

DATA UPDATE

The National Employer Survey: Employer Data on Employment Practices

PETER CAPPELLI

Background to the Survey

The general impetus for the National Employer Survey began with public policy issues of the late 1980s and early 1990s that centered on concerns about the quality of the U.S. workforce and, in particular, employers' investments in their workers. One of the main questions embedded in that general concern was the extent to which employers were providing skills for their employees. A study by the National Center for the Educational Quality of the Workforce (EQW) at the University of Pennsylvania examined surveys of employees with information on training and found enormous variations in responses concerning the extent of training. The context in which training questions were asked had such a powerful effect on the responses and varied so much across surveys, the study found, that it was difficult to draw reliable conclusions about employer training from existing data. The conclusions suggested, first, that questions about work-related education and training were highly sensitive to the context in which they were asked and ideally should be obtained in the context of more general questions about the respondent's work, as opposed to what had been the current practice of asking them in the context of participation in welfare or other social programs. Second, training questions in particular needed to be more specific about the kinds of skills developed and the credentials received. Finally and more

*The Wharton School, University of Pennsylvania. Professor of Management and Codirector of the National Center on the Educational Quality of the Workforce (EQW). Support for the analysis and interpretation of the National Employer Survey is currently provided by the National Center on Post-Secondary Improvement (NCPI), a research center supported by the U.S. Department of Education's Office of Educational Research and Improvement. Thanks to Dan Shapiro for comments on an earlier draft.

generally, there was an acute shortage of information about employers and training, especially about the characteristics of those which provided training and education as well as evidence from the employers' perspective about the nature and extent of their investments in employees (Zemsky and Shapiro 1992).

At the same time, another workplace topic also generated a need for data: the growing interest in high-performance work organization practices. While a great deal of attention was paid to these practices, most of the evidence about them was based on well-publicized stories about individual firms. The extent to which these practices were common in the broader workforce was, at the time, largely a matter of speculation.

More generally, social science researchers had argued for some time that the absence of representative survey data about organizations represented a serious gap in our knowledge about the economy and society. Arguments for national-level data about organizations had been made at least since the 1970s by such groups as the Social Science Research Council. These arguments helped drive not only the National Employer Survey (NES) but also other establishment-based surveys launched at about the same time—the National Organizations Survey, led by Arne Kalleberg, David Knoke, Peter Marsden, and Joe Spaeth, and the National Establishment Survey, conducted by Paul Osterman.

The 1994 National Employer Survey

The NES is drawn from the Standard Statistical Establishment List (SSEL), a listing of establishments drawn from Internal Revenue Service records and based on the mandatory tax reporting by employers. As such, it is the definitive list of employers and should be superior in its representativeness to other commonly used employer sampling frames, such as the one produced privately by Dunn and Bradstreet (see, e.g., Kalleberg et al. 1990). Using this sampling frame also makes it possible to match the NES to other Census data based on the SSEL, such as the Census of Manufacturing and other special surveys.

The 1994 National Employer Survey (NES I) was administered by the Bureau of the Census as a telephone survey using computer-assisted telephone interviewing (CATI), where the interviewer entered responses directly into a database. The survey was delivered in August and September of 1994 to a nationally representative sample of private establishments with 20 or more employees. It was structured to provide information about employer practices at the time of the survey, although financial measures

based on yearly data, such as total sales, were reported for the year just completed, 1993.

The survey oversampled establishments in the manufacturing sector and establishments with more than 100 employees. Public-sector employers, nonprofit institutions, and corporate headquarters were excluded from the sample, as were establishments with fewer than 20 employees. Establishments with fewer than 20 employees represent approximately 85 percent of all establishments in the United States, but those with more than 20 employees account for approximately 75 percent of all workers (Lynch and Black 1998). The choice of restricting the survey to larger establishments was made not only because small establishments come and go quickly but also because very small establishments are unlikely to be appropriate for or amenable to studying workplace policies given that their working arrangements are often so informal and variable (changing day to day in response to even routine developments such as absenteeism) as to make it difficult to respond in a meaningful way to questions about work systems and employment policies.

