

Results from the 1995 Survey of Employer-Provided Training

A new survey finds that U.S. employers allocate considerable time and resources to training their employees; the incidence of formal training tends to be higher at establishments that are larger and that have lower turnover and more benefits, among other characteristics

Harley Frazis,
Maury Gittleman,
Michael Horrigan,
and
Mary Joyce

In recent years, the issue of worker training has been pushed to the forefront of public policy circles. Concerns center around the decline in real wages of less educated workers, the effect of work organization on the demand for skills in the workplace, and the question whether U.S. workers are appropriately trained to meet the challenge of changes in job requirements brought about by the introduction of new technology.¹ In spite of the importance of this issue, substantial gaps exist in our knowledge of such fundamental questions as how much training takes place, who provides it, and who gets it.²

The lack of high-quality data on the amount of training being provided and on the costs of such training has been due primarily to the difficulty in measuring these variables. Because no universally accepted definition of *training* exists, estimates on the amount of training vary considerably from survey to survey. Some surveys collect information only on training that is highly structured, such as time spent in *formal* company training programs. This kind of approach ignores the more unstructured, *informal* ways in which employees can learn job-related skills.

The aim of this article is to fill in some of these gaps, making use of data recently collected in a survey by the Bureau of Labor Statistics: the 1995 Survey of Employer-Provided Training

(SEPT95). This survey has a number of unique features that make it a valuable source of data for studying training practices: information on both formal and informal training is collected; the intensity of training is measured in such a way as to minimize recall problems; data on training expenditures are collected, making use of records already kept; and both establishments and employees at those establishments are surveyed, providing a wide range of characteristics that can be used in an analysis of training intensity.

The sections that follow use results from SEPT95 to address a number of different questions about employer-provided training: How much training is provided? How much of training is formal and how much is informal? How much do establishments spend on training? And what types of establishments offer training, and what types of employees are receiving it?

SEPT95

SEPT95 was conducted by the Bureau of Labor Statistics for the Employment Training Administration of the U.S. Department of Labor in order to provide nationally representative data on the current training practices of employers. A sample of 1,433 establishments was drawn to represent the universe of all private establishments with 50 or

Authors' identification is on page 12.

more employees.³ (The sample was restricted to establishments with 50 or more employees in part because previous research showed that smaller establishments often have no formal training.⁴) In addition to collecting data from establishments, BLS field economists interviewed randomly selected employees in the establishments that responded to the survey.⁵ A primary objective of SEPT95 was to go beyond the collection of data on the incidence of training and obtain estimates on the intensity of training—namely, hours and costs. Information on the hours and costs of *formal* training provided by employers was obtained from the respondents to the establishment survey,⁶ whereas data on the hours and wage and salary costs of both *formal and informal* training received by workers were collected from randomly sampled employees.

Formal training is defined in the survey as training that is planned in advance and that has a structured format and a defined curriculum. Informal training is unstructured, unplanned, and easily adapted to situations and individuals.

The establishment survey consists of two survey instruments: a questionnaire and a training log. The employer questionnaire was designed to collect information on a variety of establishment characteristics and on selected costs of formal training. The cost items include the dollar amount spent during 1994 on the wages and salaries of in-house trainers, fees paid to outside training companies, tuition reimbursement, and contributions to training funds sponsored by unions, trade associations, and other outside agencies (hereafter, outside training funds). These items were included in the survey because field tests indicated that records were more likely to be available on them than on other costs of training, such as for materials or overhead. Information on the total dollar amount spent on training during the year (that is, a training budget) was not asked in SEPT95.⁷ Usable employer questionnaires were obtained from 1,062 of the respondents, for a response rate of about 74 percent.

The employer log was designed to collect information on the amount of formal training that employers provided or financed for their employees. Employers were asked to report on all the formal training events provided or financed by the establishment over a 2-week period.⁸ For each event, information was obtained on the number of employees in attendance, the hours of training, the type of training, and who conducted the training. Given that recordkeeping on training is not centralized in some establishments, a relatively short reference period was deemed necessary to provide high-quality data on the hours of formal training. Usable logs were collected from 949 respondents, equivalent to a response rate of 66 percent.

A similar design was used to collect information from randomly selected employees. An employee questionnaire obtained data on such demographic characteristics as age, sex, race, ethnicity, occupation, education, earnings, and tenure

and also included general questions on past training received. From the 2,124 potential employees (2 employees from each of the 1,062 establishments that responded to the employer survey), 1,074 questionnaires were collected, for a response rate of 50.6 percent.

The employee log was used to capture the number of hours of both formal and informal training. Employees were asked to keep a log for 10 calendar days.⁹ Employees reported any activity in which they were taught a skill or were provided with new information to help them do their job better. For each learning activity, respondents were asked who or what helped them learn the skill or information, how they learned the skill or information, what type of skill or information was learned, and how much time was spent learning the skill or information. On the basis of answers to the first two of these questions, the Bureau used an algorithm to classify each activity as formal training, informal training, or self-learning.¹⁰ The response rate for the employee log was nearly 48 percent.

