benefit to employees is available from the BLS Employee Benefit Survey (EBS). Educational assistance is one of a number of employer-sponsored benefits covered in this survey, which obtains data on the number of workers eligible for full or partial reimbursement of expenses related to education, including tuition, fees, and books.[14] Data are collected for two separate benefits: payment for job-related education and payment for non-job-related education. Job-related classes are those that provide skills needed in the employee's current job or for

advancement within the organization; non-job-related classes are for personal enrichment or career change.

Data available on educational assistance were collected as part of the 1987 survey of State and local governments and the 1988 survey of medium and large firms. The surveys found that the majority of workers are eligible to receive job-related educational assistance, that private sector workers were more likely to be offered this benefit than those in State and local governments, and that professional and clerical workers were more likely than production and service workers to have this benefit. For 1989, EBS is again studying the incidence of educational assistance in medium and large firms. In 1990, the benefit will be studied in State and local governments and, for the first time, in small firms.

Corporate studies have also been conducted that look at different measures of training. In 1985, the Conference Board surveyed 218 companies to derive information on changes in training over time. The Board found that the proportion of workers receiving training had increased in all major job categories over the 1980-85 period.[15]

A second corporate survey, conducted by the Batelle Human Affairs Research Center, collected information on management training in 61 companies with 1,000 or more employees in 1987. The major finding of that study was that 89 percent of companies reported using formal training and education programs, and that usage increased with firm size.[16]

A different way to look at employer-supported training is to examine the provisions in major collective bargaining agreements. With such economic problems in the early 1980's as recession, foreign competition, technological changes, etc., the parties to several labor agreements negotiated various job security provisions in their collective bargaining settlements. Among these was the drafting of new or improved contract language for "training". At first, training and education opportunities were provided to displaced employees in order to facilitate their reentry into the labor force. Subsequently, such opportunities were made available to active employees to enhance their career development. Examples of such provisions are found in the agreements between General Motors and the Autoworkers, AT&T and the Electrical and Communication workers, and USX and the Steelworkers.

The apprenticeship system has traditionally been an important method of training skilled workers. Apprenticeship is a structured process by which individuals

learn to become skilled workers through a combination of on-the-job training and related theoretical instruction.

Apprenticeship is an industry-based training program operated by employers and, in many cases, with labor union participation. The employer can tailor the training to meet specific or changing needs. The federal government promotes the application of registered apprenticeship programs with employers and industry organizations, and provides technical assistance and oversight to apprenticeship sponsors. The U.S. Department of Labor's Bureau of Apprenticeship and Training (BAT) provides this function in 23 States. In 27 States, the BAT delegates this responsibility to State Apprenticeship Councils (SAC).

Over 1.5 million people have completed apprenticeship since 1950. There are over 300,000 registered apprentices in the United States. The growth in the system has been due to the military apprenticeship programs which accounts for 17% of all apprentices. While the BAT recognizes over 800 occupations as apprenticeable, apprenticeships are concentrated in relatively few occupations, mostly in the building trades, metalworking trades and various repair occupations.

The cost of training

The studies described above provide measures of the frequency or extent of training for some points in time, but generally do not indicate the cost to employers of providing such training. Several studies have attempted to measure both formal and informal training costs and have come up with a wide range of estimates. The results of these surveys have been viewed with some skepticism as they vary widely, reflecting differences in methodology, definition, sample size and selection, and response rates.[17] One commonly-cited survey that focused on formal employer-sponsored training was conducted by the American Society for Training and Development. The ASTD estimated that employers spent approximately $30 billion in direct costs for formal training in 1984.[18]

Other estimates of formal training costs come from annual surveys by Lakewood Research, a subsidiary of the publisher of *Training* magazine. Lakewood annually surveys organizations with 50 or more employees regarding their budgets for formal training, the number of individuals trained, and the number of hours of training received. The 1987 survey indicated that $32 billion was budgeted for formal training, for 38.8 million workers.[19]

The cost of training may be much higher than these studies indicate. Total training costs borne by employers

include not only direct costs, but also the value of foregone production by workers participating in training. The ASTD estimated that the costs of employer-provided informal training ranged from $90 to $180 billion.[20] Jacob Mincer estimated the total value of training to be equal to the increase in production due to training. His estimate of $296 billion in 1987 includes foregone compensation and increased productivity in excess of compensation.[21] Using data from the Time Use survey, he estimated that just the value of workers' time spent in training equalled $148 billion dollars in 1987.