In administering the NES I, the target respondent was the plant manager in the manufacturing sector and the local business site manager in the nonmanufacturing sector. Other surveys have targeted human resources managers on the grounds that they are most familiar with an employer's human resources policies. The goal of this survey, however, was to measure what was actually done in the facility, not the policies that might exist in employee handbooks. For some topics, such as work organization practices, there may be a big difference between actual and stated policies. The best person to ask about actual operating practices is the person in charge of the establishment, not the manager in charge of personnel policies. The questionnaire was designed to allow for multiple respondents so that, for example, information could be obtained from establishments that kept financial data in a separate office—typically at corporate headquarters for multiestablishment enterprises.

Of the 4633 eligible establishments that were contacted by Census, only 1275 refused to participate in the survey. This represents a 72 percent response rate, which is substantially higher than any of the other U.S.-based organization surveys. The usual reason given by employers for nonparticipation in the survey was that they did not participate in voluntary surveys or were too busy to do so. Analysis of the characteristics of respondents and nonrespondents indicates that there was no significant pattern of differences at the two-digit industry level in the likelihood of participating in the survey (Lynch and Black 1998). The only differentiating characteristic of establishments less likely to participate was that

manufacturing establishments with more than 1000 employees, constituting 0.1 percent of the sample, were less likely to do so.

- *Topics in the Survey.* The focus of the NES I reflected the preceding policy issues in addition to detailed background information about the establishments:
- *Training.* The survey asked 40 separate questions about employer-provided training that centered on 12 different types of training—everything from basic literacy to executive development. The items asked whether the establishment currently provided that type of training, and if not, whether it intended to in the next 3 years, and if it did, whether it expected to change that offering in the next 3 years. Other questions get at the amount of training provided (dollar estimates as well as time spent), informal training, and arrangements with schools for improving the quality of the workforce.
- *Work organization.* These questions provide details about the composition of the workforce (employment, average education, and hours of work by occupation, minority and female composition) as well as detailed questions about how work is organized and employees are managed. These include questions asking about total quality management (TQM) and benchmarking programs, employee involvement by topic, teamwork, management structures (supervisory spans of control and organizational hierarchies), and job rotation. Detailed questions also examine criteria used to screen job applicants.
- *Wages and benefits.* Other items measure labor costs and pay as well as an extensive array of employee benefits, such as child care and various types of contingent compensation. The questions also examine the use of innovative practice such as flex time, job sharing, and pay for skill.
- *Background questions about the establishment.* Finally, the survey examines the context of the business, including issues such as business strategy (measured by sources of competitive advantage), computer use, research and development activities, and financial operating measures such as capital investments and total sales that can be used to generate production function analyses. The financial questions were based on the previous fiscal year, 1993.

Perhaps the most striking findings from the NES I were that employers paid almost no attention to information from schools when hiring production workers, that upskilling of jobs was widespread, but that the perceived proficiency of the workforce was low (*First Findings* 1995).

The 1996 School-to-Work Supplement

The 1994 School-to-Work Opportunities Act resulted from the same policy debates that motivated the NES. It was introduced to advance work-based learning and to help smooth the transition of young people from school to the workplace by encouraging partnerships between schools and employers. In order to assess the state of such arrangements, the School-to-Work Office financed a short survey of the establishments that responded to the NES I. The telephone survey took place in 1996 without CATI instrumentation, and 2380 establishments responded to it for a completed response rate of 75 percent.

The survey repeated several of the questions used in the NES I, particularly the questions about operating context. However, it also asked some new questions:

- Questions about changing skill requirements that were asked by occupation along with estimates of the most appropriate educational credential needed for hiring workers into those occupations.
- Specific questions about new hires, aged 18 to 25, their abilities, and programs that the establishment had to provide work-based education for them, such as youth apprenticeships and cooperative education.
- Questions that rated the quality of suppliers of skilled employees, such as employment agencies but also high schools and postsecondary institutions. Other items attempt to estimate the employers' support for further education for their workers, such as tuition reimbursement programs and time off for classes.