As mentioned, data for SEPT95 were collected through personal interviews, and the survey made use of already existing records as much as possible or, when there were no such records, information from respondents' logs kept expressly for the purposes of the survey. We believe that this approach results in a significant improvement in the quality of data on hours of training—particularly, hours of informal training—because employees were not assumed to have a definition of informal training in mind, nor were they asked to recall information from far back in time. Recall and definition problems have caused estimates of informal training to vary greatly by survey.¹¹ On the other hand, given the costliness of the approach used in SEPT95, sample sizes could not be as large as for a survey that measures only the incidence of such training. In addition, the period for which employer and employee respondents can be expected to keep a reliable log is fairly short. Thus, one should keep in mind that the estimates presented in this article—especially as regards the employee logs—will not be as precise as those of the typical large-scale Government establishment survey.¹²

Amount of training provided

Table 1 shows the findings from SEPT95 on the incidence and intensity of employer-provided training in establishments with 50 or more employees. Nearly 93 percent of such establishments reported that they provided or financed formal training for their employees in the last 12 months. On the employee side, close to 70 percent of employees who worked in these establishments reported receiving some formal training in the last 12 months. Further, the receipt of *informal* training is, not surprisingly, even more common, with 96 percent of employees reporting that they received such training while working for their current employer.

Table 1. Incidence and intensity of training, establishments with 50 or more employees

Type of training	Percentage of establishments providing	Percentage of employees receiving
Formal training in the last 12 months	92.5	69.8
Informal training with current employer	95.8
	Hours per employee, employer survey	May–October 1995 employee survey
Total	44.5
Formal training	10.7	13.4
Informal training	31.1

As regards the intensity of training—that is, the hours employees spend in training—employers reported that they provided an average of about 11 hours of formal training per employee during May–October 1995. Employees said that they spent an estimated 13 hours in formal training over the 6-month period.¹³

Although the hours spent in formal training are significant, the results from the employee survey show that informal training is a very important way in which employees acquire job-related skills. On average, 31 hours per employee were spent in informal training, implying that 70 percent of the training over the May–October 1995 period was delivered through informal instruction.

Spending on training

Another way of gauging the size of employers' investment in training is to measure the amount of money employers spend on training-related activities. The measurement of training expenditures by establishments is very difficult. In general, estimates on the costs of training are hard to find, and the few that exist vary greatly.

Given the unique design of SEPT95, the Bureau was able to collect information on both the direct and indirect costs of training. From the establishment survey, data were obtained on some of the direct costs associated with providing formal training. These costs include the dollar amount spent in 1994 on the wages and salaries of in-house training personnel, fees paid to outside training companies, tuition reimbursement, and contributions to outside training funds. Note that SEPT95 did not collect information on *all* direct costs of training: some of the direct costs not included in the survey are payments for equipment, supplies, space, and travel for training.

From the employee survey, information was collected on the wages of employees, as well as the hours they spent in both formal and informal training. The information was used to construct estimates of the wage and salary costs paid to employees during their training. The wages and salaries that

employees receive while in training represent an important indirect cost to employers of providing training, because the time that employees spend in training is time that they could have spent working at their jobs. The value of that time is estimated by multiplying an employee's hourly wage by the hours he or she spent in training.

In obtaining the foregoing kinds of information, SEPT95 adds data on the wage and salary opportunity costs of both formal and informal training to the basic information that exists on training expenditures. While SEPT95 does not provide the definitive answer to the question of how much is spent on training, the cost estimates from the survey represent a significant improvement in many respects over existing figures.

The first four rows of table 2 provide estimates from the employer survey on some selected direct costs of training. For this category, the first column shows expenditures per employee, the second column reports the total dollar amount spent during 1994, and the third column gives the range of expenditure levels calculated by taking one standard error and adding it to, or subtracting it from, the estimate.

Establishments with 50 or more employees spent an average of \$139 per employee during 1994 on the wages and salaries of (both full-time and part-time) in-house trainers. An average of \$98 per employee was spent on payments to outside trainers or training companies, and \$51 per employee went for tuition reimbursement. A smaller amount, \$12 per employee, was spent on payments to outside training funds.

Establishments with 50 or more employees spent \$7.7 billion on wages and salaries of in-house trainers, compared with \$5.5 billion on payments to outside trainers, during 1994. Expenditures on tuition reimbursement programs totaled \$2.8 billion, while \$0.6 billion went to training funds sponsored by unions and trade associations.

