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National Longitudinal Survey of Youth 25th Anniversary

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The February *Review*

This special issue commemorates the 25th year that the National Longitudinal Survey—Youth Cohort (NLSY79) has been in the field. Charles Pierret, the BLS program manager for the survey, does a far more thorough job of summarizing the articles in this issue than would normally have appeared in this space. The articles themselves cover a wide range of topics from some of the unique issues of longitudinal methodology to some of the more interesting questions in labor economics. James Walker, Kenneth Wolpin, Julie Yates, Audrey Light, Robert Fairlie, James Spletzer and Harley Frazis, Lawrence Wu and Jui-Chung Allen Li, and Randall Olsen made contributions to this collection.

Union membership

In 2004, 12.5 percent of wage and salary workers were union members, down from 12.9 percent in 2003. The union membership rate has steadily declined from a high of 20.1 percent in 1983, the first year for which comparable union-membership data are available.

Among private industry workers, the 2004 union membership rate was 7.9 percent, about half what it had been in 1983. Among major private industries, transportation and utilities had the highest union membership rate in 2004, at 24.9 percent. Construction, information industries, and manufacturing also had higher-than-average rates. Financial activities had the lowest unionization rate in 2004—2.0 percent.

About 36 percent of government workers were union members in 2004. Two groups—education, training, and library occupations and protective service occupations—had the highest unionization rates, at about 37 percent each. Protective service occupations include firefighters and police officers. Find out more in "Union Members in 2004," news release USDL 05–112.

Ad agents profiled

Selling advertising space is the job of advertising sales agents, who are often called account executives or advertising sales representatives. Most employers pay an advertising sales agent using a combination of salary, commissions, and bonuses. Salary varies by geographic location but is generally no more than half of a sales agent's total compensation. Commissions are usually based on a percentage of the agent's sales. Bonuses are lump-sum financial awards based on individual performance, the performance of all sales agents in a group, or the firm's overall performance.

Median annual earnings for all advertising sales agents were $38,640 in May 2003, including commissions and bonuses. The lowest paid 10 percent earned less than $19,920, and the highest paid 10 percent earned more than $87,360 per year. In addition to earnings, advertising sales agents usually get reimbursed for expenses associated with making sales visits, such as transportation costs and meals. For more information about this occupation, see "Sellers for the sellers: Advertising sales agents" by Gregory Niemesh, *Occupational Outlook Quarterly*, Fall 2004.

State unemployment trends

December 2004 unemployment rates were lower than a year earlier in 43 States, higher in 5 States and the District of Columbia, and unchanged in 2 States. Kentucky and Washington reported the largest rate decreases from a year ago, down 1.5 percentage points each, followed by Hawaii, New Jersey, and Oklahoma, all down 1.4 points. Nine additional States registered rate decreases of at least 1.0 percentage point.

Mississippi reported the largest over-the-year unemployment rate increase, 0.8 percentage point. No other State had a rate increase greater than 0.4 percentage point. See "Regional and State Employment and Unemployment: December 2004," news release USDL 05–109.

Price trends in 2004

For the 12-month period ended in December 2004, the Consumer Price Index for All Urban Consumers (CPI-U) rose 3.3 percent. This compares with an increase of 1.9 percent in all of 2003. From December 2003 to December 2004, the Producer Price Index for Finished Goods prices increased 4.1 percent, after climbing 4.0 percent during 2003. Import prices were up 6.9 percent over the year ended in December 2004, compared with a more modest 2.4-percent increase for the year ended in December 2003. The price index for overall exports rose 4.1 percent over the course of 2004.

Errata

Three rows of data were misaligned in table 4 of the article, "Work-related multiple-fatality incidents," in the October issue. A revised version of page 33 is available at:
http://www.bls.gov/opub/mlr/2004/10/art2full.pdf. □

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The National Longitudinal Survey of Youth: 1979 cohort at 25

The 1979 cohort of the National Longitudinal Survey of Youth has been a font of information for researchers of all stripes; the Monthly Labor Review *brings together the results of research on topics ranging from employment, to attrition in the survey, to data on education, to the children of survey respondents*

Charles Pierret

This issue of the *Monthly Labor Review* celebrates the 25th anniversary of the National Longitudinal Survey of Youth, 1979 Cohort (NLSY79). The National Longitudinal Surveys (NLS) program, of which the NLSY79 is the flagship survey, is a bit of an anomaly among the Bureau of Labor Statistics many data collection efforts. None of the Bureau's key economic indicators relies on NLS data. Only a couple of the more than one hundred press releases the Bureau publishes each year involve data collected by the NLS program. It is doubtful that financial markets ever will react strongly to the release of NLS data. And unlike the current employment statistics, the inflation statistics, or the unemployment rate, measures from the NLSY79 are not likely to be discussed in everyday conversation or even in the business news.

Yet, the NLSY79 has been extremely influential. Over the last 25 years, it has provided the data for thousands of Ph.D. dissertations, working papers, journal articles, and books that have shaped theory and knowledge in disciplines such as economics, sociology, education, psychology, and health sciences. The survey's primary constituency includes hundreds of researchers within universities, think tanks, and government agencies both in the United States and abroad. Because of its quality, breadth, and thoroughness, the NLSY79 has become probably the most analyzed longitudinal data set in the social sciences. Almost every issue of leading labor economics and demography journals contain at least one article that uses NLSY79 data.

The main product of the NLS program, unlike that of most other BLS programs, is the actual microdata generated by the surveys. For each respondent, researchers can access a record that details his or her responses to every question in the survey, along with summary and supporting information. Of course, this record is stripped of all information that could identify the individual respondent.[1] With 20 rounds of data currently available, the NLSY79 has become an enormous data set, comprising more than 75,000 variables for each respondent and requiring about 500 megabytes for its storage. The NLSY79 provides researchers with data from a nationally representative sample of 12,686 individuals who have participated in up to 21 hour-long interviews over the last 25 years.[2] These individuals were 14 to 22 years old when they were first surveyed in 1979; they are now in their forties. By observing their lives over the 25-year period, researchers can study the life course of a large sample of American men and women born at the end of the baby boom (1957 to 1964) as they navigate the years between adolescence or young adulthood and middle age.

Although the primary focus of the survey is labor force behavior, the content of the survey is considerably broader. The NLSY79 contains an expansive set of questions ranging from childcare costs to welfare receipt. For example, the survey

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includes detailed questions on educational attainment, investment in training, income and assets, health conditions, workplace injuries, insurance coverage, alcohol and substance abuse, sexual activity, and marital and fertility histories.

This wide array of subject matter is certainly one key to the survey's broad utilization for academic research. Recognizing that decisions made in one realm of life often affect and are affected by events in other realms, the NLSY79 questionnaire tries to get a comprehensive view of the lives of survey respondents. For example, health, childcare, and family constraints are important inputs to any labor market choices. By collecting information in many domains, the NLSY79 gives researchers the ability to simultaneously examine and control for multiple correlates of complex phenomena.

The NLSY79 also benefits from the inclusion of information collected outside of the main survey. For example, scores on the Armed Services Vocational Aptitude Battery, a series of 10 tests measuring knowledge and skill in areas from paragraph comprehension to electronics, are available for 94 percent of sample respondents. The Armed Forces Qualifying Test score, a composite of the scores on four of these tests, is one of the most popular variables in the survey, in that it can be used to control for differences in cognitive development prior to the start of the survey. Other ancillary data include a survey of the secondary schools attended by NLSY79 respondents and detailed information from the respondents' high school transcripts.

The breadth of the content in the survey is complemented by the longitudinal design, a second key to the success of the NLSY79. Not only can researchers correlate behavior in multiple domains, but they can do so over long periods; for example, they can investigate how family structure or educational experiences as a teenager affect employment decisions in a person's twenties and thirties. To facilitate this type of analysis, much of the information in the NLSY79 is gathered in event history format, in which dates are collected for the beginning and ending of important life events. Data on respondents' labor market status, marital status, fertility, and participation in government assistance programs such as unemployment insurance and Aid to Families with Dependent Children are all collected in this manner. The event history format allows researchers to sequence key events so that a first attempt at establishing causality can be made: only if *A* precedes *B* can we postulate that *A* caused *B*.

But the real advantage of longitudinal data in terms of studying causality is the existence of multiple observations of the same person. A classic econometric problem is the existence of unobserved personal characteristics that may be correlated with both the dependent variable of interest and an independent variable that is hypothesized to cause the dependent variable. For example, consider the wage premium associated with marriage among men.[3]

With cross-sectional data, one might compare the wages of married men with those of unmarried men to calculate the wage premium. Even after controlling for all observable characteristics, though, one might suspect that there are some differences that are not easily measurable (for example, interpersonal skills or ambitiousness), but that might make one both more likely to be married and more likely to earn higher-than-average wages. With longitudinal data, the standard technique is to analyze changes either directly, by regressing the change in wages on the change in marital status, or indirectly, by using a fixed-effects framework. In this way, longitudinal data give us the ability to control for individual effects by using multiple observations of the same individual.

A final key to the NLSY79's success is the high quality of its data. The fundamental measure of quality in longitudinal data is the *retention rate*—the percentage of initial respondents who respond in later rounds. Among social science surveys, the NLSY79 is the undisputed leader in this regard. In 1994, after 15 rounds of interviewing, more than 90 percent of the survey's eligible initial respondents were still being interviewed.[4] While attrition has picked up since that time, more than 80 percent of living initial respondents were interviewed in the 2002 survey.

Other dimensions of data quality are also high in the NLSY79. Nonresponse to individual questions (either refusals or "don't know" responses) is quite low; only a handful of questions have nonresponse rates above 1 percent. Because of the longitudinal design of the survey, missing data can often be recaptured in subsequent interviews. As Randall J. Olsen explains, this approach can lead to effective sample sizes larger than the response rate would imply.[5]

Given the size of the NLSY79 data set, using the data is relatively easy.[6] Researchers can download the entire data set, along with extraction software to pull off particular variables on their own computer, or they can use the extraction software at the Web site and download smaller data sets. Typically, researchers then use statistical software such as SAS, SPSS, or STATA to process the data and perform their analyses. This accessibility can be combined with the richness of the data to study many topics across myriad disciplines. The remaining articles in this issue of the *Review* highlight the contributions of the NLSY79 to research, with special emphasis on issues in the area of labor economics.

James A. Walker points out that the introduction of nationally representative longitudinal microdata sets, combined with ever-increasing computing power, has created a revolution in social science research over the last few decades.[7] Previously, researchers had to rely on aggregate statistics to grasp the workings of large complex systems. Now they can study individual actors to build an understanding of social structure based upon those micro-

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foundations. Before, analysts were forced to use small, potentially unrepresentative samples to infer "normal" behavior. Now, large surveys give them access to thousands of individuals to study at very low cost. The combination of massive amounts of data and growing computing power led to the development of new statistical methods to exploit this new source of information.

The first of these data sets, including the original NLS, failed to fully exploit their longitudinal design. Instead, they tended to ask questions as if the survey were cross sectional, concentrating on the situation at the time of the interview. The genius of the NLSY79 was that it attempted to capture information about what was happening *between* interviews. Now events of short duration—jobs, marriages, spells of unemployment or public assistance, and the like—were captured, and events across different domains could be sequenced. Analysts now knew, for example, whether the job change happened before or after the marriage, so issues of causality could be addressed.

A second major improvement in the NLSY79 over previous surveys using longitudinal data sets was the NLSY79's strong emphasis on reducing attrition and the effects of attrition on the data. Even seemingly modest attrition can lead to sharp declines in sample size. If participants who do not respond in a particular round are never recontacted, and if 3 percent of the remaining sample declines to participate in every round, only slightly more than one-half of the initial sample will be left after 20 rounds. The NLSY79's retention rate has required interviewing an average of 99 percent of the number of the previous round's respondents every round. As Olsen's article shows, this task involved increased efforts in terms of both survey design and field operations. All respondents were recontacted every round, regardless of how long it had been since they were last interviewed. A surprising number were reinterviewed after missing one or several rounds. In addition, questions were written to recapture data that had not been retrieved in interviews that had been missed. Respondents were asked about events that had occurred since the last interview, not those which were ongoing or had happened in the past year.

Of course, even the highest-quality data are worthless if they are unrelated to any valuable or interesting content. The other six articles in this edition focus on particular content areas. Kenneth I. Wolpin's article on education data in the NLSY79 details a large number of correlates of educational attainment that can be found in the survey's database.[8] Not only do more educated individuals earn more money, on average, but they work more hours, are less likely to be unemployed or receive welfare payments, have better health and less obesity, drink less, wait longer to have children and have fewer of them, and, among women in the survey, bear children who weigh more at birth and score higher on cognitive tests. These findings hint at the richness of the NLSY79 data, among which associations like these can be explored in great depth.

In her article on early career job churning, Julie A. Yates also touches on the richness of the education data in the NLSY79.[9] She shows that the concept of educational attainment is not at all static: people leave school and return, sometimes getting new educational credentials, sometimes not. This ever-present activity adds significantly to the level of education in the United States. Indeed, only 11 percent of those born between 1961 and 1964 had a college degree when they first left school, but more than 25 percent had a degree by their 35th birthday.

The main focus of Yates's article, though, is the length of time required after leaving school to acquire a job that will last 1, 3, or 5 years. She finds that, by age 35, about 60 percent of those who left school with a high school degree or greater have worked at a job for at least 5 years. For high school dropouts, however, the figure is only 36 percent. Interestingly, the route high school graduates take to acquire a job of this duration is different from that taken by college graduates: the median high school graduate takes 10.1 years and 5 shorter jobs before finding the job that will last 5 years, whereas a college graduate requires only 3.5 years and 2 jobs.