The effects of training

How private-sector training affects employment, productivity, and wages has been the subject of a number of recent studies. One analysis utilized combined data on formal and informal training from the EOPP survey; the researchers found that a 10 percent increase in the amount of time devoted to training was associated with an average 3 percent increase in productivity and a 1.5 percent increase in wages.[22] Other researchers used the 1983 CPS and found that receiving formal company training was associated with wage gains of more than 20 percent.[23]

Data from the NLS make possible comparisons of the effects of different types of training. Researchers Lillard and Tan, using data from the NLS Young Men's cohort, found that company training had a greater impact on earnings than did training from any other source.[24] Of all the types of training, managerial training had the largest impact on earnings. The same researchers found that earnings gains tended to decay over a period of seven to fifteen years. Linda Lynch used data from the Youth cohort and found that company training and apprenticeships had greater impacts on earnings than did off-the-job training, such as that provided by business colleges and technical institutes.[25]

What we know from training surveys

A general consensus has emerged on certain issues:

- The likelihood of training declines with age.
- The likelihood of training increases with education.
- Men are more likely to receive training than women and whites are more likely to receive training than blacks.
- The likelihood of training increases with firm size.
- Most training is informal.
- Training increases future earnings of workers, but which kinds of training do so and how well training pays is uncertain.

What we do not know

There is no universal *definition of training*. Survey results indicate that anywhere from 20 to 60 percent of the work force is currently receiving training. Because no definition of training is generally provided to respondents, they are free to interpret the question as they wish and they appear to use a narrow definition. While economists broadly define training as the learning or improvement of skills that will be applied in the work place, this definition blurs the distinction between training and schooling.

The *total amount of training* received by workers is largely unknown. This measurement requires information on both the incidence of training and its duration.

It is unclear how to measure whether *training is successful*. Existing surveys focus largely on the location of training rather than on its content. One aspect of the success of training would be its effect on earnings and turnover. Increases in earnings have been related to firm tenure and work histories to estimate indirectly the effect of training.

Estimates of the *cost of training* are extremely weak. By all accounts, the direct costs of training are a small fraction of the total costs. Estimates of total costs must include the value of worker's time spent in training. And, even the time estimates of training will be ambiguous if training and production occur simultaneously.

Changes in training over time are unknown. The lack of consistent or repeated surveys leaves us without any indicators of how the quantity of annual training per worker has changed over time. Estimate of the amount of lifetime training of workers would also be desirable. Additionally, nothing is known about the quality of training over time.

What we would like to know

The basic questions we would like to answer are: How much employer-provided training is going on? How much are we spending on training? And, what the effect of training on individuals, firms, and society?

To answer these questions would require the collection of information from employers on the extent of their training activities, and the content and cost of that training. Ideally, these answers would be tied to the characteristics of individual workers in order to measure the effect of training on earnings and unemployment.

Information on firm or job tenure would also be useful and regular data collection to measure change would make analysis possible.

The problem faced in collecting meaningful training data is that both employers and employees have vital information. Employers are the best source of information on cost, hours, and content of formal training. Employees are the best source of similar information on informal training and of data on demographic characteristics.

With this in mind, it might be possible to move from the general questions asked in the beginning of this section to some specific ones:

- What kind of training is being offered?
- How many hours are devoted to training?
- What are the direct dollar expenditures by firms and individuals on training?
- How many hours of training per year is the average worker receiving? Does it vary by demographic or occupational group?
- Who pays for training?
- What is the benefit of training to employers and employees?
- Is the amount or content of training changing over time?

The Bureau of Labor Statistics believes that the most pressing need is for a broad-based establishment survey of employer-provided training. This survey would focus on the type, extent, and cost of training. The survey would have to be large enough to provide data by both industry and size of establishment. This information would assist policy makers in understanding the transition from school to work, and provide information on workforce quality.

It is clear from reviewing the literature that obtaining this type of information would not be easy. Careful attention would have to be given to the design of the survey instrument, and extensive testing and pilot work would be required. We envision a multi-stage survey design using both mail and telephone collection to maximize reliability and response rates.

U.S. Bureau of Labor Statistics
June 14, 1990

[1] See Gary S. Becker, *Human Capital*, 2nd edition, Chicago: University of Chicago Press, 1975.

[2] See Jacob Mincer. *Schooling, Experience, and Earnings*, (New York, Columbia University Press, National Bureau of Economic Research, 1974).