Although expenditures on these selected direct costs of

Table 2. Expenditures on training, establishments with 50 or more employees

Category	Per employee	Level (billions of dollars)	Error range of expenditures (billions of dollars)
1994 selected costs of formal training:			
Wages and salaries of in-house trainers	\$139	\$7.7	\$7.0–\$8.5
Payments to outside trainers	98	5.5	4.8–6.1
Tuition reimbursements ..	51	2.8	2.6–3.0
Contributions to outside training funds	12	.6	.5–.8
May–October 1995 wages and salaries paid to trainees			
For formal training	647	37.1	32.8–41.4
For informal training	224	12.8	11.0–14.7
	423	24.2	19.9–28.5

Table 3. Incidence and intensity of training, by establishment size and industry

Size and industry	Percent of establishments that provided formal training in the last 12 months	Percent of employees who received formal training in the last 12 months	Hours per employee in May–October 1995			
			Employer survey	Employee survey		
			Formal training	Formal training	Informal training	Percent of total hours spent in formal training
All establishments	92.5	69.8	10.7	13.4	31.1	30.1
Establishment size						
50–99 employees	90.8	61.6	5.7	8.2	31.9	20.4
100–499 employees	94.4	73.0	12.1	13.5	34.5	28.1
500 or more employees	98.1	71.0	12.0	16.6	26.0	39.0
Industry						
Mining	96.7	94.7	14.4	17.2	18.9	47.7
Construction	94.7	71.2	5.0	11.4	36.1	24.1
Manufacturing:						
Durable goods	88.1	78.3	11.7	20.8	30.3	40.8
Nondurable goods	95.2	85.4	11.9	21.7	18.5	54.0
Transportation, communications, and public utilities	96.5	81.4	18.3	17.6	19.7	47.1
Wholesale trade	98.4	68.1	8.4	8.3	25.4	24.7
Retail trade	88.7	48.8	3.7	4.2	32.6	11.5
Finance, insurance, and real estate	95.6	87.4	16.6	15.9	34.7	31.4
Services	93.5	70.7	11.0	13.2	37.0	26.3

training are substantial, employers spent an even larger amount on indirect wage and salary costs of training. Some \$647 was spent per employee between May and October 1995 on the wages and salaries paid to workers during their training. About 65 percent of this amount, or \$423, was spent on informal training. In total dollars, \$37 billion was spent on indirect wage and salary costs over the May–October period: \$13 billion for time spent in formal training and \$24 billion for time spent receiving informal training.

Establishments providing training

What determines whether an establishment provides training and how much training it provides? One simple answer is that establishments provide training to their workers if the benefits of the training exceed the costs. This leads to the more difficult question of what affects the benefits and costs of training. The answer to this question is complex and likely to differ across establishments and types of training. Without spelling out all the various factors and motivations behind a firm's decision to offer training, this section studies the extent to which the incidence and intensity of training are related to a variety of establishment characteristics, such as size, industry, labor turnover, the nature of part-time and contract employment, the presence of unions, the adoption of various alternative workplace practices, and the provision of benefits.

Size and industry. The size of an establishment may influence its decision to provide training, particularly formal training. For example, larger establishments might be more likely

to provide formal training, due to economies of scale. In other words, the total cost of training may not increase much as the number of trainees increases, because the cost of hiring a trainer and developing a curriculum are relatively fixed. An establishment's industry affiliation also may affect its training decisions, given that product market conditions, profitability, technology, and a variety of other factors that affect the benefits and costs of training differ across industries. For example, if demand in an industry fluctuates widely because of cyclical or seasonal factors, managers of an establishment in that industry may be reluctant to make large investments in training, knowing that workers might have to be laid off before a return on the investment is realized.

Table 3 suggests that small establishments are somewhat less likely to provide formal training than are larger ones, with 91 percent of establishments with 50–99 employees having provided formal training in the last 12 months, compared with 94 percent of establishments with 100–499 employees and 98 percent of establishments with 500 or more employees. Similarly, findings from the employee survey show that employees working in small establishments were less likely to receive formal training than were those working in larger establishments. Some 62 percent of employees in establishments with fewer than 100 employees had received formal training in the last 12 months, as opposed to 73 percent for establishments with 100–499 employees and 71.0 percent for establishments with 500 or more employees.¹⁴

The percentage of establishments reporting that they had provided formal training in the last 12 months was generally high for all industries, ranging from 88 percent in durable-

goods manufacturing to 98 percent in wholesale trade. The percentage of employees who reported that they had received formal training shows more variation across industries. Employees in mining industries were the most likely to have received training in the last 12 months, at 95 percent, compared with 68 percent of employees in wholesale trade and 49 percent in retail trade.

The amount of formal training provided also varies by establishment size. Table 3 shows that establishments with fewer than 100 employees provided fewer hours of formal training per employee than did larger establishments. Establishments in the smallest size class (50–99 employees) provided approximately 6 hours of formal training per employee, compared with 12 hours per employee for medium-sized (100–499 employees) and large (500 or more employees) establishments. Similar findings emerge from the employee survey: the hours of formal training that employees received in May–October 1995 range from 8 hours for small establishments to almost 17 hours for large ones; however, the hours of informal training do not show any clear pattern by establishment size.

As the last column in the table shows, larger establishments tend to rely more heavily on formal training as a means of training their employees. Employees in establishments with 500 or more employees spent 39 percent of their total training time in formal training, compared with only 20 percent for employees in establishments with fewer than 100 employees. These findings support the argument for economies of scale in formal training.