Audrey Light also uses the work history data of the NLSY79 to study employment dynamics—specifically job mobility and wage growth.[10] She asks whether wage growth is greater for those who stay in one job or those who change employers frequently. The answer she arrives at depends at least partially on the reasons for mobility. Those who change jobs voluntarily have wage growth of the same magnitude as those who stay in jobs; those who change jobs involuntarily have lower wage growth. Light admits that her analysis is "cursory." Given the complexities underlying her question—including the role of spells out of the labor force and their interactions with education and gender—it is not surprising that there is no simple answer to the question of how job mobility affects wage growth. But by providing longitudinal employment data along with comprehensive contextual data, the NLSY79 will continue to play a key role in our growing understanding of employment dynamics.

The NLSY79, states Robert W. Fairlie, has many features that make it attractive for the study of self-employment:[11] a large, nationally representative sample; detailed financial information; dara on family and educational background; and measures of cognitive and psychological suitability. But the survey's strongest asset is its comprehensive work history, which tracks transitions into and out of self-employment as well as wage and salary employment. A great deal of self-employment, at least among the young, is episodic, with workers moving often between employment states. But as workers age, their participation in self-employment grows and becomes more stable. Only 5 percent of 22-year-old men are self-employed; by age 42, 12 percent of men are self-employed.

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The NLSY79, because of its longitudinal design, is ideal for investigating the dynamics of self-employment.

Since the 1950's, the reigning paradigm of labor economics has been human capital theory, in which workers invest in productive skills in order to earn higher wages. The study of human capital has divided skills acquisition into two components: education—in which general knowledge is acquired largely prior to the start of one's working career; and training—in which more specific, job-related skills are acquired, often during one's career. As Harley J. Frazis and James R. Spletzer assert, empirical labor economics research on training has lagged behind research on education because research on training placed much greater demands on the data.[12] Again, the NLSY79 has been a key data set in this literature, not only because it captures details about training, but because it contains a complete history of employment and thousands of other contextual variables.

The final article in this volume introduces an additional dimension of the NLSY79. In a unique collaboration between Federal Government agencies with complementary interests, the NLS program, with the financial support of the National Institute of Child Health and Human Development, has been surveying the children of all women respondents to the NLSY79 every 2 years since 1986. In their article, Lawrence L. Wu and Jui-Chung Allen Li describe this survey, called the Children of the NLSY79.[13] Mothers are asked about pregnancy, prenatal care, and childcare, as well as the early development of their children. Young children are given cognitive and developmental assessments from the age of 4 to the age of 14. Children between ages 10 and 14 are interviewed briefly about school and family life. Those older than 15 years are given an interview that is similar to the NLSY79 interview. What emerges is a unique data set with a complete developmental history from birth and a comprehensive background of the mother, starting many years before birth. Over time, the sample size has grown to rival that of the NLSY79 itself. At its inception in 1986, the Children of the NLSY79 survey comprised 4,971 children. In 2002, 7,467 children were assessed or interviewed, ranging in age from 2 to 30 years.

These articles only scratch the surface of what is available in the NLSY79. Space limitations and the customary focus of the *Monthly Labor Review* dictate a concentration on employment, education, and training. But there is much more. The NLS program tracks research using NLS data in the NLS bibliography.[14] Among other topics that have been the subject of at least 100 papers using NLSY79 data are income and earnings, marriage, maternal employment, adolescent fertility, alcohol and substance use, childcare, family structure, and government assistance programs. Smaller numbers of papers have used NLSY79 data to examine topics as diverse as job satisfaction, depression, migration, breastfeeding, parental leave, savings, and the involvement of fathers in raising children. There truly are few topics in social science that have not seen a contribution from NLSY79 data.

The success of the NLSY79 also led the Bureau of Labor Statistics to introduce a new cohort to its own longitudinal survey program. The NLSY97 is a survey of 8,984 youths who were born between 1980 and 1984 and who were 12 to 17 years of age when first interviewed in 1997. While the basic design of this survey is quite similar to that of the NLSY79, several changes were introduced because of the NLS program's experience with earlier surveys. The most important change was that NLSY97 respondents were younger when first interviewed than were those in the NLSY79. It was felt that respondents should be observed while still in school and still in the parental home, so that all transitions to the world of work and to independent living could be recorded. Also, starting with a younger sample allowed the survey to collect more background on the respondents' introduction to the labor market. Information on informal jobs such as babysitting and yard work was collected for those as young as 12 years.[15] In another attempt to understand initial conditions, the NLSY97 interviewed a parent for each respondent. These interviews focused on the child's family, health, and schooling background, as well as the resources available to the child in the parental home. The eighth annual interview of the NLSY97 is currently in the field, and the respondents are now in their twenties. Already, a number of articles using these data have been published on a wide array of topics. It appears that the NLSY97 is poised to emulate the success of the NLSY79.

Many people have contributed to the success of the NLSY79 program, which is managed and funded by the Bureau of Labor Statistics. Since the survey's inception, the Center for Human Resource Research at the Ohio State University has directed survey operations under contract to the Department of Labor. The Center is responsible for survey development, data processing, and user support. In turn, the actual interviewing has been performed under subcontract by the National Opinion Research Center at the University of Chicago. Designing, preparing, fielding, processing, and disseminating a survey of the complexity of the NLSY79 requires many dedicated professionals. The success of the survey is a tribute to their hard work and dedication.

The contributions of two groups are especially noteworthy. Over the last 25 years, the field-interviewing staff at the National Opinion Research Center has consistently exceeded response rate targets by locating elusive respondents, convincing reluctant respondents to participate, and maintaining high levels of data quality. Still, the most important group in the success of the NLSY79 is the respondents. For 25 years, the members of this group have endured thousands of sometimes difficult and intrusive questions for little more than

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the knowledge that they are involved in an important research project. Their assistance has added immensely to academic and policy research across a wide array of disciplines, helping those involved to increase their knowledge,elaborate new theory, and develop new ways of understanding critical issues in the social sciences. □

Notes

[1] Under special arrangement, researchers can access certain geographic information about respondents in order to link environmental variables to the records of those respondents. Personally identifying information, however, is never available to researchers; it is protected by law through the Confidential Information Protection and Statistical Efficiency Act.

[2] Much of the summary information that follows can be found on the NLSY79 Web site at **http://www.bls.gov/nls/nlsy79.htm** or in the NLSY79 *User's Guide* (Bureau of Labor Statistics, 2001).

[3] For a more thorough discussion of this issue, see Harry A. Krashinsky, "Do Marital Status and Computer Usage Really Change the Wage Structure?" *Journal of Human Resources*, summer 2004, pp. 774–91.

[4] Two subsamples comprising roughly 3,000 respondents were dropped from the sample in 1985 and 1991 to reduce costs. The current sample size is 9,964 initial respondents, of which 346 were deceased at the time of the 2002 survey.

[5] Randall J. Olsen, "The problem of respondent attrition: survey methodology is key," this issue, pp. 63–70.

[6] The data are available at no cost on the Internet at **http://www.bls.gov/nls/nlsy79.htm**.

[7] James A. Walker, "Antecedents and predecessors of the NLSY79: paving the course," this issue, pp. 8–14.

[8] Kenneth I. Wolpin, "Education data in the NLSY79: a premiere research tool," this issue, pp. 15–20.

[9] Julie A. Yates, "The transition from school to work: education and work experiences," this issue, pp. 21–32.

[10] Audrey Light, "Job mobility and wage growth: evidence from the NLSY79," this issue, pp. 33–39.

[11] Robert W. Fairlie, "Self-employment, entrepreneurship, and the NLSY79," this issue, pp. 40–47.

[12] Harley J. Frazis and James R. Spletzer, "Worker training: what we've learned from the NLSY79," this issue, pp. 48–58.

[13] Lawrence L. Wu and Jui-Chung Allen Li, "Children of the NLSY79: a unique data resource," this issue, pp. 59–62.

[14] On the Internet at **http://www.chrr.ohio-state.edu/nls-bib/**.

[15] See, for example, "Employment of Teenagers during the School Year and Summer," news release 04–217, on the Internet at **http://www.bls.gov/news.release/pdf/nlsyth.pdf**.

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Antecedents and predecessors of NLSY79: paving the course

A historical view of the NLSY79 development stages highlights lessons learned during an era filled with new concepts and innovations in sociology, economics, and computer science

James R. Walker

In 1965, at the prompting of the Assistant Secretary of Labor, Daniel Patrick Moynihan, individuals from the Department of Labor (DOL) and Ohio State University designed the National Longitudinal Surveys of Labor Market Experience. At the time, the participants did not realize that they were creating one of the premier, large scale national longitudinal surveys in the United States. Initially funded for 5 years by the Department of Labor, the "Parnes" data, as the Original Cohorts were called, continued for 37 years, with the last scheduled fielding of the women samples in 2003.[1] The success of the Original Cohorts led to the creation of the National Longitudinal Survey of Youth (NLSY79).

This article explores antecedents and predecessors of the National Longitudinal Survey of Youth, 1979.[2] Longitudinal data are now so plentiful that it is difficult to imagine the world in which they did not exist. Yet, in the mid-1960s, the large scale longitudinal household surveys that came to dominate areas of sociology, demography, and labor economics did not exist. Analyses that are now commonplace were either not possible or inference was restricted to small or specialized samples.

Yet to suggest that there were no longitudinal data sources prior to 1965 is wrong; several longitudinal surveys predate the NLS. Two well-known studies reflect the nature of longitudinal data available before the start of the NLS. The Glueck study of juvenile delinquents from the Boston area followed 1,000 adolescents (500 juvenile delinquents and 500 non-delinquents) into adulthood to examine criminal behavior and contact with the justice system.[3] Sheldon and Eleanor Glueck started interviewing at the end of 1938, completing the first wave of interviews in 1948. Two more waves of interviews followed as the youth were interviewed at ages 25 and 32. Interviews continued until 1965.

The other study available before the NLS, and perhaps more visible to economists, is the National Bureau of Economic Research (NBER)-Thorndike sample, collected from Air Force volunteers during WWII. In 1955, R. Thorndike and E. Hagen randomly selected 17,000 of the 75,000 Air Force volunteers who took the Aviation Cadet Qualifying Test in the second half of 1943 (a test similar in function to the Armed Services Vocational Aptitude Battery (ASVAB) tests that NLSY79 respondents took to set a norm in recruiting standards for the Department of Defense). In 1969, with funding from the NBER, Paul Taubman and his colleagues reinterviewed about 5,000 of the original 17,000 members of the Thorndike sample, obtaining information on current and retrospective earnings, education, and occupation. These data have been widely used to study the determinants of earnings,

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ability bias, and the return to schooling (that is, benefits associated with higher levels of schooling).[4]

A number of other specialized longitudinal studies were launched in the decade prior to the NLS. These efforts surveyed teen mothers, drug users, gifted children, and children from privileged and underprivileged backgrounds.[5] These studies shared features like the Gluecks' study and the NBER-Thorndike study in that they were local in character with limited or irregular longitudinal followups. However, several studies are impressive and cover a long arc of their respondents' lives.[6]

Antecedents

Scientific frontiers. Two critical elements came together in the 1960s supporting the development of large, household surveys. First, the social science field had developed the conceptual foundation supporting the use of longitudinal data. Within the fields of psychology and sociology, researchers and scientists fostered the life course perspective, viewing human development as following a sequence of stages.[7] And second, in the economics field, human capital became the organizing conceptual framework. In his 1960 Presidential Address to the American Economics Association, T.W. Schultz presented his influential thoughts on human capital.[8] The human capital theory quickly became a central concept for understanding the determinants of wages, the structure of earnings, and more generally, the distribution of economic opportunities. Labor economists sought to measure the return to schooling, labor market experience, and tenure with an employer. Social scientists sought to understand schooling decisions, both in terms of quantity (the amount of schooling obtained) and in terms of quality (types of post secondary schooling).

Intervention and experiments. The intellectual primacy of measuring education and training fueled and was fueled by the era of big social science and policy interventionism of the mid-1960s. In 1964, the Johnson Administration announced the War on Poverty. Education and training programs were among the most important anti-poverty programs proposed. Thus, measuring and understanding the determinants and consequences of poverty required the collection of new, longitudinal household level data. The Department of Labor, Office of Economic Opportunity initiated a survey of the same name in 1967, followed by the Panel Study of Income Dynamics (PSID), conducted by the Census Bureau in 1968.

The mid-1960s also witnessed the negative income tax experiments in Gary, New Jersey; Seattle, Washington; and Denver, Colorado. These experiments varied in size and focus, but each was large with sizable treatment and control groups. And, unlike the NLS and PSID surveys, which "only" collected information on the respondents, the experiments were more ambitious, comprising both an important experimental design component and an extensive data collection component. Also, the experiments generated another source of longitudinal data and provided additional demands for their analysis and interpretation.