Among the more important results from the 1996 Supplement was how little involvement employers had in school-to-work programs. Youth apprenticeships, for example, were virtually nonexistent (Shapiro and Zemsky 1997).

The 1997 NES (NES II)

The National Employer Survey was repeated in August of 1997 (NES II), again administered by the U.S. Bureau of the Census via a CATI arrangement. The sampling frame was again drawn from the SSEL, targeting business establishments throughout the United States, excluding those with fewer than 20 employees and the other categories of employers mentioned earlier and oversampling the nation's largest establishments and those in the manufacturing sector. A subset of the establishments that completed the NES I was resurveyed in NES II. Seventy-five percent of

those which were resurveyed responded, creating a longitudinal panel of 915 respondents in both 1994 and 1997. While there was some selection bias in the retained establishments based on industry type, it was not severe: Establishments in transportation, communications, insurance, and wholesale trade industries were retained at less than a 70 percent rate, whereas more than 80 percent of the establishments in the chemical and petroleum, lumber and paper products, primary metals, and metal products industries were retained. The retention rate for the smallest establishments (those hiring fewer than 50 employees) was less than 70 percent.

The sample for the NES II has three additional components, including an oversampling of states involved in particular educational reform efforts (2000 completed interviews in California, Kentucky, Michigan, Maryland, and Pennsylvania) and approximately 2500 completed interviews that comprise a representative sample of the rest of the United States (45 states plus the District of Columbia). These 4500 responses and the 900 that were resurveyed from 1994 created a total sample of 5465 establishments in NES II and an average response rate of 78 percent.¹

Topics in the NES II. The 1997 survey (NES II) was considerably shorter than the original, largely in an effort to raise response rates closer to Census's typical 90 percent response rate for establishment surveys. The NES II repeats the basic questions asked in 1994 about operating context, about the composition of the workforce (including education, pay, and benefits), about work organization, and about financial and operating statistics. Training questions are shortened to a list of five training topics. In addition, the survey asked about the following new issues:

- *Contingent work.* The survey asks about the use of contract (temps and leased employees) and part-time workers. New questions also differentiate between voluntary and involuntary turnover.
- *Recruiting and selection.* Detailed questions identify the methods used to recruit applicants and the methods used to select candidates from the applicant pool. Separate responses are included for each of five occupational groups.
- *Relations with schools.* The NES II repeats items from the 1996 Supplement about participation in school-to-work programs and the establishment's experience with recent school leavers. It goes on to examine

¹ The longitudinal component had a response rate of 88 percent. However, the rate of partial responses was reasonably high, and when they were excluded, the completed longitudinal sample came down to 766 and the completed response rate to 74 percent.

broader forms of community involvement in schools, such as employer-sponsored scholarships or tutoring programs. For respondents in the oversampled states noted earlier, questions asked about participation in state-specific educational programs.

Among the more important findings from the NES II is the considerable expansion of high-performance work systems between 1994 and 1997 (Cappelli and Neumark forthcoming).

The 1998 School-to-Work Supplement

In 1998, another supplement to the NES was conducted to examine issues associated with schooling and work. Once again, the survey was sponsored by the National School-to-Work Office, this time resurveying 1000 of the establishments that responded to the NES II. The response rate was 72 percent. The survey repeated most of the questions about school-to-work programs asked in the 1996 supplement, such as their participation in programs like cooperative education, youth apprenticeships, and remedial training and the employer's perceptions of recent school leavers as employees. This time the questions also asked about the number of students involved in these programs and the amount of time the establishment spent conducting them.

New items in the 1998 Supplement included detail questions examining the extent of leased or temp employees and the jobs they held, downsizing (both when it occurred and the extent to which it happened), and outsourcing. Among the most important results from the 1998 Supplement is evidence of a considerable expansion in the extent of employer involvement in school and education programs (Shapiro 1998).