The amount of formal training varies considerably across industries. In general, establishments in the transportation, communications, and public utilities; finance, insurance, and real estate; and mining industries provided more hours of formal training than the average, and establishments in retail trade, wholesale trade, and construction provided fewer hours than the average.

Turnover. One establishment characteristic that has received considerable attention among economists is the relationship between training and the level of employee turnover. Turnover and training are expected to be inversely related: the

higher the level of turnover, the lower is the amount of training. This expectation is based on the reasoning that the longer an employee stays with an employer, the higher will be the return to training. As noted earlier, if labor turnover is high, employers will be reluctant to invest in training, knowing that workers might have to be laid off or quit before a return to the investment in training can be earned. From the employee's view, if the training involves skills specific to the establishment, it is likely to contribute to an increase in productivity at that establishment.¹⁵ Greater productivity at the establishment, in turn, will tend to raise a worker's wage above what he or she would earn elsewhere, thus providing an incentive to stay. In other words, training can serve to lower turnover.

The findings from SEPT95 generally support the inverse relationship between training and turnover.¹⁶ Table 4 suggests that employees working in establishments with high turnover are less likely to receive formal training than their counterparts in establishments with medium or low turnover. The same relationship is found when one examines the percentage of establishments that had provided formal training in the last 12 months obtained from the employer survey.

Table 4 also indicates that high-turnover establishments provided less formal training than did other establishments. Hours of formal training from both the employer and employee surveys support this finding. Hours of informal training, however, are not inversely related to turnover. Perhaps most striking is the relationship between turnover and an establishment's reliance on formal training. Employees working in low-turnover establishments spent about 59 percent of their total training time in formal training, compared with 18 percent for employees in high-turnover establishments. These findings support the theory that employers may be reluctant to invest in costly training (presumably, formal training is more costly than informal training) when employee turnover is high, as well as the theory that employers who invest in costly training are less likely to lay off workers or have workers quit.

Unionization. There are a number of reasons that the presence of unions may lead to higher levels of training. Collective bargaining agreements often require that employers pro-

Table 4. Incidence and intensity of training, by employee turnover

Turnover	Percent of establishments that provided formal training in the last 12 months	Percent of employees who received formal training in the last 12 months	Hours per employee in May–October 1995			
			Employer survey	Employee survey		
			Formal training	Formal training	Informal training	Percent of total hours spent in formal training
Low	92.7	78.0	10.8	27.3	19.0	58.9
Medium	96.0	74.7	12.5	15.6	30.4	33.8
High	88.6	60.7	7.2	7.6	34.2	18.2

vide training. In addition, union jobs generally pay more than nonunion jobs, and these higher wages may reduce turnover, which, as just noted, could lead to increased training.

Alternatively, establishments with labor unions may provide *less* training than their nonunionized counterparts, for a number of reasons. The higher wages of unionized workers might encourage establishments to recruit already skilled workers, so they would not have to incur the added expense of training their employees. Further, unions—especially in the construction trades—sometimes conduct their own training, which again reduces an establishment’s need to train employees itself.

Table 5 shows very little difference in the likelihood of providing formal training between union and nonunion establishments.¹⁷ Some differences emerge from an examination of the number of hours of formal training per employee obtained from the employer survey. Establishments without unions provided an average of 11 hours of formal training per employee, slightly more than the approximately 10 hours for unionized establishments.

One possible explanation for the lower hours of formal training among union establishments is that workers in unionized shops may be more experienced, on average, and thus require less training. A question concerning an employee’s tenure with the current employer asked in the employee survey allows us to investigate this hypothesis.

As shown in the following tabulation of the distribution of employee tenure in union and nonunion establishments, union establishments do appear to have a larger percentage of workers with more tenure:

<i>Tenure with current employer</i>	<i>Nonunion</i>	<i>Union</i>
Less than 1 year	8.6	2.8
1 to 5 years	41.7	25.6
5 to 10 years	26.4	28.7
10 or more years	23.3	43.0

Forty-three percent of workers in union establishments had a tenure of 10 years or more with their current employer,

compared with only 23 percent of workers in nonunion establishments.

Results from the employee survey show only a small difference in the hours of formal training between union and nonunion employees. However, employees in union establishments received fewer hours of informal training. Again, this finding is consistent with union establishments having a generally more tenured work force, and, as is shown later, older, more tenured workers receive less informal training.

Table 5 also shows that union establishments tend to rely more heavily on formal training than do nonunion establishments: 36 percent of total training received by employees in union establishments was formal training, compared with 28 percent for nonunion establishments. Again, this may be due to the differences in the distribution of workers’ tenure in the two types of establishments, or it may result from union efforts to promote formal training through collective bargaining agreements.

Human resource practices. Whether and how much training an establishment provides is likely to be influenced by training’s place in a broader range of human resource practices. For instance, training is more likely to be provided if employers expect their workers to stay for an extended period; generous benefits may help ensure that workers do not quit before the employer is able to recoup its training costs. SEPT95 asked about the provision of the following benefits: paid vacation, paid sick leave, health care benefits, employee assistance program, employee wellness program, pension plan, profit sharing, flexible work schedules, flexible work site or telecommuting, employer-financed child care, and paid parental or family leave.