Yet, conducting the social experiments reflected certain optimism (as it only makes sense to investigate the source of the disease if remedies are available). Indeed, demand for these new forms of data were perhaps driven by the belief in the effectiveness of interventionist economic policies, and particularly labor market policies to enhance human capital. In 1962, Congress passed the Manpower Development and Training Act, which generated an array of training programs targeted to the low-skilled, unemployed, and underemployed population. The Comprehensive Training Act of 1973 attempted to unify the existing Federal programs, and initiated programs to additional groups (for example, welfare recipients). The quasi-experimental designs of the 1960s and 1970s called for longitudinal data that could be used to compare labor market outcomes for treatment groups and control groups. These outcomes were matched with observable personal characteristics for at least two points in time (for the treatment group, before and after training). The need for individual longitudinal data is transparent. Indeed, a primary motivation for the NLSY79 cohort was "to permit a replication of the analysis of the 1960s Young Men and Young Women cohorts and to assist in the evaluation of the expanded employment and training programs for youth legislated in the 1977 amendments to the Comprehensive Training Act of 1973."[9]

The analysis gap. Analyses of longitudinal data started appearing in the major journals about 10 years after data collection. To prove this, Frank Stafford assessed empirical practices within labor economics according to the content and practices of labor papers published in the top economics journals.[10]

For example, Stafford reports that more than half of the papers published in the six major journals in the first half of the 1960s on labor market topics were theoretical, with no empirical analyses. Of those reporting empirical analyses, (national) time series data or aggregate (say, to the State or metropolitan area) cross section data comprised the vast majority of published work. Nearly one-fifth of the empirical papers of the time period reported on tabulations and data summaries published elsewhere (Stafford's term for secondary analyses). Not surprisingly, given the (virtual) absence of panel data, no papers during this period were published using panel data. And, only one paper using panel data appeared in the top economics journals in the second half of the 1960s. The top journals witnessed a small but

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steady stream of papers using longitudinal data in the early 1970s;[11] a stream that turned into a river in the second half of the 1970s and early 1980s.

Joshua Angrist and Alan Krueger update Stafford's tabulations into the late 1990s.[12] By this time, microdata, cross sectional, and longitudinal analyses have increased their dominance—now fully 85 percent of empirical papers in the top economics journals on labor market topics use microdata. The micro-files of the Current Population Survey (especially the March Income Supplement) was the most popular cross sectional source of data; and the Panel Survey of Income Dynamics and the NLS cohorts dominate the longitudinal-based studies.[13] However, the dominance of the PSID and NLS as longitudinal data sources weakened as economists increasingly (if not frequently) frame and collect their own longitudinal data sources. The value of longitudinal data used to address particular questions is evident from the variety of longitudinal data collected.

The computer revolution. Implicit in Stafford's and Angrist and Kreuger's tabulations is that there is a 10-year lag between the start of a panel and widespread use of the data. This lag is surprisingly constant, though the reasons behind it vary with each cohort. For the original cohorts of the NLS and the PSID, longitudinal data were new and analytically and physically cumbersome to use. Computing power in the mid-1960s was a fraction of what it is today. Computing was done in centralized locations, using mainframe computers maintained by specialized staff. Commonly used equipment, such as keypunch machines, card readers, magnetic tape drives, and impact line printers can now be found only in museums. The personal computer revolution was a solid 15 years in the future. Disk drives and other convenient large scale storage devices did not exist. Tabulations easily produced in a matter of seconds on a desktop computer today required "spinning tapes" on the mainframe, assistance from the tape machine operator, and literally hours of computer time. Empirical researchers acquired nocturnal habits, as all significant computing was done at night. Notions of the solitary scholar are almost always wrong, but certainly did not apply to the early pioneers analyzing microdata.

It is also true that the profession had to develop the statistical procedures and analytical skills for working with the longitudinal data. With a few notable exceptions, most of the initial statistical procedures for panel data were developed after 1965. The increased computational capacity of the computer revolution was also necessary to support the new statistical procedures.[14]

Longitudinal versus household data. Besides acquiring statistical techniques, researchers had to appreciate the advantages and disadvantages of longitudinal data. Arguably, we continue to relearn these lessons. The chapters by Stafford and Angrist and Krueger are informative on this dimension and on the contemporary research frontier. Stafford's chapter enumerates the advantages and disadvantages of longitudinal data, and compares data collected by household surveys versus those collected by program or social experiments. In Angrist and Krueger, the comparative advantage of panel data is presumed, and the discussion focuses on empirical and modeling strategies for recovering causal effects.

The original cohorts

From this intellectual and policy context, the original four cohorts of the National Longitudinal Surveys of Labor Market Experience were designed to represent the U.S. civilian noninstitutional population at the time of the initial survey. The surveys were funded by the Office of Manpower, Automation, and Training (now, the Employment and Training Administration) of the Department of Labor, and conducted by the Center for Human Resource Research of Ohio State University. Specifically, the original cohorts are: Older Men Ages 45–59 in 1966; Mature Women ages 30–44 in 1966, and two cohorts of youth, Young Men ages 14–24 in 1966; and Young Women 14–24 in 1968. Initially, each cohort was to be interviewed annually for 5 years for a total of six interviews), with about 5,000 individuals per cohort. However, cost considerations after the first wave of interviews changed these plans. As a result, the older cohorts were interviewed biennially, with the Mature Women interviewed in both 1971 and 1972 to place an interview year at the end of the 5-year period. Because of high retention rates and widespread use by the research community, the surveys secured another 5 years of funding in 1972, and again in 1977 when the decision was made to start a new youth cohort, the NLSY79.[15]

As previously noted, a fundamental purpose of the NLS has been to provide relevant information on a variety of issues to assist the research of economists, sociologists, and other analysts. This mission motivated the selection of the original cohorts. For example, the first cohort of Older Men (45–59 in 1966) was selected to study factors associated with declining labor force participation, such as skill obsolescence, health problems, and age discrimination. The Young Men's Cohort (14–24 in 1966) and Young Women's Cohorts (14–24 in 1968) were selected because of the problems associated with the preparation for, initial entry into, and adjustment to the labor force.[16] Problems of the youth labor market generated concern and added to contemporary debate on topics such as teen unemployment, family effects on youth employment, the effect of minimum wages, and barriers impeding the transition from school to work.[17]

Increased labor force participation by married women and

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women with children is one of the great social changes of the second half of the twentieth century.[18] The Mature Women's Cohort (age 30–44, in 1967) was intended to enable researchers to study women who were reentering the workforce and balancing the roles of homemaker, mother, and labor force participant.[19]

Wealth of information. The initial survey instruments focused on labor market activity. Instruments included the Current Population Survey (CPS) questionnaire to summarize current labor force status and a longer set of questions on work experiences and attitudes to work. Attention was given to collecting information on the respondent's current job (at the interview date) and if not working, on the longest job held since the prior interview. In addition, information on the number of weeks worked in the last calendar year and the reasons for not working are now collected. Information on education is also concentrated on the status at the time of the interview. Information on the current high school or college is collected, if the respondent has dropped out of school, why, or if the respondent returned to school, and reasons for the return.

Even in the focused instruments of the early rounds, the surveys exhibited an eclectic mix of questions on employment and (for the youth) education. Yet, the instrument also obtained information on health, training, assets and income, and family background. It did not take many years for the content of the instrument to broaden significantly and attain the breadth of coverage now associated with the NLS. As James Sweet, noted, this breadth is natural because of the diverse and competent set of scholars consulted about the instrument's content, and more importantly, that virtually every phase of life is and will be associated with some aspect of work.[20]

The original cohorts had a tremendous impact on policy and on research. In October, 1977 the Social Science Research Council held a 3-day conference to review the NLS. The council's review was so extensive that it required five volumes of papers to summarize and evaluate the research contribution of the Original Cohorts. To give a flavor of the topics, exhibit 1 lists the table of contents to the report on the behaviors studied using the NLS Original Cohorts. Exhibit 2 lists some of the policy findings from individual assessments done in the early 1980s.

The NLS Youth cohorts could be used, like the NBER-Thorndike sample, to study the return to schooling while controlling for ability bias. One of the early uses of the NLS was to estimate returns to schooling. Microdata are needed to obtain information on the many background and contextual variables that would confound the analysis. The primary problem in estimating the return to schooling is controlling for ability bias—are there person-specific unobserved variables (for example, motivation, parental support, intelligence) that affects both the amount of education and labor market earnings. Gary Chamberlain and Zvi Griliches wrote an influential set of papers using the Young Men's Cohort to articulate the issues involved and to provide initial estimates of the return education controlling for ability bias.[21] Now, instead of using the NBER-Thorndike convenience sample, researchers could estimate the return to schooling using a nationally representative sample. Research on the return to schooling uncovered the weak-nesses of the point-in-time measurement of the educational attainment. The NLSY79 schooling section was substantially extended and provided researchers with a wealth of in-formation.[22]

More issues from the panel. In the late 1970s, as economists focused on life cycle events, they recognized the value of panel data to distinguish between outcomes generated by "state dependence;" that is, the true effects of the dynamic path experienced or of "unobserved" heterogeneity—fixed, but unobserved personal characteristics that may contribute to a set of outcomes. State dependence/unobserved heterogeneity debates arose in many literatures. A critical example at the time was whether unemployment "scarred" workers: did a long spell of unemployment damage the worker to make them less employable in the future? Or were workers with the longest spells of unemployment those with the lowest level

Exhibit 1 **Table of contents from Social Science Research Council report, 1977**

Labor supply
Female labor supply and fertility expectations; Child care and welfare; Marital instability; Male labor supply

Labor demand
Dual and segmented labor markets; Racial discrimination in the labor market; Sex discrimination in the labor market; Unionization and labor market differentials; Labor demand and structural factors – further considerations

Human capital and status attainment models
Human capital; Sociology of education status attainment

Unemployment
Job separation; Job search

Social psychological factors
Aging

Methodological research using the NLS

SOURCE: William Bielby, Clifford Hawley, and David Bills "Research Uses of the National Longitudinal Surveys," A Research Agenda for the National Longitudinal Surveys of Labor Market Experience, part V (Washington, DC, Social Science Research Council, Center for Coordination of Research on Social Indicators, 1978).

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Exhibit 2. Topics of the NLS Cohorts before 1979

Young Men and Young Women

School to work transitions; Effects of minimum wage; Returns to schooling and ability bias; Impact of early employment on later success; Consequences of early childbearing among teenagers; Effects of unemployment insurance benefits

Mature Women

Effect of discontinuous work experience on earnings and labor supply; Balancing family and work demands; Market availability of child care and women's employment; Effect of income tax on labor supply of married women

Older Men

Retirement decisions of older men; Effects of unemployment insurance benefits; General issues relating to the aging of the population; Relationship between health and employment; Broad range of socio-economic considerations of the elderly; Analysis of age discrimination in employment

SOURCE: Center for Human Resource Research, "The National Longitudinal Surveys and Public Policy" (Columbus, Ohio. The Ohio State University, no date); Duane Leigh, "The National Longitudinal Surveys: A Selective Survey of Recent Evidence," paper presented at the American Economic Association Meetings (Washington, DC, Dec. 28, 1981); and June O'Neill, "Review of the National Longitudinal Surveys," unpublished paper (Washington, DC, The Urban Institute, 1982). Review prepared for the Office of Research and Evaluation, Employment and Training Administration, Department of Labor.

of skills that made them susceptible to more and longer spells in the future? As is well known, answers to these questions determine the type of appropriate policy response. For example, in the unemployment case, if scarring is present, policies targeted at eliminating long employment spells may be effective, but such policies would be ineffective if the long spells are primarily generated by unobserved individual characteristics. After nearly 30 years of professional experience in thinking about these issues (and with many applications supported by the NLS79), some researchers might view the early literature as naïve and simplistic, yet, there is no denying the authors' intellectual excitement and vigor in these early papers. The authors were aware that they were breaking new ground and were excited about the analytical promises held by longitudinal data.[23]

Impact of the original cohorts

The success of the Original Cohorts paved the way for the NLSY79. The promise of longitudinal data and the policy issues of the mid- to late 1970s called for another youth cohort.

Given a chance to field another cohort, the research community had an opportunity to correct some of the deficiencies of the original cohorts and to collect data on new topics. The participants of the Social Science Research Council review panel of 1977 were charged to:

- Provide a comprehensive review of research based on the NLS
- Identify new directions
- Suggest analytical strategies
- Comment on survey content

Conference attendees took their job seriously and provided thoughtful and broad perspectives of the NLS. Indeed, participants developed several critical suggestions that shaped the design of NLSY79. Most notably, the panel advocated collection of more extensive labor market experience data. A methodological paper by Burton Singer illustrated the analytical advantages of collecting event histories (that is, a full enumeration of the start and stop dates of all jobs held since the last interview).[24] The state dependence/unobserved heterogeneity analyses of the original cohorts highlighted the need for precise timing information to construct the correct temporal sequence of education, marriage, employment and fertility decisions and outcomes. The event histories collected in the NLSY79 is one of its innovations.[25]

As noted, the Social Science Research Council review committee also recommended improved information on schooling. Here, the interest was to gain improved information on the type and nature of post secondary schooling, and especially on vocational training. At the time of the recommendation on schooling, the NLS program was housed within the Employment and Training Administration of DOL.

Lessons learned. The Social Science Research Council recommended that the definition of the sampling universe be refined from the noninstitutionalized population. The Census Bureau did the field work and gained expertise in following the noninstitutionalized population. Yet, as the review panel notes, this practice induced bias in the construction of the Original Youth cohorts. For example, for the Young Men's cohort, men in jail or in the military were defined out of scope and excluded (at the height of the Vietnam War). The definition also reflects the survey's point-in-time structure and the cross sectional thinking behind it—persons

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incarcerated and persons in the military at the time of the interview would have little employment activity to report and presumably could be excluded at little cost. An equally pernicious fielding decision generated by the same cross sectional mindset was to drop follow-up respondents who missed two consecutive interviews. This could be view as simply a mistake of adolescence—we did not know better then. Indeed, it took the NLSY79 to teach us about the possibility of retention and the significance of respondent continuity.