The 2000 NES (NES III)

The third version of the NES was motivated by issues that date from the initial conception of the Educational Quality of the Workforce (EQW) Center and by new concerns emerging in the context of the corporate restructuring of the 1990s. The NES III includes two components: the establishment survey, as in previous versions, but also an employee survey matched to a sample of the responding establishments. The EQW investigations about data on training concluded that there were serious limits to what we know about individual worker experiences with workplace practices and that the best way to address these limits would be to collect data that matched employees with their employers.

Developing matched employer-employee data has been an important goal for many research areas in the social sciences. It is an area where the United States has been well behind other countries. Recent efforts to match existing surveys from employees to existing surveys of employers at the Census offer some of the benefits of matched data, although the fact that the surveys were not designed to be matched limits the range of issues that can be examined [see Haltiwanger et al. (1999) for a survey of matched-data issues]. At present, there are essentially no matched surveys available for the U.S. workforce.² The NES III resembles the matched Australian Workplace Industrial Relations Survey conducted in 1996, the 1998 British Workplace Employee Relations Survey, and the Workplace and Employee Survey currently being conducted by Statistics Canada in that it is an employer-first approach where the employees are drawn from establishments that responded to a national probability survey of employers. The survey was administered in December of 2000.

The Establishment Survey. The employer survey in the NES III is drawn from the establishments that responded to the NES surveys in 1994 and 1997. The new version includes 2825 establishments with more than 20 employees. Because of the sampling decisions in the prior surveys, it oversamples manufacturing establishments. The entire sample was drawn from establishments that also responded to NES II. In addition, 814 of the establishments were surveyed in NES I as well. Rising costs at Census and continuing concerns about survey length led to further cuts in the questionnaire. However, the survey still includes most of the questions from NES I and NES II about the context of the organization, including new performance measures such as cycle time for manufacturing and the use of accounting practices such as balanced scorecards and economic value added. The questions about the composition of the workforce, pay and benefits, and basic training measures also remain, as do the school-to-work questions from the NES II. New topics in the survey include

- Detailed questions about contingent work, including use of professional employer organizations.

² The exceptions suggest the limits of the available data. The National Organizations Survey, which surveys employers, is constructed from respondents to the General Social Survey and has a match of one employee for each establishment. There is an effort underway to repeat this approach in 2002. The 1996 Medical Expenditure Panel Survey samples employees and then their employers on issues associated with health care (Cooper, Hagy, and Vistnes 1999). Other ad hoc surveys have small samples, such as the public utility data used by Cappelli and Rogovsky (1998) based on employee data from 11 companies.

- Questions about organizational learning at the establishment level (e.g., use of data mining techniques) and at the individual level (e.g., employee suggestion systems).

The Employee Survey. The matched survey of employees in the NES III is taken from a random sample of employers who responded to the establishment survey. The Office of Management and Budget limited the employee survey to 225 establishments to reduce the burden to the public. Then a random sample of up to 50 nonexempt employees was drawn within each of those 200 establishments. Employers with fewer than 50 nonexempt workers surveyed all their workers, and those with more than 50 were given instructions for drawing a random sample from those employees. An important concern about this approach is whether the employer is, in fact, drawing a random sample. Without knowing the sampling frame—the characteristics of the entire nonexempt workforce—it is impossible to estimate the extent of biases in the sample that they draw. Information on that sampling frame is not available to Census, and the only alternative, requiring employers to construct and then submit data on their employees to Census in order to construct a sampling frame, was considered too obtrusive to pursue.

The employee survey considers a range of topics organized around two types of analyses. The first is to identify how employer practices may drive the employees' work-related outcomes, such as job attitudes. The second is to see how employee characteristics may affect organizational outcomes, such as establishment performance. Specific topics include

- Information about respondents' careers, such as the number of promotions they have received at their current employer, the number of prior employers they have had, and whether they previously worked at a temp agency.
- Responses about their job tasks, including use of computers and time spent in teamwork.
- Individual outcomes, including job attitudes, such as satisfaction and commitment, self-reported measures of health and stress, and self-reported job performance.
- Their participation in formal training, organized by topic, with a special section tracking training in information technology.
- Demographic characteristics, including education and pay.