In recent years, there has been much talk about changes in workplace practices that are designed to move businesses away from a rigid and hierarchical management style. Training has been mentioned as an integral part of successfully implementing these practices so that workers have the necessary interactive and job skills to carry out the practices.¹⁸ SEPT95 asked whether establishments had any of the fol-

Table 5. Incidence and intensity of training, by union presence

Union presence	Percent of establishments that provided formal training in the last 12 months	Percent of employees who received formal training in the last 12 months	Hours per employee in May–October 1995			
			Employer survey	Employee survey		
				Formal training	Formal training	Informal training
No employees represented by union	92.9	71.6	11.0	14.0	35.4	28.4
Some employees represented by union	90.6	65.7	9.7	12.1	21.2	36.2

Table 6. Incidence and intensity of training, by selected human-resource practices

Number of benefits, number of workplace practices, and presence of contract employees	Percent of establishments that provided formal training in the last 12 months	Percent of employees who received formal training in the last 12 months	Hours per employee in May–October 1995			
			Employer survey	Employee survey		
			Formal training	Formal training	Informal training	Proportion of total hours spent in formal training
Number of selected establishment benefits:						
Six or fewer	89.5	62.9	7.1	10.2	28.7	26.2
Seven or more	99.6	76.9	14.8	16.7	33.5	33.3
Number of selected establishment workplace practices:						
Three or fewer	89.1	66.9	7.6	12.0	31.4	27.6
Four or more	98.6	72.4	13.8	14.7	30.8	32.3
Presence of contract employees:						
No contract employees	90.2	63.6	8.1	8.7	33.2	20.7
Some contract employees	98.5	77.0	13.6	18.7	28.7	39.5

lowing workplace practices: pay increases that are directly linked to mastering new skills; employee involvement in the establishment’s technology and equipment decisions; job redesign or reengineering; job rotation; just-in-time inventories; coworker review of employee performance; quality circles; total quality management; and self-directed work teams.

Another human-resource practice that may be related to employers’ training decisions is the use of contract workers, although the direction of the relationship is not always clear and most likely depends on the motivation for contracting. Establishments using contract workers to save money may not have the resources to provide training, while those relying on outside employees to protect a “core” group of workers from fluctuations in workload may actually provide substantial amounts of training to the core group.

Table 6 indicates that establishments with high numbers of benefits and workplace practices, as well as establishments that make use of contract employees, were more likely to provide formal training; also, employees working in such establishments were more likely to have received formal training. These findings are supportive of the notion that some businesses are pursuing a “high-performance” strategy wherein “core” workers are provided formal training, generous benefits, and more autonomy and flexibility to make decisions.

Findings from the employer survey suggest that establishments with more benefits and more workplace practices also provided more formal training. Results from the employee survey do not show as strong a relationship between the intensity of training and these human-resource practices. Hours of formal training are higher for employees working in establishments providing more benefits and more workplace practices, but the differences are not statistically significant. Hours of informal training found in the employee survey do not con-

sistently increase as the number of benefits or workplace practices rises.

Results from the employee survey do show that establishments with a small number of benefits and workplace practices are less likely to rely on formal training. For instance, employees working at establishments with fewer than four benefits spent only 10 percent of their training time in formal-training activities, while employees in establishments with eight or more benefits spent nearly 30 percent of training time in such activities.

Recipients of training

The previous section showed how training varied across different types of establishments. In this section, the focus is on the characteristics of *workers*, rather than establishments. Are some types of workers more likely than others to receive training? If so, what type of worker receives the most training?

SEPT95 asked employees various questions about themselves and their jobs at the establishment. The demographic characteristics included age, sex, race, ethnicity, and education level. The employment characteristics obtained were employee tenure, whether the employee was working part or full time, occupation, and earnings.

Table 7 shows the incidence and intensity of training for workers in various age, sex, race or ethnicity, and education groups. Only the incidence of formal training is shown, because, as mentioned earlier, the receipt of informal training was found to be very common (90 percent or higher) for all workers. Hours of both formal and informal training are presented.

In general, the youngest and the oldest workers were less likely to have received formal training during the last 12

months than were workers aged 25 to 44. The table also shows that the total hours of training were low for the youngest workers, increased with age, and then dropped off for workers 55 years of age and older. This general pattern is evidenced for hours of both formal and informal training, although only the hours of formal training are significantly lower for the youngest and oldest groups. As a result, only 11 percent of the youngest workers' training is formal, compared with 30 percent for older workers.

The relatively low hours of formal training among the very young provides some support for the notion that employers or employees (or both) may be delaying their investment in costly training until the employer-employee match is found to be a good one. The low hours of training for workers 24 years of age or younger may also be influenced by the fact that very young workers tend to change jobs frequently and may not have settled into their chosen careers.