Not all of the recommendations from the review committee were accepted. As previously mentioned, one of the primary motivations for the NLSY79 was to assist in the evaluation of youth employment and training programs under the Comprehensive Employment and Training Act of 1973 (CETA). The Employment and Training Administration had front-line responsibility for evaluating the programs. Yet, the Social Science Research Council committee argued against designing the survey for program evaluation:

> Significant changes in study designs have been made for the new youth cohorts [i.e., men and women of the NLSY79]. These include adding questions about participation in youth-job training programs, collecting supplemental data by matching to program records on respondents who have participated in such programs, and excluding from the panel those over age 21 (rather than 24 as in the previous youth panels or 25, which would be required to cover young people not covered in existing [NLS] panels). The conferees were nearly unanimous in perceiving these changes as motivated by an intention to use the NLS as a vehicle for the evaluation of these training programs. They present strong arguments both for the impossibility of evaluating programs under the proposed design, and for the danger of drawing evaluative conclusions from the data produced by this design.[26]

Conferees questioned whether respondents would be able to provide sufficiently accurate program information to allow researchers to identify their training program and specifically their exact "treatment." Their concerns were well founded; an encyclopedic review of the evaluation literature shows that the NLS (and other large scale surveys) have been little used for the evaluation of training programs.[27]

This panel of experts earned their honorariums. Many of their recommendations were incorporated into the design of the NLSY79 Cohort. Indeed, the survey's continuous and detailed recording of events related to the transition from school to work, from adolescence into adulthood, and now into middle age have made it the analytical workhorse within several social science disciplines. The NLSY79 is viewed by many to be the crown jewel of the NLS program. □

Notes

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[1] "Parnes" data are named after one of the designers of the NLS, Herb Parnes, from Ohio State University.

[2] Frank L. Mott, "Looking Backward: Post Hoc Reflections on Longitudinal Surveys," in Erin Phelps, Frank F. Furstenberg, and Anne Colby, eds., *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation, 2002). This offers another perspective on the history of the NLS program.

[3] The Gluecks initiated a survey design that is difficult to match today. They interviewed the youth, their families, employers, school teachers, neighbors and justice officials. And they supplemented and validated the interview data with administrative data obtained from social welfare agencies. See Robert J. Sampson and John H. Laub, Crime in the Making: Pathways and Turning Points Through Life (Cambridge, MA, Harvard University Press, 1995), p. 90.

[4] See Paul Taubman and Terence Wales, "Higher Education, Mental Ability and Screening," *Journal of Political Economy*, 81 (Jan. – Feb., 1973) pp. 28–55, for a description of the NBER-Thorndike sample.

[5] Europe initiated a number of early longitudinal studies as well. Erin Phelps and others, *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation, 2002), lists a few of the most noteworthy.

[6] The Terman study of children with high ability followed a group of 672 high-ability children from California for more than 65 years, with an attrition rate of less than 10 percent of the original respondents (excluding those who died or became invalids)! See George E. Vaillant, "The Study of Adult Development," in Erin Phelps and others, eds., *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation, 2002), pp. 116–132.

[7] See Janet Zollinger Giele, "Longitudinal Studies and Life Course Research: Innovation, Investigators, and Policy Ideas," in Erin Phelps and others, eds., *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation, 2002). Giele discusses the synthesis in developmental psychology, sociology, and history after World War II that led to a new conceptual framework for understanding the forces and behavioral processes as people age.

[8] See Theodore W. Schultz, "Investment in Human Capital," *American Economic Review*, March 1961, pp. 1–17.

[9] *NLSY79 User's Guide* (Columbus, OH, Center for Human Resource Research) p. 4.

[10] Frank Stafford, "Forestalling the Demise of Empirical Economics: The Role of Microdata in Labor Economics Research," in Orley Ashenfelter and Richard Layard, eds., *Handbook of Labor Economics*, vol. 1 (New York, North Holland, 1986).

[11] However, about 20 percent of these papers using a longitudinal data source, used the data as a cross section.

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[12] Joshua D. Angrist and Alan B. Krueger, "Empirical Strategies in Labor Economics," in Orley C. Ashenfelter and David Card, eds., *Handbook of Labor Economics*, vol. 3A (New York, North Holland, 1986).

[13] With a small edge in papers to the original cohorts of the NLS! See for example, Stafford, "Forestalling the Demise of Empirical Economics," 1986.

[14] One of the first codifications of panel data techniques appeared in a special volume in the *Journal of Econometrics* in 1982. Also see Gary Chamberlain, "Panel Data," in Z. Griliches and M. D. Intriligator, eds., *Handbook of Econometrics*, vol. 2 (Amsterdam, North Holland, 1994). Chamberlain is considered a highly influential chapter on panel data. Also see C. Hsiao, *Analysis of Panel Data* (Cambridge, MA, Cambridge University Press, 1986), a readable gem from the Econometric Society; and Jeffrey Wooldridge, *Econometric Analysis for Cross and Panel Data* (Cambridge, MA, MIT Press, 2002). Wooldridge's elegant text provides a unified treatment of what is now an extensive literature.

[15] Retention rates at the end of the first six interviews: Older Men 83 percent, Mature Women 88 percent, Young Men 76 percent, Young Women 86 percent. Please see the *NLS Handbook* or *NLS User Guide* for each Cohort for additional information.

[16] Social Science Research Council, "A Research Agenda for the National Longitudinal Surveys of Labor Market Experience," Parts i-IV. A Report on the Social Science Research Council's Conference on the National Longitudinal Surveys. Prepared for the Employment and Training Administration of the U.S. Department of Labor, October 1977 NBER volume.

[17] See, for example, Richard B. Freeman and David A. Wise, eds., *The Youth Labor Market Problems: Its Nature, Causes, and Consequences* (Chicago, University of Chicago Press, 1982).

[18] See Richard B. Freeman, "The Evolution of the American Labor Market 1948–1980," in Martin Feldstein, ed., *The American Economy in Transition* (Chicago, University of Chicago Press, 1980). As Freeman notes, "In the early part of the post-WWII period, most of the increase occurred among older women, many of whom were returning to work as their children reached school age. Nearly 80 percent of the growth in the female work force between 1947 and 1965 resulted from increased numbers of women aged 35 and over, whose labor force participation rate rose sharply."

[19] Frank Mott, "Looking Backward: Post Hoc Reflections on Longitudinal Surveys," 2002, p. 67. Mott notes the strong policy motivation supporting the cohorts, but also recognizes the Mature Women's Cohort was "created in part because of internal pressures applied within the Department of Labor by individuals in the department's Women's Bureau."

[20] James Sweet, remarks to a review of the NLS program by the Social Service Research Council in 1977. See William Bielby, Clifford Hawley, and David Bills, "Research Uses of the National Longitudinal Surveys," A Research Agenda for the National Longitudinal Surveys of Labor Market Experience, Part V. (Washington, DC, Social Science Reserach Council, Center for Coordination of Research on Social Indicators, 1978).

[21] See Gary Chamberlain and Zvi Griliches "Unobservables with a Varianve-Components Structure: Ability, Schooling, and the Economic Success of Brothers," *International Economic Review*, 1975, vol. 16, pp. 422–50.

[22] For a summary of its influence, see Kenneth I. Wolpin, "Educational data in the NLSY79: a premiere research tool," *Monthly Labor Review*, February 2005, pp. 15–20.

[23] See David Ellwood, "Teenage Unemployment: Permanent Scars or Temporary Blemishes," in Richard B. Freeman and David A. Wise, eds., *The Youth Labor Market Problem: Its Nature, Causes and Consequences* (Chicago, University of Chicago Press, 1981); and James J. Heckman, "Heterogeneity and State Dependence," in Sherwin Rosen, ed., *Studies in Labor Markets* (Chicago, University of Chicago Press, 1981).

[24] See Bielby and others, "Research Uses of the National Longitudinal Surveys," 1978.

[25] For a discussion of event histories and other methodological contributions of the NLSY79, see Randy Olsen, "The problem of respondent attrition: survey methodology is key," *Monthly Labor Review*, February 2005, pp. 63–67.

[26] Social Science Research Council, *A Research Agenda for the National Longitudinal Surveys of Labor Market Experience*, 1977, p. 31.

[27] James J. Heckman, Robert LaLonde, and Jeffrey Smith, "Something on Evaluation Literature," in David Card and Orley Ashenfelter, eds., *Handbook of Labor Economics*, vol. 3a (New York, North Holland, 1999), p. 1994.

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Education data in the NLSY79: a premiere research tool

Social science researchers widely use the NLSY79 schooling data because of its longitudinal nature and range of content

Kenneth I. Wolpin

Perhaps the most widely used data in social science research are those related to measures of education; among such measures, years of schooling is the most ubiquitous. A search of the National Longitudinal Survey (NLS) Annotated Bibliography yields 1,803 articles, book chapters, dissertations, and so forth, in which either the word "education" or "schooling" appears in the title, abstract, or as a keyword.[1] Of those, more than 1,000 were based on the National Longitudinal Survey of Youth, 1979 (NLSY79) data.[2]

Researchers' use of education measures found in the NLSY79 spans several social science disciplines, particularly economics and sociology, and, to a lesser extent, psychology. A large number of articles using NLSY79 education measures have appeared in major general audience and specialty journals. (See table 1.)[3] In economics, there were 8 such journals, totaling 78 published articles, and in sociology, 6 journals with 47 articles. In psychology, one journal specializing in child development published five articles, and one medical science journal also published five.[4]

The topics covered in these articles vary widely, as is evident from looking at the titles of the journals. These articles can be classified into two broad categories: (i) articles that study schooling decisions themselves (for example, how much schooling to complete, whether to drop out of high school, or choice of college major), and (ii) articles that study the "effect" of schooling on some other decision or outcome (for example, on wages, fertility, or alcohol consumption). In both cases, the NLSY79 data is chosen for its omnibus nature (that is, the data include information other than schooling), and because the data are longitudinal.

Although the NLSY79 was a pathbreaking survey in many ways, the collection of schooling data has been relatively standard. The education section in 1979, the first year of the survey, contained a total of just 25 questions (excluding interviewer check items), although respondents were attending school levels ranging from junior high through college.[5] In the first follow-up survey in 1980, respondents were asked just 16 questions, primarily to update the baseline schooling information obtained in the 1979 survey round. Essentially, the same questions were asked in the second follow-up in 1981, with the important addition of a monthly attendance record obtained retrospectively back to January 1980. This addition was in keeping with the event history format of the NLSY79 with respect to the collection of employment data and was continued throughout all subsequent rounds. The schooling section was unchanged until 1984, when an extensive set of questions was added to obtain information on colleges attended by respondents. Again, in keeping with the overall format of the survey, the aim was to obtain an event history of college attendance. The rostering of colleges attended continued prospectively through 1990, when the young-

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Table 1. Number of articles published since 1990 with "education" or "schooling" as a keyword in the title or in the abstract: journals with five or more articles by field

Field / journal	Number of articles
Economics:	
American Economic Review	10
Economics of Education Review	7
Industrial and Labor Relations Review	11
Journal of Human Resources	18
Journal of Labor Economics	7
Journal of Political Economy	5
Monthly Labor Review	10
Review of Economics and Statistics	13
Sociology, demography:	
American Sociological Review	6
Demography	8
Family Planning Perspective	8
Journal of Family Issues	6
Journal of Marriage and the Family	10
Social Forces	9
Psychology:	
Child Development	5
Others:	
Pediatrics	5

est respondents were age 25. The major elements of the schooling data in the main survey include current school enrollment status, highest grade attended and completed, high school curriculum, major field of study in college, degrees obtained, names and locations of colleges attended, college loans, and the schooling of household members.

Along with the main survey, there are several supplemental data collections pertinent to schooling. The School Survey, given in 1980, collected information from school administrators on school characteristics. The High School Transcript Survey collected and coded high school transcripts for almost 9,000 of the respondents. Finally, the Children of the NLSY79, begun in 1986, collected child development data for all children born to the women of the NLSY79.

It is beyond the scope of this article to summarize the findings from the studies cited above; instead, some data are presented that fit with the purpose of this special issue, that of celebrating the 25th anniversary of the NLSY79. In that vein, the data presented illustrate the aforementioned two most important features of the survey, the longitudinal nature and the range of content. These features are highlighted by documenting differences among completed schooling groups in a wide array of behaviorally-related characteristics. (See table 2.) Cumulative differences are shown for many characteristics over a substantial post-schooling age range. The table makes clear the rationale for the intensive study of schooling by social scientists, and for the popularity of using the NLSY79 data.

In the table, schooling is based on completed years of schooling as of age 25 and is divided into five categories: high school dropouts (completed years of schooling reported to be less than 12) who have not received a GED, high school dropouts who have received a GED, high school graduates (completed years of schooling exactly 12, no GED), those with some college (completed years of schooling between 13 and 15), and college graduates (completed years of schooling 16 or more). The table, based on data through the 2000 survey, considers differences in earnings, welfare takeup and payments, unemployment, hours worked, financial asset holdings, health status, obesity, alcohol consumption, fertility, and birth weight and test scores of the first-born child.

About 20 percent of males and 17 percent of females in this cohort did not complete high school with a regular diploma; of those, about a third received a GED. Notice that counting a person with a GED as a high school graduate makes a nontrivial difference to the calculation of the dropout rate.[6] A little less than 40 percent graduated high school with a diploma and did not complete any further schooling. The rest, about 40 percent of the cohort, went on to college, and about half of those graduated.

The cumulative figures in the table span ages from 25 through 39. However, many of the variables are not available in every year. Thus, cumulative variables, such as total earnings or weeks of unemployment, would be understated. Averaging available data and multiplying by 15 would provide an unbiased estimate except that missing values tend to occur more frequently at the older ages, both because of attrition and because the survey became biannual after 1994, and many of the variables are age-trended. To obtain an estimate of the cumulative values, averages of three 5-year age intervals (ages 25–29, 30–34, and 35–39) were calculated, each average was multiplied by 5, and then the three totals were added together. As long as the age trends are not severe within each of the 5-year age intervals, this procedure should provide a reasonable estimate.