[3] Two articles that provide reviews of existing literature on the extent and cost of training, and that offer suggestions for training policy, are included in a collection of papers assembled by the Secretary of Labor's Commission on Workforce Quality and Labor Market Efficiency. See Charles Brown, University of Michigan, "Empirical Evidence on Private Training," and Stephen L. Mangum, Ohio State University, "Evidence on Private Sector Training," contained in *Investing in People: A Strategy to Address America's Workforce Crisis*, U.S. Department of Labor, pp. 301-386.

[4] See *How Workers Get Their Training*, Bulletin 2226 (Bureau of Labor Statistics, 1985).

[5] See, for example, Anthony P. Carnevale and Leila Garner, *The Learning Enterprise*, The American Society for Training and Development and the Employment and Training Administration, 1988.

[6] See press release, "Participation in Adult Education, May 1984," No. 86-308b (U.S. Department of Education, Office of Educational Research and Improvement, 1986).

[7] Special tabulations of the Survey of Participation in Adult Education. From Harold Goldstein of the American Society for Training and Development, to be published in forthcoming Industrial Relations Research Association publication.

[8] See *NLS Handbook, 1987*, Center for Human Resource Research, The Ohio State University, Columbus, Ohio, 1987.

[9] The Older Men's cohort will be reinterviewed in 1991. Labor market issues are not important for most of these men, however, who will be between 70 and 84 years old when surveyed.

[10] See *What's It Worth? Educational Background and Economic Status: Spring 1984.* Series P-70, No. 11. (Bureau of the Census, 1984) p. 16.

[11] See Frank Stafford and Greg J. Duncan, "The Use of Time and Technology by Household in the United States", *Research in Labor Economics*, 1980, pps. 335-375.

[12] See *Occupational Training in Selected Manufacturing Industries, 1974*, BLS Bulletin 1976 and ETA R&D Monograph 53 (Bureau of Labor Statistics and Employment and Training Administration, 1977).

[13] See, for example, John M. Barron, Dave A. Black, and Mark A. Loewenstein, "Job Matching and On-the-job Training," *Journal of Labor Economics*, 1989, pp. 1-19.

[14] Two surveys of employer benefits are discussed. See *Employee Benefits in Medium and Large Firms, 1988*, Bulletin 2336 (Bureau of Labor Statistics, 1989); see also, *Employee Benefits in State and Local Governments, 1987*, Bulletin 2309 (Bureau of Labor Statistics, 1988), pp. 76-77.

[15] Seymour Lusterman, "Trends in Corporate Education and Training," Report No. 870, The Conference Board, 1985.

[16] This study was one of many cited in Ann Bartel, "Utilizing Corporate Survey Data to Study Investments in Employee Training and Development", paper prepared for the December 1988 Conference on Employer-sponsored training, the Institute on Education and the Economy, Teachers College, Columbia University, New York.

[17] See Charles Brown, "Empirical Evidence on Private Training," and Stephen Mangum, "Evidence on Private Sector Training".

[18] See *The Learning Enterprise*, p. 17.

[19] Chris Lee, "Where the Training Dollars Go," *Training*, October 1987, pp. 51-65.

[20] See *The Learning Enterprise*, p. 15.

[21] Jacob Mincer, "Job Training:Costs, Returns, and Wage Profiles," Working Paper No. 3208 (National Bureau of Economic Research, 1989).

[22] See Barron, Black, and Loewenstein, "Job Matching."

[23] Lee Lillard and Hong Tan, *Private Sector Training: Who Gets It and What are Its Effects?* Rand Monograph R-3331-DOL/RC (March 1986).

[24] Lillard and Tan, pp. 58.

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[25] Lisa M. Lynch. "Private Sector Training and Its Impact on The Earnings of Young Workers," Working Paper No. 2872 (National Bureau of Economic Research, 1989). Other studies on the effect of training on earnings and productivity include: Jacob Mincer. "Job Training, Wage Growth, and Labor Turnover," Working Paper No. 2690 (National Bureau of Economic Research, 1988); James N. Brown, "Why Do Wages Increase With Tenure," *American Economic Review* (December 1989), pp. 971-991; Michael Pergamit and Janice Shack-Marquez, "Earnings and Different Types of Training," Bureau of Labor Statistics Working Paper No. 165 (June 1987); and, John Bishop, Kevin Hollenbeck, Suk Kang, and Richard Willke, *Training and Human Capital Formation*, Ohio State University (July 1985).