Table 7 shows that 73 percent of women reported receiving formal training in the last 12 months, compared with 67 percent of men. Men received an average of 48 hours of training during the period from May to October 1995, as opposed to 42 hours for women. Neither the difference in incidence nor that in hours of training was statistically significant at conventional levels.

Responses to the questions in the survey regarding ethnicity and race were used to group employees into three categories: white, black, and Hispanic. The three groups are not mutually exclusive, as Hispanics can be either black or white. Table 7 shows small and statistically insignificant differences in the incidence of either formal or informal training by race and ethnicity. In general, white workers tended to receive more hours of training over the 6-month period than did workers in the other two categories.¹⁹ Interestingly, while black workers received about the same number of hours of formal training as white workers, they received significantly fewer hours of informal training.

Table 7 also indicates that workers with a bachelor's degree or higher were more likely to have received formal training during the last 12 months than were their less educated counterparts. About 90 percent of those with a bachelor's degree or higher received training during that period, compared

Table 7. Incidence and intensity of training, by demographic characteristics

Demographic characteristic	Percent of employees who received formal training in the last 12 months	Hours per employee in May-October 1995		
		Formal training	Informal training	Percent of total training hours spent in formal training
All employees	69.8	13.4	31.1	30.1
Age				
24 years and younger	63.4	2.7	21.4	11.1
25 to 34 years	78.5	14.0	32.5	30.0
35 to 44 years	74.7	15.4	30.3	33.8
45 to 54 years	64.7	17.2	39.0	30.6
55 years and older	50.7	5.7	17.1	25.1
Sex				
Men	66.5	12.2	35.4	25.6
Women	73.1	14.6	26.9	35.2
Race and origin				
White	70.4	13.6	35.0	27.9
Black	70.6	13.8	13.9	49.9
Hispanic origin	73.7	11.0	21.7	33.6
Educational attainment				
High school graduate or less	60.1	10.9	24.8	30.6
Some college	67.8	14.3	37.0	27.8
Bachelor's degree or higher	89.7	16.1	31.8	33.6

with 60 percent of those with a high school diploma or less schooling. The number of hours of training also is smaller for the least educated group, although the differences in hours of training per employee across the different educational attainment groups are not significant. The pattern of training by education level is consistent with past research, which has repeatedly shown that more educated workers receive more training.²⁰

Table 8 shows the incidence and intensity of training by employment characteristics. One such characteristic is whether the employee works part time or full time on his or her job. It is expected that employers will invest more heavily in training their full-time employees than their part-time counterparts. The results in the table are consistent with this expectation, with full-time workers (35 or more hours per week) more likely to have received formal training in the preceding 12 months than part-time employees were (71.6 percent, compared with 56.1 percent). Similarly, full-time workers received an average of 48.8 hours of training, compared with 12.5 hours for part-time workers. Most of the difference is the result of patterns in informal training, although differences are evident for formal training as well.

Workers were put into quartiles by calculating what their

earnings would be if they worked 35 hours in a week and then finding their position in the weekly earnings distribution of U.S. workers who work 35 or more hours a week. As the table shows, a smaller proportion of those in the bottom quartile receive formal training than do higher earners. For instance, 62 percent of those in the bottom quartile received formal training in the preceding 12 months, compared with 84 percent for the top quartile. Hours of training also are lower for those in the bottom quartile: these individuals received an average of 4 hours of formal training, as opposed to 23 hours for those in the top quartile. Furthermore, lower earning employees received a smaller share of training via formal delivery methods than did workers with higher earnings.

An employee's occupation is another job characteristic that is likely to influence the amount and kinds of training that he or she receives. Service workers stand out in table 8 as being less likely than those in other occupations to receive formal training. The table also shows that professional and technical workers tend to receive more training than the average worker, having the highest number of hours of training per employee for both formal and informal training, followed by production and construction workers. In terms of formal training alone, there is a considerable gap between the number of hours of training received by professional and technical workers (22) and that received by most other occupations, particularly managers (4) and service workers (6).

The survey also asked employees about three different types of job tenure: the amount of time the worker had been with his or her current employer; the amount of time the worker had been in his or her current occupation (that is, had done a particular kind of work); and the amount of time a worker had been in his or her current position at the establishment. Table 8 shows the receipt of formal training in the preceding 12 months and the hours of formal and informal training for these three kinds of tenure. The results suggest that, after staying with the same

employer for 5 years, the likelihood of having received formal training in the last 12 months rises. A similar pattern exists for tenure in the current job, but tenure in a given occupation does not appear to have a strong association with the receipt of formal training.