The most striking feature of the table is how different high school dropouts, particularly those without GED's, and college graduates are relative to the rest. Following is a breakdown of each characteristic in turn.

Earnings. There are two sources of information on earnings in the NLSY79: a global question on the amount of wage and salary income in the previous calendar year, and earnings obtained from the event history on reported jobs. The figures in the table come from the former source and are in 1996 dollars.[7] Over the 15-year period between the ages of 25 and 39, a male high school dropout without a GED earned, on average, $273,250, about $30,000 less than a high school dropout with a GED, and $150,000 less than a high school graduate with a regular diploma. On the other end of the edu-

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Table 2. Selected characteristics by completed schooling

Characteristic	Males					Females				
	High school dropout		High school graduate	Some college	College graduate	High school dropout		High school graduate	Some college	College graduate
	No GED	GED				No GED	GED			
Percent	13.7	6.2	37.9	20.4	21.8	11.5	5.4	39.7	23.2	20.3
Cumulative earnings[1]										
Age 25–39	$273,250	$305,041	$429,813	$486,619	$775,206	$113,521	$187,214	$207,738	$284,859	$426,855
Cumulative welfare payments[1]										
Age 25–39	$7,004	$7,185	$2,447	$1,216	$346	$28,032	$16,477	$8,198	$4,285	$271
Percent of years receiving welfare										
Age 25–39	13.3	10.6	4.5	2.8	.5	31.0	19.7	10.7	5.4	.7
Cumulative weeks unemployed										
Age 25–39	71.9	60.3	36.5	31.0	11.3	53.3	47.8	33.7	24.0	12.2
Cumulative hours worked: full-time (2,080 hours) year equivalents										
Age 25–39	13.1	12.7	15.6	15.3	16.6	7.3	9.6	10.4	11.2	12.2
Change in financial assets between 1985 and 2000										
10th percentile	–543	–814	–1,357	–2,360	–2,474	–87	–679	–1,368	–2,035	–950
50th percentile	0	0	977	1,928	19,347	0	0	467	1,868	12,927
90th percentile	4,671	7,865	31,805	55,119	268,212	3,661	8,517	20,642	67,953	178,281
Percent reporting health limitation, age 25–39										
At least once	36.4	32.2	21.1	18.4	9.0	51.6	36.1	36.0	31.7	21.1
At least 50 percent of the years	7.4	8.1	3.1	3.2	1.0	10.1	9.8	4.4	4.8	1.9
Percent obese (BMI greater than or equal to 30), age 25–39										
At least once	35.7	25.8	33.2	29.7	18.7	39.3	30.7	32.2	27.5	17.8
At least 50 percent of the years	16.3	12.2	17.8	16.2	8.2	26.1	18.7	17.1	14.7	6.2
Number of days per month having had six or more alcoholic drinks										
Age 18–24	1.97	1.78	1.70	1.40	1.39	.80	.59	.46	.40	.54
Age 25–34	1.21	.86	.98	.93	.61	.39	.55	.27	.17	.14
Number of children ever born, greater than or equal to age 35	1.9	1.9	1.6	1.4	1.5	2.6	2.3	1.9	1.7	1.6
Percent at first birth, less than or equal to age 19	23.9	23.7	8.8	4.2	1.1	68.4	55.6	26.1	11.1	.7
Birth weight of first born (ounces)	–	–	–	–	–	113.2	115.4	117.0	116.4	117.9
PPVT percentile score of first born	–	–	–	–	–	30	41	43	49	63

[1] 1996 dollars

NOTE: All figures use the 1979 sample weights. Dash indicates data not available.

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cation spectrum, a male college graduate earned $775,206, almost $300,000 more than a male who completed some college. Female differences by education are smaller in absolute value, in part because they work less (see below). Nevertheless, a female high school graduate earned about $90,000 more than a dropout without a GED, and about $75,000 less than what a female who completed some college earned. A female college graduate earned $426,855, about $140,000 more than a female with some college.

Welfare payments and takeup. The NLSY79 collects data on takeup and payments for several welfare programs. The figures in the table aggregate respondent information about the Aid to Families with Dependent Children (AFDC), Food Stamp, and Supplemental Security Income (SSI) programs. Because of AFDC, aggregate welfare payments and takeup are much larger for females than for males. Over the 15 years, female high school dropouts without a GED received welfare on average in about 30 percent of the years, totaling $28,032. In contrast, high school dropouts with a GED received welfare in about 20 percent of the years, totaling $16,477. Comparable figures for high school graduates were about 11 percent of the years and $8,198, and for those with some college, 5 percent of the years and $4,285. Female college graduates, on average, essentially received no welfare.

Perhaps somewhat surprisingly, as seen in the table, even female high school dropouts without a GED had considerably more market earnings over the period than they received in welfare. In fact, only 35 percent of these women reported receiving more in welfare payments than they earned over the period. In contrast, 16 percent of high school dropouts with a GED, 10 percent of high school graduates, and 4 percent of those with some college received more welfare over the 15 years than they earned.

The takeup rates and average payments for males are, as noted, considerably smaller than for females; for example, male high school dropouts without a GED received some welfare in only 13 percent of the years, about the same as those with a GED. Welfare payments over the entire 15-year period were, on average, only about $7,000 for high school dropouts regardless of GED status, and only 7 percent of dropouts without a GED received more in welfare benefits than they earned.

Labor force status (unemployment and hours worked). Male high school dropouts without a GED were unemployed 72 weeks, and similar female dropouts were unemployed 53 weeks, cumulatively over the 15-year age period.[8] These figures are slightly higher than for dropouts with a GED. Those who graduated from high school or completed some college had significantly fewer cumulative weeks of unemployment. However, as with earnings and welfare, college graduates were distinctly different than the other schooling groups; male (female) college graduates spent only 11 (12) weeks unemployed over the 15 years. With respect to the amount of time spent working, measured in full-time year equivalents (2,080 hours), on average male dropouts (those with and without a GED) worked about 13 of the 15 years, while male college graduates worked more than full-time, 16.6 years or about 2,300 hours per year. In contrast, female dropouts without a GED worked less than one-half of the years, while college graduates worked four-fifths of the years.

Financial asset accumulation. The NLSY79 began collecting asset data in 1985. Table 2 presents statistics on the amount of financial assets accumulated from the first report (when respondents were 20 to 28 years of age) to the 2000 report (when respondents were 35 to 43).[9] Differences in financial savings by schooling are large, although the relationship is quite skewed. Median financial savings are zero for high school dropouts of both sexes, slightly negative at the 10th percentile, and less than $10,000 at the 90th percentile. Median savings is less than $2,000 for those with some college, but savings increase to $55,000 for males and $68,000 for females at the 90th percentile. College graduates are again different than other schooling groups in terms of their financial savings. Median financial savings of males is almost $20,000, but more than $250,000 at the 90th percentile; for females, the median is about $13,000 and the 90th percentile, $178,000.

Health. In each round of the NLSY79, respondents were asked separately about whether their health limited the amount or the kind of work they could perform. Table 2 presents data on the distribution of the number of times between the ages of 25 and 39 that the respondent answered affirmatively to either question.[10] The first row reports on the percent who gave an affirmative response at least once, and the second row, on the percent who gave an affirmative response in at least 50 percent of the years. High school dropouts without a GED are the most prone to report a health limitation affecting work at least once; more than a third of the men and more than half of the women reported ever having a limitation. At the other extreme, only 9 percent of male college graduates, and 21 percent of female college graduates, reported such an occurrence at least once. Chronic health conditions, as measured by having reported a health limitation in at least half of the years, are much less prevalent in all schooling groups, but non-negligible for high school dropouts. Between 7 percent and 8 percent of male high school dropouts, and about 10 percent of female high school dropouts, have a persistent health condition, while this is true of only 1 percent of male and 2 percent of female college graduates.

Obesity. The NLSY79 collected self-reported information on a respondent's height and weight in 1981, 1982, and 1985,

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and on the respondent's weight in all rounds since 1986, except 1987 and 1991. Body mass index (BMI) was calculated in each year using the latest height information that was available.[11] As with health limitations, table 2 reports the distribution of the number of times over the 15-year age period, 25–39, that respondents have a BMI of 30 or more, indicating obesity, again by schooling groups for each sex. Although there is some prevalence of obesity among males with schooling below college completion, it is not large. Among males with some college, 30 percent were obese in at least 1 year, and 16 percent were obese in at least one-half of the years. The same figures for high school dropouts are 36 percent and 16 percent. Differences are larger for females, with 28 percent of those with some college, and 39 percent of high school dropouts without a GED, being obese in at least 1 year. College graduates again are substantially different from all of the other groups. For both sexes, less than 20 percent were obese in any year, and less than 10 percent in at least half of the years.

Alcohol consumption. In several years (1982, 1983, 1984, and 1994), the NLSY79 has included a section of questions, funded by the National Institute of Alcohol Abuse and Alcoholism (NIAAA), on alcohol use. A common question in those rounds has been the number of days in the last month that the respondent consumed six or more drinks. Table 2 shows the average number of days over all of the observations in those years for two age intervals, 18–24 and 25–34, by schooling and sex. In all of the schooling groups, for both males and females, alcohol consumption measured in this way fell substantially with age. Male high school dropouts without a GED averaged just less than 2 days a month between the ages of 18 and 24, but 30 percent less between 25 and 34. Females within that schooling group averaged only .8 days at the earlier age, but that fell in half at the later age. College graduates are less of an outlier in terms of alcohol consumption at the earlier age, although their consumption falls proportionately more at the later age.

Fertility. Differences by schooling in the number of children ever born by age 35 are large. Female high school dropouts who have not earned a GED have had 2.6 children on average by age 35, .3 more than their counterparts with a GED, .7 more than those with a high school diploma, .9 more than those with some college, and a full child more than those with a college degree. Males at all schooling levels report having had fewer children, and this is particularly pronounced for high school dropouts. Even so, those male respondents with some college report having fathered half a child less than those who were high school dropouts.

Schooling differences in fertility are even more striking in terms of the prevalence of teenage childbearing. More than two-thirds of female high school dropouts without a GED, and more than one-half of those with a GED, gave birth to a child as a teen. This figure drops to one-quarter for high school graduates, to about 10 percent for those with some college, and to less than 1 percent for college graduates.

Birth weight of children. Starting with the 1982 survey round, with funding from the National Institute of Child Health and Human Development (NICHD), the NLSY79 collected information about the pregnancy outcomes of the female respondents.[12] Table 2 compares mean birth weight of first-born children across the schooling groups.[13] The differences observed among the respondent's own outcomes, such as earnings and health, also emerge among the children of the respondents. High school dropouts without a GED have the lowest birth weight of children, almost 5 ounces less than the first births of the college graduates.

Peabody Picture Vocabulary Test (PPVT) scores of children. The Children of the NLSY79 survey was started in 1986 and obtains information about the children born to the women of the NLSY79, including cognitive test scores. Table 2 reports the mean percentile scores (age adjusted) of first-born children by mother's schooling. As seen repeatedly in the table, the lowest and highest schooling groups, high school dropouts without a GED and college graduates, appear to be outliers. Children of the former group have mean scores that fall in the 30th percentile, while those of the latter fall in the 63rd percentile. The other three schooling groups fall in between and differ only slightly from each other.

THIS OVERVIEW analyzes the contributions of the NLSY79 to the study of issues related to education. Space limitations, combined with the vastness of the literature, precluded a critical assessment of the scientific contributions of the research based on NLSY79 schooling data. Instead, this article demonstrates why the schooling data has played such an important role in making the NLSY79 one of the premiere research instruments in the social sciences. □

Notes

[1] Education alone yields 1,600 matches, schooling alone 588, with 385 matches using both. A search for the words "earnings" or "wages" yielded 1,437 matches, and for "income," 1,027 matches. All of these figures are somewhat overstatements because of duplications that arise when papers appear in multiple forms, for example, as a working paper and later as a journal publication.

[2] When referring to the NLSY79, I include the Children of the NLSY79. Recall also that the NLS consists of five additional cohorts, four begun between 1966 and 1968, and the latest begun in 1997.

[3] I thank Terry Fahey at the Center for Human Resource Research (CHRR) for performing the specialized search of the Bibliography's data-

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base on which these figures are based.

[4] This is the only psychology journal publishing at least five such articles. There are about a dozen other psychology journals that have published fewer than five, though most have published only one article.

[5] In the NLSY97, on the other hand, the schooling section contained several hundred questions in the first round. Schooling data in the 1997 survey are obtained as a dated event history similar to the employment data.

[6] The Current Population Survey (CPS) counts both those with a GED and those with a regular diploma as a high school graduate.

[7] The samples for the earnings and welfare statistics are both based on respondent-years in which there is no missing information either on earnings or on welfare benefits. In addition, the sample is restricted to those who had at least one report in each 5-year age interval.

[8] As with earnings and welfare, the sample is restricted to those who have a valid report in at least 1 year of each 5-year age interval.

[9] Financial assets consist of moneys in savings or checking accounts, money market funds, credit unions, U.S. savings bonds, individual retirement accounts, 401K or pre-tax annuities, certificates of deposits, personal loans to others or mortgages held, stocks, bonds, mutual funds, and rights to an estate or investment trust.

[10] The sample is based on respondent-years in which there is no missing information on the health limitation question. The average numbers of years over the 25–39 age range in which these data are reported for each schooling category are: 10.3, 10.0, 10.5, 10.4, and 10.3 for males, and 10.9, 10.6, 10.7, 10.8, and 10.7 for females.