Access to and Use of the NES Surveys. All the data described above are under the control of the Bureau of the Census and subject to its regulations concerning use. NES I and NES II are available to the general public through public-use files that are distributed by the Census Bureau and are also available at the EQW and NCPI Web sites (www.irhe.upenn.edu and www.ncpi.stanford.edu). The Web sites also contain many of the publications that describe and make use of the NES data. The NES III public-use file should be available in late 2001. The public-use files are essentially identical to the complete data. They differ mainly in that the variable measuring the total number of employees in each establishment is available in the public-use file only in categorical form (more than 500 employees, between 250 and 500 employees, between 250 and 50 employees, and fewer than 50 employees) in order to make it impossible to identify individual establishments. Financial information also typically is top-coded at the 90th percentile response.

The other data—the 1996 and 1998 Supplements and the complete files for the NES surveys—are available only within the Census Bureau. Analyses that link the NES surveys together or merge other data to them also can be done only within the Census Bureau. Researchers interested in working at the Census Bureau may file an application with the Center for Economic Studies (CES) at the Bureau of the Census. If the application is approved, the researchers must become special sworn employees of the Census Bureau who are bound by legal restrictions on their use of the data. All statistical findings generated by researchers using restricted Census data must be cleared for confidentiality concerns by the CES staff before they can be distributed or discussed outside the Census Bureau community. Projects using Census data can be conducted at the CES headquarters in Suitland, MD, or at its satellite offices in Berkeley, Pittsburgh, and Boston. Researchers interested in using data at the CES should contact it directly for information about the application process (see www.ces.census.gov).

Representative Research. The range of research topics that can be examined using the NES data is very broad and so far includes, among others, the effect of worker education levels on establishment performance (Black and Lynch 1996), the determinants and consequences of employer selection practices (Wilk and Cappelli 1997), the effects of high-performance work practices on employers (Black and Lynch forthcoming; Cappelli and Neumark forthcoming) and employees (Cappelli and Carter 2000), the determinants of employer training decisions (Lynch

and Black 1998), and the determinants and consequences of employer downsizing decisions (Cappelli 2000).

The data from the various NES surveys helps address a considerable gap in our understanding of workplace issues. It offers a resource for researchers to go beyond case studies, samples of convenience, and industry-focused surveys to investigate workplace issues in the economy as a whole. Pending adequate resources and administrative good fortune, the NES project should go forward into the new millennium, where it can continue to provide information about workplace issues.