With regard to hours of training, employees with low tenure (as measured by all three types of tenure) tended to receive more hours of informal training than did more experi-

Table 8. Incidence and intensity of training, by employment characteristics

Employment characteristic	Hours per employee in May-October 1995			
	Percent of employees who received formal training in the last 12 months	Formal training	Informal training	Percent of total training hours spent in formal training
All employees	69.8	13.4	31.1	30.1
Usual weekly hours worked				
Fewer than 35 hours	56.1	4.8	7.7	38.2
35 or more hours	71.6	14.6	34.2	29.9
Earnings				
First quartile	61.8	4.1	30.6	11.8
Second quartile	74.5	11.6	30.5	27.6
Third quartile	62.0	15.9	39.6	28.6
Fourth quartile	84.0	22.8	21.1	52.0
Occupation				
Managerial and administrative	80.2	4.3	22.4	16.2
Professional, paraprofessional, and technical	84.8	22.3	38.7	36.6
Sales, clerical, and administrative support	72.5	10.2	23.2	30.4
Service	49.8	5.6	22.1	20.2
Production, construction, operating, maintenance, and material handling	66.3	15.2	38.5	28.3
Tenure with current employer				
Up to 2 years	67.5	8.9	56.5	13.6
More than 2 years and up to 5 years	56.8	4.5	19.5	18.8
More than 5 years and up to 10 years	79.7	19.5	27.0	41.9
More than 10 years	75.3	21.1	20.5	50.7
Tenure in current occupation				
Up to 2 years	73.4	12.5	64.7	16.2
More than 2 years and up to 5 years	68.4	7.5	22.4	25.0
More than 5 years and up to 10 years	68.9	9.6	20.0	32.4
More than 10 years	69.2	19.4	24.4	44.3
Tenure in current job				
Up to 2 years	73.4	13.2	48.9	21.2
More than 2 years and up to 5 years	59.7	4.6	20.3	18.3
More than 5 years and up to 10 years	78.1	22.6	14.4	61.1
More than 10 years	66.5	23.6	13.7	63.3

enced workers. For example, workers with fewer than 2 years of tenure with the current employer spent about 57 hours in informal training, compared with nearly 20 hours for workers with 2 to 5 years of tenure. As regards formal training, the increase in hours tended to be higher for more tenured workers: formal-training hours increased from nearly 5 to about 20 as the worker moved from 2 to 5 years of tenure with the current employer to 5 to 10 years. The simplest economic models would predict training to decline with tenure on a given job, as the earlier an employee receives training, the longer returns to the investment in training would be received. However, it may be that employers wait until a worker has been on the job a while and has proven satisfactory before heavily investing in costly formal training for that worker.²¹ For all three types of tenure, formal training appears to make up a growing share of total training as tenure increases, as shown in table 8. One explanation for this is that, as tenure increases, workers become more likely to be the providers, rather than the recipients, of informal training.

THIS ARTICLE HAS DISCUSSED employer-provided training using data from SEPT95, a new BLS survey. We believe that SEPT95 represents an advance in establishment-based training surveys, as it goes beyond the incidence of training to obtain estimates of the *intensity* of training provided by establishments. In addition to obtaining estimates of formal training, the survey collected information on the extent of informal training by interviewing randomly selected employees.

The findings from SEPT95 indicate that U.S. employers ex-

pend a considerable amount of time and resources on both formal and informal training. For example, establishments with 50 or more employees—the sampling frame for the survey—paid \$7.7 billion to in-house training staff and \$5.5 billion to outside trainers during 1994, \$139 and \$98 per employee, respectively. Training expenditures tend to increase with establishment size for all types of expenditures covered in the survey. The wage and salary cost of employees' time while in training represented an even greater expense, with \$224 spent per employee for employees' time in formal training and \$423 spent for informal training, from May to October 1995—rates of \$448 and \$864 per employee, extrapolated to 1 year.²² Employees received between 10 and 13 hours of formal training and 31 hours of informal training during the period from May to October 1995. Assuming an average workweek of 40 hours, these findings suggest that workers spend roughly 4 percent of their working hours in one or the other kind of training.

Findings from the employer data indicate that the incidence of formal training tends to be higher at establishments that are larger, have lower turnover, have higher numbers of benefits, use more alternative workplace practices, and use contract workers.²³ These findings are consistent with the idea that employers who show signs of promoting a long-term relationship with their employees tend to offer more training. Also, because the incidence and hours of training appear to increase with higher pay and more education, the analysis of employee data confirms the finding from other household surveys that more skilled workers are more likely to receive training. □

Footnotes

AUTHORS' IDENTIFICATION: Harley Frazis and Mary Joyce are research economists in the Office of Employment and Unemployment Statistics, Bureau of Labor Statistics. Michael Horrigan is the Director of Longitudinal Research in the same office. Maury Gittleman, a research economist for the Office of Compensation and Working Conditions, Bureau of Labor Statistics, is currently on detail with the Organization for Economic Cooperation and Development, Paris, France. This article is a shortened version of a paper appearing in *Advances in the Study of Entrepreneurship, Innovation, and Economic Growth*, vol. 9 (Greenwich, CT, JAI Press, 1997), pp. 47–82. The views expressed are those of the authors and do not necessarily reflect the views of the U.S. Department of Labor.