[11] More specifically, the 1985 height report was used whenever available (about 90 percent of the cases). If that was missing, the 1982 height report was used, and if both were missing, the 1981 height report was used. Differences in reported height in the 3 years are small; mean reported height in 1981 is .17 inches less than in 1985 for those that report both. The BMI is defined as weight in kilograms divided by the square of height in meters. Obesity is defined as having a BMI of 30 or more.

[12] Information was also collected on maternal behaviors during each pregnancy, such as prenatal care, smoking, drug use, and drinking.

[13] Looking at first-born children avoids differences that might arise if birth weight is related to birth order, given that less educated women have more children as shown above. A similar comment applies to the Peabody Picture Vocabulary Test scores addressed in the following section.

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The transition from school to work: education and work experiences

Data from the National Longitudinal Survey of Youth 1979 found that the average worker, approximately 5 years after leaving school for the first time, starts a job that will last 3 years; however, there was considerable variation by education

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Youths experience different trajectories in their transition from school to work. Some youths jump from job to job and do not develop a steady employment relationship until many years after leaving school, if at all. Others settle into a longer-term employment relationship soon after leaving school. Some policymakers and educators express concern that many new entrants to the job market tend to experience periods of churning, moving from one low paying job to another, without settling into a longer-term relationship.[1] This argument posits that the time, sometimes many years, spent moving from one short-term job to another is nonproductive and steps should be taken to eliminate it.

Other analysts see this period of short employment spells in a more positive light. They argue that early job mobility represents "job shopping" where young workers learn about different work environments and their own skills and interests.[2] As youths acquire different work experiences, they are able to move into jobs that better match their skills and interests, often with higher wages. In this light, the job-shopping phase can be beneficial for both workers and their employers.

Education is clearly linked to these employment processes. In high school, youths learn mainly general skills. These include not only hard skills such as literacy and numeracy, but soft skills such as punctuality, dependability, and following directions. Because of their youth, those seeking jobs just after high school may know less about the world of work and be less committed to a particular occupation. Likewise, employers of these youths have less information about their skills. Both employer and employee may look at entry-level jobs as a learning process by which each can evaluate the long-term potential of their "match." College graduates, on the other hand, invest more in specific skills and may acquire a greater knowledge of the job market within their field. They can match their interests to skills and reject potential career paths before entering the labor market. Employers of new college graduates have potentially greater knowledge of the particular skills of their new hires, and, because of the higher wages they must pay, more incentive to find a good match. For these reasons, matches between new college graduates and their employers may be expected to last longer than those between new high school graduates and employers. Youths who have left school without a high school degree are doubly disadvantaged; they lack both general and job-specific skills, and they face employers who have low expectations and little incentive to invest in their matches. Consequently, schooling choices may dictate the speed and ease of the school-to-work transition.

This article documents the transition from school to work for a nationally representative sample of men and women from the time they first left school for a year or more until age 35. The tables in this article describe the duration of employment relationships and time since leaving school until holding a job for a specific number of years. This will help to answer a number of questions about the transition from school to work,

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such as: how does job changing evolve as individuals age; how does job mobility behavior vary by education level and other demographic characteristics; and finally, how long does it take an average individual to settle into a longer-term job.

Other researchers have used the National Longitudinal Survey of Youth 1979 (NLSY79) to study job changes, mostly focusing on men. Some of the articles have been more descriptive like this one, although for earlier time periods.[3] Others engage in detailed empirical analysis, and generally try to examine the causes and consequences of early job changes.[4] In this article, we use data through 2002, which allows us to trace individuals' careers until age 35. Thus we can show individuals' job transitions from the end of school into the workforce and up until mid-career.

Data and methods

The data. To adequately measure the path an individual takes from the completion of schooling to stable employment, one needs longitudinal data that track respondents over their working lives. In this article, the education and employment histories are examined using NLSY79 data. These data describe a sample of men and women who were ages 14 to 22 in 1979 and 37 to 44 when interviewed in 2002. In 2002, the sample—which includes an overrepresentation of blacks and Hispanics—had 7,724 respondents. This article defines the transition from school to work to occur at the point when the individual leaves school for 12 months or more. However, work histories in the NLSY79 data generally begin in January 1, 1978, or the respondent's 16th birthday, whichever is later. Thus, in order to view the complete school-to-work transition without oversampling those with higher education, only respondents born between January 1, 1961, and December 31, 1964—that is, the last four birth cohorts of the NLSY79—are used.[5] After dropping respondents with incomplete data, there were a total of 3,845 respondents. In all computations, weights are used to adjust for different sampling rates and nonresponse rates so that the data are a nationally representative sample of all youths born between 1961 and 1964 and living in the United States in 1979.

A key feature of the NLSY79 data set is that it records much of the information as event histories; thus, the dates of transitions are documented and updated with each interview. In the event history of employment, or work history, the "start" and "stop" dates of each job the respondent has held are recorded, as well as dates of nonwork (such as maternity leave or layoff) within each job. This allows various job-related measures, such as the number of jobs held, weeks worked, and job tenure, to be calculated. In addition, because the dates of these job-related behaviors are recorded for each individual, these variables can be calculated for a specific period—for example, the number of jobs each worker held during the 2 years before the start date of a certain job can be determined. Using the NLSY79 work history data, it is possible to construct and link monthly records of school attendance or nonattendance with employment.

Defining school leaving groups. In this analysis, individuals are grouped based on their education level when they first left school. Individuals were assigned to a school-leaving group based on the highest degree, if any, they reported earning as of the time they first left school for 12 months or longer.[6] Thus, if an individual dropped out of school but subsequently returned to finish high school within a 12-month period, they would be classified as a high school graduate and not a dropout. Similarly, individuals who completed high school and went to work full time, but within the 12-month period began taking night classes, would continue to be viewed as 'in school,' despite their work schedule, until they were no longer taking classes. Once determined that an individual had left school for 12 months, even if the person later returned to school and received a degree, the initial school-leaving group to which they were assigned was not changed.[7]

Table 1 describes the sample used in this article by educational category as well as the average age respondents first left school.[8] Twelve percent of the sample first left school at approximately age 17 before attaining a high school degree and are assigned to the category of dropouts. Approximately 55 percent of the sample first left school for at least 12 months after attaining a high school degree; these respondents left school approximately 1 year later (age 18) than dropouts. Individuals with some college but who did not attain a bachelor's degree before first leaving school make up 22 percent of our sample, while 11 percent are those who attained a college degree before first leaving school. The educational outcomes of men were more dispersed than those of women; men were both more likely to drop out and more likely to complete college.[9] Ethnic and racial differences in initial educational attainment are quite pronounced. Whites were more likely than either blacks or Hispanics or Latinos to have either gone to college or earned a college degree and less likely to drop out.

While the date first left school is a useful point to measure the school-to-work transition, it does not always indicate the final degree earned. Many individuals return to school, either by combining work and schooling or by leaving the labor force altogether. Table 2 shows that a large number of individuals return to school at some point before they be-

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Table 1. Degree and age when first left school for 12 months or longer and degree when completed schooling, by school-leaving group

Original school-leaving group and characteristic	Degree when first left school	Average age when first left school for 12 months or longer	Degree when completed schooling
High school dropouts	12.1	17.0	7.1
High school graduates	54.6	17.9	42.8
Some college	22.0	21.4	23.7
College graduates	11.3	23.8	26.5
Men	–	19.3	–
Less than a high school diploma	12.6	17.1	7.4
High school graduates, no college	54.2	18.0	44.4
Less than a bachelor's degree	19.6	21.6	21.1
Bachelor's degree or more	12.6	24.0	26.1
Women	–	19.2	–
Less than a high school diploma	10.6	16.9	6.1
High school graduates, no college	55.0	17.9	40.8
Less than a bachelor's degree	24.5	21.3	26.3
Bachelor's degree or more	9.9	23.6	26.7
White (non-Hispanic)	–	19.4	–
Less than a high school diploma	10.2	16.9	5.8
High school graduates, no college	54.0	17.9	41.4
Less than a bachelor's degree	23.0	21.5	22.4
Bachelor's degree or more	12.7	23.7	30.4
Black (non-Hispanic)	–	18.9	–
Less than a high school diploma	17.0	17.4	10.0
High school graduates, no college	58.7	18.1	49.0
Less than a bachelor's degree	19.1	21.3	28.9
Bachelor's degree or more	5.1	24.2	12.1
Hispanic or Latino	–	18.7	–
Less than a high school diploma	22.7	16.9	15.4
High school graduates, no college	54.2	18.0	45.3
Less than a bachelor's degree	16.9	21.3	26.9
Bachelor's degree or more	6.1	25.3	12.4

NOTE: Educational attainment is defined as of the time they first left school for 12 consecutive months. Our sample is 51 percent men; 49 percent women; 77 percent non-Hispanic whites; 15 percent non-Hispanic blacks; and 7 percent Hispanics or Latinos.

come age 35; however, not everyone who returned to school eventually received a degree. Fifty-three percent of high school dropouts returned to school, as did 42 percent of high school graduates. While 58 percent of initial dropouts never received a high school diploma or GED (general equivalency diploma), 28 percent of dropouts did eventually earn a high school diploma; an additional 10 percent received some college education; and 4 percent went on to receive a college degree or more. Again, ethnic and racial differences are quite striking in this regard. When returning to school, whites in all education categories were more likely to complete their college degree. As already noted, whites generally had more education when they first left school. Thus, the process of returning to school to complete unfinished degrees did not close the racial gap in educational attainment, but instead seemed to widen it.

As seen in the last column of table 1, by age 35, whites are significantly less likely to have less than a high school diploma or GED and twice as likely to have completed college. Only 6 percent of whites had not received a high school degree or GED by their 35th birthday compared with 10 percent of blacks and 15 percent of Hispanics or Latinos. In contrast, more than 30 percent of whites had received a college degree compared with only 12 percent of blacks and Hispanics or Latinos. In contrast, the gender gap in educational attainment is small; at 35, women have only slightly more education than men.

The school-to-work transition

Duration of employment. The longitudinal nature and event history data collection of the NLSY79 make the data set ideal for studying job duration. A job-shopping model would suggest that the quality of job matches would increase with each subsequent job. Thus the probability that one would find a better match and switch jobs would decrease over time. This tendency is reinforced by the development of job-specific skills, which may not be valued by another employer. Theoretically, then, a successful transition to the labor market should be characterized by increasing job tenure. Therefore,

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Table 2. Distribution of completed schooling, by school-leaving group

	Ever returned to school	Highest degree ever reported receiving			
		High school dropout	High school graduates (or GED)	Some college	College graduates
High school dropouts	53.2	58.3	28.2	9.7	3.7
High school graduates	42.1	–	72.1	22.9	5.0
Some college	54.6	–	–	45.5	54.5
College graduates	41.0	–	–	–	100.0
Men					
High school dropouts	50.1	58.8	27.7	9.1	4.4
High school graduates	37.2	–	75.5	20.3	4.2
Some college	54.8	–	–	45.6	54.4
College graduates	34.5	–	–	–	100.0
Women					
High school dropouts	57.4	57.7	28.8	10.7	2.8
High school graduates	47.1	–	68.6	25.6	5.8
Some college	54.5	–	–	45.5	54.6
College graduates	49.7	–	–	–	100.0
White (non-Hispanic)					
High school dropouts	50.4	56.8	27.5	10.9	4.9
High school graduates	42.1	–	71.5	22.6	5.9
Some college	53.4	–	–	39.5	60.5
College graduates	41.2	–	–	–	100.0
Black (non-Hispanic)					
High school dropouts	61.8	58.6	31.5	8.4	1.5
High school graduates	42.3	–	74.3	23.6	2.1
Some college	58.7	–	–	71.2	28.8
College graduates	26.5	–	–	–	100.0
Hispanic or Latino					
High school dropouts	49.9	67.8	23.3	7.2	1.8
High school graduates	39.9	–	73.7	23.8	2.5
College graduates	38.6	–	–	–	100.0

NOTE: Educational attainment is defined as of the time they first left school for 12 consecutive months.

tenure of the longest job ever held can be used as an indicator of the successful transition from school to work and into a stable employment relationship.

Table 3 shows the duration of the longest job held. Youths with a high school degree or less can learn about interests and gain job-specific skills while on the job, and those with some post high school education can gain job-specific skills in the classroom. If these schooling choices are equally suited for preparing youths for stable employment, then the duration of their longest job by age 35 should be similar. A period of churning or job shopping would be expected from those who do not yet know their skills and preferences. However, high school dropouts and graduates should eventually obtain job- or employer-specific skills; find a compatible career path; and settle into long-term jobs. From that point on they would, theoretically, have labor market behavior similar to youths who spent that time gaining those skills in a classroom. Again, the data disprove this. Even though high school dropouts left school the earliest, were in the labor market for the longest time—and therefore had the most time to start down a career path—they are the least likely to have had stable employment relationships lasting more than 2 years. At age 20, 14 percent of dropouts have never held a job and 58 percent had yet to hold a job for more than 1 year. At age 35, approximately 18 years after leaving school for the first time, 2 percent of dropouts have never held a job; 9 percent of dropouts have never held a job for more than a year; and an additional 15 percent have never held a job for 2 years or longer. Only 36 percent of high school dropouts had held a job for 5 years or more by age 35.