REFERENCES

- Black, Sandra E., and Lisa M. Lynch. 1996. "Human Capital Investments and Productivity." *American Economics Review* 86(May):263–68.
- _____. and _____. Forthcoming. "How to Compete: The Impact of Workplace Practices and Information Technology on Productivity." *Review of Economics and Statistics*.
- Cappelli, Peter. 2000. "Examining the Incidence of Downsizing and Its Effects on Establishment Performance." In *On the Job: Job Stability and Job Security*, edited by David Neumark. New York: Russell Sage Foundation.
- _____. and William Carter. 2000. "Computers, Work Organization, and Wage Outcomes." Working paper no. 7987. Cambridge, MA: National Bureau of Economic Research.
- _____. and David Neumark. Forthcoming. "Do 'High Performance' Work Practices Improve Establishment-Level Outcomes? *Industrial and Labor Relations Review*.
- _____. and Nikolai Rogovsky. 1998. "Employee Involvement and Organizational Citizenship: Implications for Labor Law Reform and 'Lean Production.'" *Industrial and Labor Relations Review* 51(4):633–53.
- Cooper, Philip F., Alison P. Hagy, and Jessica P. Vistnes. 1999. "The Medical Expenditure Panel Survey: Creation of a Linked Employer-Employee Database." In *The Creation and Analysis of Employer-Employee Matched Data*, edited by John C. Haltiwanger, Julia I. Lane, James R. Spletzer, Jeles J. M. Theeuwes, and Kenneth R. Troske, pp. 552–53. Amsterdam: Elsevier–North Holland.
- Cross-Walk of National Data Sets Focusing on Worker Training*. 1992. Philadelphia: National Center on the Educational Quality of the Workforce.
- First Findings from the EQW National Employer Survey*. 1995. Philadelphia: National Center on the Educational Quality of the Workforce.
- Haltiwanger, John C., Julia I. Lane, James R. Spletzer, Jeles J. M. Theeuwes, and Kenneth R. Troske, eds. 1999. *The Creation and Analysis of Employer-Employee Matched Data*. Amsterdam: Elsevier–North Holland.
- Hildreth, Andrew, and Stephen Pudney. 1999. "Econometric Issues in the Analysis of Linked Cross-Section Employer-Worker Surveys." In *The Creation and Analysis of Employer-Employee Matched Data*, edited by John C. Haltiwanger, Julia I. Lane, James R. Spletzer, Jeles J. M. Theeuwes, and Kenneth R. Troske, pp. 461–88. Amsterdam: Elsevier–North Holland.
- Kalleberg, Arne L., Peter V. Marsden, Howard E. Aldrich, and James W. Cassell. 1990. "Comparing Organizational Sampling Frames." *Administrative Science Quarterly* 35(4):658–88.
- Lynch, Lisa M., and Sharon E. Black. 1998. "Beyond the Incidence of Employer-Provided Training." *Industrial and Labor Relations Review* 52(1):64–81.
- Shapiro, Dan. 1998. *School-to-Work Partnerships and Employer Participation: Evidence on Persistence and Attrition from the National Employer Survey*. Philadelphia: National Center on the Educational Quality of the Workforce.

- and Robert Zemsky. 1997. *Education and the Workplace: From School-to-Work to Schooling-at-Work*. Philadelphia: National Center on the Educational Quality of the Workforce.
- Statistical Companions to the Cross-Walk of National Data Sets Focusing on Worker Training*. 1992. Philadelphia: National Center on the Educational Quality of the Workforce.
- Wilk, Steffanie, and Peter Cappelli. 1997. "Understanding Selection Processes: Organization Determinants and Performance Outcomes." Working paper. Washington: U.S. Bureau of the Census Center for Economic Studies.
- Zemsky, Robert, and Daniel Shapiro. 1992. *On Measuring a Mirage: Why U.S. Training Numbers Don't Add Up*. Philadelphia: National Center on the Educational Quality of the Workforce.

APPENDIX

RESPONSE AND RETENTION RATES FOR THE NES

1994 NES I

1996 School-to-Work Supplement

1997 NES II

1998 School-to-Work Supplement

2000 NES III Employer

2000 NES III Employee

Observations*

3173

2378

5463

1000

2825

225 establishments

Response rate

68 percent

75 percent

78 percent

72 percent

85 percent

Xx percent

Longitudinal component

0

100% with NES I

915 with NES I

100% with NES II

815 with NES I, 2010 with NES II

0

Sponsor†

NCEQW

NCEQW and U.S. School-to-Work Office

NCPI and CPRE

NCPI and U.S. School-to-Work Office

NCPI, CPRI, School-to-Work, Ford and Rockefeller Foundations

NCPI and CPRI

Principal investigators

Lisa Lynch

Robert Zemsky and Daniel Shapiro

Daniel Shapiro and Peter Cappelli

Daniel Shapiro and Robert Zemsky

Peter Cappelli

Peter Cappelli

*Observations here include all partial or incomplete surveys. The percentage of responses that are partial, that is, missing at least some information, range from 5 percent in the NES III Employer Survey to 9 percent in NES I and 19 percent in NES II.

†NCEQW = National Center on the Educational Quality of the Workforce, based at the University of Pennsylvania; NCPI = National Center on Post-secondary Improvement, the successor to NCEQW based at Stanford University; CPRE = Consortium for Policy Research on Education, based at the University of Pennsylvania; NAVE = National Assessment of Vocational Education, a project undertaken by the U.S. Department of Education.