¹ See Frank Levy and Richard J. Murnane, "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations," *Journal of Economic Literature*, September 1992, pp. 1333–81, for a survey of recent changes in the earnings structure; Paul Osterman, "Skill, Training and Work Organization in American Establishments," *Industrial Relations*, April 1995, pp. 125–46, for a discussion of the relationship between work organization and training; and Ann P. Bartel and Nachum Sicherman, "Technological Change and the Skill Acquisition of Young Workers," unpublished, April 1995, for an analysis of the effect of technological change on young workers' acquisition of skills.

² Lisa Lynch, "A Needs Analysis of Training Data: What Do We Want, What Do We Have, Can We Ever Get It?" in J. Haltiwanger, M. E. Manser, and R. Topel, eds., *Labor Statistics Measurement Issues*, NBER Studies in Income and Wealth (Chicago, University of Chicago Press, forthcoming).

³ The sample frame for the survey was the list of privately owned establishments on the BLS Universe Data Base. The frame units were classified into strata based on nine industries and five employment size classes.

⁴ Harley J. Frazis, Diane E. Herz, and Michael W. Horrigan, "Employer-provided training: results from a new survey," *Monthly Labor Review*, May 1995, pp. 3–17.

⁵ Two employees were randomly selected at each establishment.

⁶ Experienced BLS interviewers were instructed to administer the survey to the person at the establishment who was most familiar with its training policies and practices. At larger establishments the interviewers were told to ask for the training or human resource director, and at smaller establishments they were requested to seek the person who handles personnel and training issues.

⁷ Previous surveys that asked for total expenditures on training experienced very low response rates. The 6-percent response rate for this item on the Columbia Human Resource Management survey is one such example.

⁸ Interviewers had the option of collecting the training log data for the preceding 2 weeks at the time of the interview or leaving the log with the respondent to complete over the next 2 weeks. The decision as to which alternative to choose was based on the availability and quality of training records.

⁹ Interviewers trained the employees on the use of the log by having them recall their activities over the previous 3 days and then keep a daily log over the next 7 days.

¹⁰ Self-learning activities are not counted as training.

¹¹ Mark Loewenstein and James Spletzer, "Formal and Informal Training: Evidence from the NLSY" (Bureau of Labor Statistics, unpublished, April 1998).

¹² In particular, estimates of the incidence of training from the earlier 1993 Survey of Employer Provided Training (SEPT93), which contained no measures of the intensity of the training, will be more precise. (See Frazis, Herz, and Horrigan, "Employer-provided training," for results from SEPT93.)

¹³ These two estimates of the hours of formal training were obtained from different survey instruments and respondents, so there are a number of methodological reasons for which they might be expected to differ. However, it is also important to keep in mind that the two estimates are *independent*, each measured with a different degree of precision. We conducted a statistical test that incorporates the standard error associated with each estimate and found that the hypothesis that the two are equal could not be rejected at the 10-percent significance level.

¹⁴ Because the incidence of informal training is relatively high in any size of establishment (95 percent of employees received such training while working for their current employer), very small differences across size classes were evident for the provision of informal training.

¹⁵ A model of training that accounts for firm-specific skills was first developed by Gary Becker, *Human Capital* (New York, National Bureau of Economic Research, 1975).

¹⁶ Turnover is measured by computing the ratio of hires and separations to employment during a 3-month period. On the basis of this computation, establishments were placed into three categories, depending on whether their turnover was low, medium, or high. A small number of establishments tended to have very low turnover, with the remaining establishments spread out fairly evenly. As a result, the low-turnover category contains only 7 percent

of all establishments, compared with 49 percent for the medium-turnover category and 44 percent for the high-turnover one.

¹⁷ Establishments were grouped into two categories, depending on whether any of the workers were covered by a collective bargaining arrangement. Owing to the relatively low percentage of U.S. employees who were unionized, the vast majority of establishments (82 percent) fall into a category in which none of the employees is a member of a labor union.

¹⁸ Thomas Bailey, *Discretionary Effort and the Organization of Work: Employee Participation and Work Reform since Hawthorne* (New York, Columbia University, 1993).

¹⁹ The differences in hours between whites and Hispanics were not significant.

²⁰ Charles Brown, "Empirical Evidence on Private Training," in *Investing in People*, vol. 1 (U.S. Department of Labor, Commission on Workforce Quality and Labor Market Efficiency, 1989), pp. 301–29.

²¹ See Mark Loewenstein and James Spletzer, "Belated Training: The Relationship between Training, Tenure, and Wages" (Bureau of Labor Statistics, unpublished, September 1996), for evidence on "belated" formal training in the NLSY.

²² Such extrapolation assumes no seasonal differences in the provision of training.

²³ These conclusions are based on the bivariate relationship between the number of hours of formal training and a particular variable. To the extent that the variables are correlated with each other (for example, larger firms tend to use more contract workers), some of those relationships may not hold in a multivariate context. (For a multivariate analysis of the SEPT95 data, see Harley Frazis, Maury Gittleman, and Mary Joyce, *Determinants of Training: An Analysis Using Both Employer and Employee Characteristics* (Bureau of Labor Statistics, unpublished, February 1998).