In contrast, those with at least some college or a bachelor's degree make the transition to stable employment—that is, a job lasting more than 2 years—the fastest. By age 30, nearly 86 percent of those with some college and 82 percent with a bachelor's degree or more have held a job for more than 2 years. And by age 35, about 95 percent of individuals in these two education categories have

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Table 3. Duration of employment relationship with a single employer, for longest held job from first time left school to age 35, by age and educational attainment

Age and characteristic	No job	Duration of longest employment relationship			
		Less than 1 year	More than 1 year but less than 2 years	More than 2 years but less than 5 years	5 years or more
Through age 20	10.3	57.4	27.8	4.4	[1]
Less than a high school diploma	14.2	58.1	21.8	6.0	[1]
High school graduates, no college	9.4	56.4	30.4	4.2	[1]
Less than a bachelor's degree	12.7	84.1	3.2	[1]	[1]
Bachelor's degree or more	[2]	[2]	[2]	[2]	[2]
Through age 25	2.2	19.6	28.8	41.3	8.3
Less than a high school diploma	4.2	28.2	24.5	36.7	6.4
High school graduates, no college	1.7	15.5	24.4	45.4	12.9
Less than a bachelor's degree	1.5	18.3	36.2	43.4	.6
Bachelor's degree or more	2.2	37.6	45.0	15.2	[1]
Through age 30	1.0	6.2	13.8	44.3	34.6
Less than a high school diploma	2.2	15.9	18.7	41.9	21.3
High school graduates, no college	1.0	5.7	14.2	42.2	36.9
Less than a bachelor's degree	.2	3.5	10.6	46.0	39.6
Bachelor's degree or more	1.7	3.6	12.5	53.7	28.4
Through age 35	.7	2.9	6.9	33.1	56.4
Less than a high school diploma	1.8	9.1	14.5	39.0	35.7
High school graduates, no college	.6	2.6	7.4	33.7	55.7
Less than a bachelor's degree	.1	1.5	3.1	28.8	66.4
Bachelor's degree or more	1.1	.4	4.1	31.8	62.5

[1] Estimates are not presented for these categories because most sample members had not been out of school long enough to hold a job of this length.

[2] Estimates are not presented because most sample members in this education category are not yet out of school.

done so. At age 35, 66 percent of those with some college and 63 percent of those with a college degree had held a job for 5 years or more.

Women in the labor market. During the last several decades, the "working mother" has become the norm rather than the exception.[10] While women no longer automatically withdraw from the labor force upon marrying or after having a child, it remains common for women with young children to interrupt their careers for both childbearing and childrearing. Women may also choose more intermittent or seasonal work that correlates with school or other childrearing activities. It is reasonable to expect that their work trajectory will be different from men. However, much of the difference between the school-to-work trajectory of men and women—at least in the measures presented here—appears to stem from the variability of work experience in female dropouts.

Table 4 breaks down the duration of longest held employment relationship by sex as well as age. At all ages, female high school dropouts are significantly more likely to have never held a job, and held jobs for less time. At age 20, 21 percent of female dropouts had never held a job, while approximately 13 percent had held a job for between 1 and 2 years. Only 9 percent of male dropouts, in comparison, had never been employed, and 28 percent had held their longest job between 1 and 2 years. While the difference in employment duration shrinks with age, it never equalizes. At their 35th birthday, 4 percent of female dropouts had never held a job and only a quarter had held a job more than 5 years. In comparison, nearly 44 percent of male dropouts had held a job more than 5 years by age 35, and almost all had held a job.

The work experiences of dropouts contrasts to the employment histories of those with more education. At age 25, women with some college or a college degree are more likely to have held a job since leaving school for the first time, and were equally and often more likely to have held a job of a specific duration as similarly educated men. However, differences emerged with age. These differences are probably due to the fact that some women leave and re-enter the workforce due to household responsibilities as they age. At age 35, only 1 percent of male or female college graduates had never held a job, but 68 percent of the men had held a job for more than 5 years, compared with 55 percent of the women. Only 3 percent of male college graduates had never held a job for 2 or more years, compared with 9 percent of women with a college degree.

Racial differences. Table 5 examines the duration of employment relationships for the longest held job by race and ethnicity. Compared with similarly educated whites or Hispanics, blacks consistently have less tenure. However, blacks in particular benefit from increases in education. At

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Table 4. Duration of employment relationship with a single employer, for longest held job from first time left school to age 35—by sex, age, and eduational attainment

Age and characteristic	No job	Duration of longest employment relationship			
		Less than 1 year	More than 1 year but less than 2 years	More than 2 years but less than 5 years	5 years or more
Men only through age 20	9.8	58.0	28.7	3.5	(1)
Less than a high school diploma	8.7	57.6	28.3	5.4	(1)
High school graduates, no college	10.1	57.7	29.1	3.1	(1)
Less than a bachelor's degree	(1)	(1)	(1)	(1)	(1)
Bachelor's degree or more	(2)	(2)	(2)	(2)	(2)
Women only through age 20	10.9	56.9	27.0	5.3	(1)
Less than a high school diploma	21.2	58.6	13.3	6.8	(1)
High school graduates, no college	8.7	55.1	31.0	5.2	(1)
Less than a bachelor's degree	13.3	85.4	1.3	(1)	(1)
Bachelor's degree or more	(2)	(2)	(2)	(2)	(2)
Men only through age 25	1.7	19.4	28.3	42.5	8.1
Less than a high school diploma	1.1	20.7	24.6	47.0	6.5
High school graduates, no college	1.7	15.1	24.3	46.5	12.5
Less than a bachelor's degree	2.0	21.9	35.9	39.7	.4
Bachelor's degree or more	2.4	38.6	41.5	17.4	(2)
Women only through age 25	2.3	19.9	29.4	40.0	8.4
Less than a high school diploma	8.3	38.1	24.4	23.0	6.2
High school graduates, no college	1.8	16.0	24.6	44.3	13.3
Less than a bachelor's degree	1.1	15.2	36.4	46.5	.7
Bachelor's degree or more	2.0	36.3	49.1	12.6	(2)
Men through age 30	.8	5.0	11.9	45.2	37.1
Less than a high school diploma	.1	11.1	15.7	47.1	25.9
High school graduates, no college	.9	4.0	12.6	42.8	39.7
Less than a bachelor's degree	.4	3.4	10.1	45.3	40.9
Bachelor's degree or more	1.6	5.1	7.7	53.9	31.7
Women through age 30	1.3	7.5	15.7	43.3	32.1
Less than a high school diploma	4.9	22.2	22.6	35.1	15.2
High school graduates, no college	1.0	7.5	15.9	41.6	34.0
Less than a bachelor's degree	.1	3.5	11.0	46.7	38.0
Bachelor's degree or more	1.9	1.5	18.9	53.6	24.1
Men through age 35	.5	2.3	5.0	31.2	60.9
Less than a high school diploma	.1	7.3	10.0	39.0	43.5
High school graduates, no college	.6	1.9	5.8	31.9	59.8
Less than a bachelor's degree	.1	1.7	2.0	25.0	71.1
Bachelor's degree or more	1.4	.0	1.1	29.4	68.1
Women through age 35	.8	3.5	8.9	35.0	51.7
Less than a high school diploma	4.0	11.5	20.4	38.9	25.3
High school graduates, no college	.6	3.3	9.1	35.6	51.4
Less than a bachelor's degree	.1	1.4	4.0	32.0	62.5
Bachelor's degree or more	.7	1.0	8.1	35.1	55.1

[1] Estimates are not presented for these categories because most sample members had not been out of school long enough to hold a job of this length.

[2] Estimates are not presented because most sample members in this education category are not yet out of school.

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Table 5. Duration of employment relationship with a single employer, for longest held job from first time left school to age 35—by age, race, Hispanic or Latino ethnicity, and educational attainment

Age and characteristic	No job	Duration of longest employment relationship			
		Less than 1 year	More than 1 year but less than 2 years	More than 2 years but less than 5 years	5 years or more
Through age 20					
White (non-Hispanic)	6.7	56.9	31.5	4.9	(1)
Less than a high school diploma	10.5	58.3	25.2	6.1	(1)
High school graduates, no college	6.0	55.5	33.6	4.9	(1)
Less than a bachelor's degree	(2)	(2)	(2)	(2)	(2)
Bachelor's degree or more	(2)	(2)	(2)	(2)	(2)
Black (non-Hispanic)	25.1	58.4	14.3	2.2	(1)
Less than a high school diploma	25.7	56.7	13.2	4.4	(1)
High school graduates, no college	24.6	58.6	15.1	1.7	(1)
Less than a bachelor's degree	(2)	(2)	(2)	(2)	(2)
Bachelor's degree or more	(2)	(2)	(2)	(2)	(2)
Hispanic or Latino	12.7	60.9	22.3	4.2	(1)
Less than a high school diploma	16.0	56.0	19.5	8.5	(1)
High school graduates, no college	10.9	62.3	24.4	2.4	(1)
Less than a bachelor's degree	(2)	(2)	(2)	(2)	(2)
Bachelor's degree or more	(3)	(3)	(3)	(3)	(3)
Through age 25					
White (non-Hispanic)	1.3	17.6	29.1	43.2	8.8
Less than a high school diploma	2.3	23.3	26.5	41.7	6.2
High school graduates, no college	1.0	13.4	23.5	47.6	14.4
Less than a bachelor's degree	2.3	16.5	37.5	44.6	.4
Bachelor's degree or more	2.4	37.9	43.4	16.2	(2)
Black (non-Hispanic)	5.7	27.5	30.2	31.0	5.7
Less than a high school diploma	11.0	37.8	23.3	21.5	6.5
High school graduates, no college	4.6	23.6	29.9	34.9	7.0
Less than a bachelor's degree	5.2	26.9	33.8	32.3	1.8
Bachelor's degree or more	(3)	(3)	(3)	(3)	(3)
Hispanic or Latino	2.2	22.3	24.7	43.6	7.4
Less than a high school diploma	3.2	32.5	18.0	38.7	7.7
High school graduates, no college	1.6	19.1	33.0	45.5	9.8
Less than a bachelor's degree	2.2	18.2	28.9	50.8	.0
Bachelor's degree or more	(3)	(3)	(3)	(3)	(3)
Through age 30					
White (non-Hispanic)	.5	4.5	13.0	45.2	36.8
Less than a high school diploma	.8	11.5	17.6	47.8	22.2
High school graduates, no college	.4	4.3	13.4	42.4	39.5
Less than a bachelor's degree	.9	2.6	10.0	46.4	41.0
Bachelor's degree or more	1.7	3.5	12.9	52.3	29.7
Black (non-Hispanic)	3.1	12.7	18.3	40.3	25.6
Less than a high school diploma	6.5	25.3	23.3	27.0	18.0
High school graduates, no college	2.8	11.1	19.3	41.5	25.3
Less than a bachelor's degree	1.4	9.3	12.8	44.6	31.9
Bachelor's degree or more	1.7	2.2	10.2	55.0	30.9
Hispanic or Latino	1.8	9.1	13.5	44.2	31.4
Less than a high school diploma	2.5	18.7	15.8	39.6	23.4
High school graduates, no college	1.3	7.6	12.8	43.7	34.5
Less than a bachelor's degree	1.2	.4	12.0	47.1	39.3
Bachelor's degree or more	(3)	(3)	(3)	(3)	(3)
Through age 35					
White (non-Hispanic)	.4	1.9	5.7	32.6	59.4
Less than a high school diploma	.6	6.0	13.9	29.7	29.7
High school graduates, no college	.5	2.0	5.8	31.6	60.0
Less than a bachelor's degree	.5	1.4	2.6	31.3	64.2
Bachelor's degree or more	1.2	.1	3.8	31.8	62.4

See notes at end of table.

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Table 5. Continued—Duration of employment relationship with a single employer, for longest held job from first time left school to age 35—by age, race, Hispanic or Latino ethnicity, and educational attainment

Age and characteristic	No job	Duration of longest employment relationship			
		Less than 1 year	More than 1 year but less than 2 years	More than 2 years but less than 5 years	5 years or more
Black (non-Hispanic)	1.7	7.1	13.8	34.0	43.4
Less than a high school diploma	4.6	18.0	18.9	34.7	23.9
High school graduates, no college	1.5	5.5	15.2	35.0	42.7
Less than a bachelor's degree	.0	4.2	7.3	29.4	59.1
Bachelor's degree or more	.0	.0	4.5	37.6	58.0
Hispanic or Latino	1.5	4.4	6.7	34.5	52.9
Less than a high school diploma	2.5	9.6	12.0	39.5	36.4
High school graduates, no college	1.1	4.1	6.1	33.0	55.7
Less than a bachelor's degree	2.0	.4	3.0	31.8	63.2
Bachelor's degree or more	[3]	[3]	[3]	[3]	[3]

[1] Estimates are not presented for these categories because most sample members had not been out of school long enough to hold a job of this length.

[2] Estimates are not presented because most sample members in this education category are not yet out of school.

[3] Estimates are not presented because cell size is less than 50.

their 20th birthday, 27 percent of black dropouts and 24 percent of blacks with a high school degree had never held a job. By their 25th birthday, 11 percent of black dropouts had yet to hold a job, compared with 6 percent of blacks with a high school degree. By their 35th birthday, 4 percent of black dropouts had still never held a job, and less than a quarter had ever held a job for 5 years or more. On the other hand, less than 2 percent of black high school graduates had never held a job, and 43 percent had held a job for 5 years or longer. Moreover, at age 35 nearly all blacks with some college or those with college degrees had held jobs, and approximately 60 percent had held jobs for 5 years or more.

A second way to use job duration to study the school-to-work transition is to look at the tenure of all jobs ever held, not just the longest job. Table 6 presents a measure of job mobility or churning by averaging the tenure across all jobs held since first leaving school. At their 25th birthday, 55 percent of the sample changed jobs, on average, at least once a year, while approximately 7 percent had an average tenure of 3 years or more. However, even at age 35, nearly a quarter of the sample had average tenure of less than a year, meaning a nontrivial portion of the sample continued to have a relatively large number of short-duration jobs as they approached middle age. What is striking is that at age 35, half of all dropouts have an average tenure across all jobs that is 1 year or less, while only 10 percent have average tenure of 3 years or more. While table 3 shows that the majority of dropouts at some point have held a job that lasted more than 2 years, table 6 indicates that for most dropouts, jobs of long duration are accompanied by many more jobs of short duration.

Again, the differences in the employment histories of men and women became apparent with age. At age 25, the average tenure across all jobs for men and women is roughly the same: 55 percent of men and 56 percent of women had average tenure less than 1 year, while 6 percent of men and 7 percent of women had average tenure of more than 3 years. By age 35, approximately 22 percent of men had average tenure of less than 1 year, compared with 27 percent of women—and 28 percent of men had average tenure of more than 3 years, compared with 22 percent of women. More importantly, this difference holds true for all education categories. Even female college graduates consistently have less average tenure than similarly educated men. While 3 percent of college-educated men have average tenure of less than 1 year, 13 percent of college-educated women have the same. Moreover, 47 percent of these men have average tenure of more than 3 years, compared with only 30 percent of college-educated women.

Years or jobs until 'stable employment.' As already demonstrated, individuals have a great deal of job mobility in their first years out of school. Brief and intermittent periods of employment are common among many young workers, especially those with low levels of education. The

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Table 6. Percentage of individuals who have average tenure across all jobs less than a specific duration

Characteristic	Percent of people with average tenure lenght of:								
	To 25th birthday			To 30th birthday			To 35th birthday		
	1 year or less	More than 1 year but less than 3 years	3 years or more	1 year or less	More than 1 year but less than 3 years	3 years or more	1 year or more	More than 1 year but less than 3 years	3 years or more
Total	55.3	38.0	6.7	35.4	48.5	16.1	24.2	50.3	25.4
Less than a high school diploma	70.1	25.9	4.0	61.5	31.7	6.8	50.4	40.0	9.7
High school graduates, no college	52.0	39.2	8.8	38.1	46.9	15.1	26.6	50.5	22.9
Less than a bachelor's degree	52.2	42.6	5.2	21.7	57.3	21.0	12.9	54.2	32.9
Bachelor's degree or more	64.5	35.0	.5	21.4	56.6	22.0	7.2	53.2	39.6
Men	55.1	38.6	6.3	33.7	48.9	17.4	22.0	49.7	28.3
Less than a high school diploma	65.2	30.4	4.4	56.9	35.9	7.2	43.5	45.9	10.5
High school graduates, no college	52.1	40.3	7.7	36.7	48.0	15.3	25.0	50.5	24.6
Less than a bachelor's degree	52.2	41.6	6.2	20.0	55.0	25.0	11.2	49.9	38.9
Bachelor's degree or more	64.5	34.6	1.0	16.5	57.4	26.0	2.8	50.2	47.0
Women	55.6	37.3	7.1	37.2	48.0	14.8	26.5	51.0	22.4
Less than a high school diploma	77.1	19.5	3.4	67.8	26.0	6.2	59.8	31.8	8.5
High school graduates, no college	51.9	38.2	9.9	39.5	45.7	14.8	28.2	50.5	21.3
Less than a bachelor's degree	52.1	43.4	4.5	23.1	59.2	17.6	14.3	57.9	27.9
Bachelor's degree or more	64.5	35.5	.0	27.9	55.5	16.6	13.0	57.1	29.9
White (non-Hispanic)	53.2	40.1	6.7	32.6	49.7	17.7	21.5	50.8	27.8
Less than a high school diploma	68.4	28.6	3.0	58.3	34.8	6.9	46.6	42.7	10.7
High school graduates, no college	49.1	41.6	9.3	35.8	47.4	16.8	24.0	50.9	25.2
Less than a bachelor's degree	51.8	43.7	4.5	20.0	58.4	21.6	12.2	53.6	34.3
Bachelor's degree or more	64.2	35.3	.6	21.0	56.0	22.9	7.4	51.9	40.7
Black (non-Hispanic)	65.4	28.0	6.5	47.4	41.9	10.7	36.3	47.3	16.4
Less than a high school diploma	74.2	19.3	6.5	68.6	23.7	7.7	59.3	32.0	8.7
High school graduates, no college	64.5	29.0	6.5	49.2	42.2	8.7	38.5	47.3	14.3
Less than a bachelor's degree	59.7	32.5	7.8	30.7	52.6	16.7	17.6	57.7	24.7
Bachelor's degree or more	[1]	[1]	[1]	22.6	57.2	20.2	9.1	57.7	33.2
Hispanic or Latino	57.4	34.6	8.0	40.9	49.0	11.2	27.8	52.5	19.7
Less than a high school diploma	70.1	24.4	5.5	64.0	30.9	5.1	51.9	41.5	6.6
High school graduates, no college	56.4	35.3	8.3	38.7	51.5	9.7	26.5	54.8	18.7
Less than a bachelor's degree	39.9	48.2	11.9	20.0	58.0	22.0	9.1	53.4	37.5
Bachelor's degree or more	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]

[1] Estimates are not presented because cell size is less than 50.

question remains: how long does it take for young workers to find stable employment or a longer-term employment relationship?

Table 7 presents the median number of years from first leaving school until a worker holds a job for either 1, 3, or 5 years. Comparing the four school-leaving groups, it is apparent that the transition from school to work was quicker as education increased. For example, the median high school dropout took more than 3 years to start a job that would last a full year, and nearly 11years before they started a job that would last 3 years. Because less than 50 percent of the high school dropout sample had yet to hold a job for 5 years at age 35, we cannot determine the median number of years. In comparison, the median high school graduate took 6 years to start a job that would last 3 years and 10 years to start one lasting 5 years. Those with a college degree settled into stable employment much more quickly; within a year and a half they started a job that would last 3 years—and less than 4 years to start a job that would last 5 years.

In other words, the median high school dropout started a job that would last 3 years at age 29; the median high school graduate, at age 24; and the median college graduate, age 26. In addition, the median high school dropout had yet to hold a job lasting 5 years by age 35, while a high school graduate started one at age 28. A college graduate started a job lasting 5 years at age 27. It appears that high school graduates are able to use the general skills gained in high school to obtain additional on-the-job skills. While this article does not analyze the wage potential of jobs and cannot determine if the career paths are similar, the median high school graduate started jobs of a significant duration—5 years—at approximately the same age as the median college graduate.

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Table 7. Median number of years between leaving school for the first time and starting a job that lasts a set amount of time, to age 35, 1978–2002

Characteristic	Median number of years between leaving school for the first time and starting a job that will last at least:		
	1 year	3 years	5 years or more
Total	.9	4.6	9.2
Less than a high school diploma	3.3	10.8	(1)
High school graduates, no college	1.3	5.8	10.1
Less than a bachelor's degree	.5	2.7	5.0
Bachelor's degree or more	.2	1.3	3.5
Men	.8	4.1	8.0
Less than a high school diploma	2.3	7.6	(1)
High school graduates, no college	1.2	5.4	9.1
Less than a bachelor's degree	.4	2.5	4.1
Bachelor's degree or more	.1	1.0	2.3
Women	1.0	5.3	10.9
Less than a high school diploma	5.9	14.9	(1)
High school graduates, no college	1.3	6.4	11.7
Less than a bachelor's degree	.5	3.0	5.9
Bachelor's degree or more	.2	2.5	5.4
White (non-Hispanic)	.8	4.1	8.1
Less than a high school diploma	2.9	8.7	(1)
High school graduates, no college	1.0	5.3	9.2
Less than a bachelor's degree	.4	2.6	4.7
Bachelor's degree or more	.1	1.3	3.3
Black (non-Hispanic)	2.3	8.0	(1)
Less than a high school diploma	6.2	(1)	(1)
High school graduates, no college	3.1	9.1	(1)
Less than a bachelor's degree	.9	3.8	6.5
Bachelor's degree or more	.3	1.9	3.2
Hispanic or Latino	1.5	5.7	10.5
Less than a high school diploma	4.0	10.5	(1)
High school graduates, no college	1.8	6.2	10.3
Less than a bachelor's degree	.2	.2	4.9
Bachelor's degree or more	(2)	(2)	(2)

[1] Estimates are not presented because less than 50 percent of the sample had held a job of this length.

[2] Estimates are not presented because cell size is less than 50.

Female dropouts took longer to find stable employment than male dropouts. It took the median female dropout approximately twice as long to hold jobs lasting 1 or 3 years than male dropouts; 5.9 years versus 2.3 years before starting a job that would last 1 year; and 14.9 years versus 7.6 years before starting a job that would last 3 years. While women with a college education started a job that lasted at least 1 year at the same time as similarly educated men, it took them significantly longer to start a job that lasted 5 years (5.4 years versus 2.3 years).

Compared with whites and Hispanics or Latinos, blacks fared poorly in the labor market. At their 35th birthday, more than 50 percent of both black high school dropouts and graduates had never held a job for 5 years or more, and more than 50 percent of black dropouts had never held a job lasting at least 3 years. It took white dropouts nearly 9 years to start a job that would last 3 years, while Hispanic or Latino dropouts took more than 10 years. In comparison, white college graduates started a job that would last 3 years approximately 1 year after leaving school; blacks with a college degree took approximately 1 extra year—but started a job lasting at least 3 years the same time as whites did.

Similar patterns existed for the median number of jobs held from time first left school until workers settled into stable employment. (See table 8.) In all cases, measuring number of jobs held from first leaving school until starting a job that lasted 1, 3, or 5 years, college graduates made the transition to stable employment with the least amount of churning or job shopping. A high school dropout, on the other hand, seems to do a fair amount of churning. The median high school dropout held two jobs before starting a job that lasted 1 year and held five jobs before starting a job that lasted 3 years. A high school graduate, in comparison, held one job before holding a job for 1 year and five jobs before holding a job for 5 years. Finally, those with a college degree or more found a long-lasting job with relatively little job shopping or churning. College graduates held only two jobs before starting a job that lasted 5 years or more.

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Table 8. Median number of jobs held between leaving school for the first time and starting a job that will last a set amount of time, to age 35, 1978–2002

Characteristic	Median number of jobs held between leaving school for the first time and starting a job that will last at least:		
	1 year	3 years	5 years or more
Total	1	3	5
Less than a high school diploma	2	5	[1]
High school graduates, no college	1	4	5
Less than a bachelor's degree	1	2	3
Bachelor's degree or more	0	1	2
Men	1	3	4
Less than a high school diploma	2	5	[1]
High school graduates, no college	1	4	5
Less than a bachelor's degree	1	2	3
Bachelor's degree or more	0	1	2
Women	1	4	5
Less than a high school diploma	3	6	[1]
High school graduates, no college	1	4	5
Less than a bachelor's degree	1	3	4
Bachelor's degree or more	0	2	3
White (non-Hispanic)	1	3	4
Less than a high school diploma	3	6	[1]
High school graduates, no college	1	4	5
Less than a bachelor's degree	1	2	3
Bachelor's degree or more	0	1	2
Black (non-Hispanic)	2	4	[1]
Less than a high school diploma	2	[1]	[1]
High school graduates, no college	2	4	[1]
Less than a bachelor's degree	1	3	3
Bachelor's degree or more	1	2	2
Hispanic	1	4	5
Less than a high school diploma	3	5	[1]
High school graduates, no college	2	4	5
Less than a bachelor's degree	0	2	3
Bachelor's degree or more	[2]	[2]	[2]

[1] Estimates are not presented because less than 50 percent of the sample had held a job of this length.

[2] Estimates are not presented because cell size is less than 50.

IT TAKES APPROXIMATELY 5 YEARS after leaving school for the first time before the average worker starts a job that will last 3 years. However, college graduates found stable, long-term employment almost immediately, while high school dropouts continued to have many short-term jobs 15 years after leaving school. By age 35, more than 62 percent of college graduates had held a job for more than 5 years; at the median, this group had started their career job less than 4 years after leaving school. In contrast, most high school dropouts took many years to overcome their lack of skills: at age 35, only 36 percent of them had held a job for more than 5 years, and more than 50 percent had an average tenure of 1 year or less. The data also show significant differences by sex and race in the work experiences of individuals between the end of schooling and age 35. While many of the racial differences become insignificant with increases in education, the disparity between men and women often remain. Across both genders and all races, increases in education smooth the transition from school to work. □

Notes

[1] See, for example, Report by the Commission on the skills of the American Workforce, 1990.

[2] See, for example, Robert H. Topel and Michael P. Ward, "Job Mobility and the Careers of Young Men," *The Quarterly Journal of Economics*, May 1992, pp. 439–479; Boyan Jovanovic, "Job Matching and the Theory of Turnover," *Journal of Political Economy*, May 1979, pp. 972–990; William R. Johnson, "The Theory of Job Shopping," *The Quarterly Journal of Economics*, May 1978, pp. 261–278.

[3] Jacob Alex Klerman and Lynn A. Karoly, "Young Men and the Transition to Stable Employment," *Monthly Labor Review*, August 1994,

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pp. 31–48; Jonathan R. Veum and Andrea B. Weiss, "Education and the Work Histories of Young Adults," *Monthly Labor Review*, April 1994, pp. 11–20.

[4] Rosella Gareecki and David B. Neumark, "Order from Chaos? The Effects of Early Labor Market Experiences on Adult Labor Market Outcomes," *Industrial and Labor Relations Review*, January 1998, pp. 299–322; and Audry Light, Kathleen McGarry, "Job Change Patterns and the Wages of Young Men," *The Review of Economics and Statistics*, May 1998, pp. 276–286.

[5] If we do not restrict the sample to these birth cohorts, only individuals who had not exited school before 1978 would be included in the 1957 to 1960 sample. As a result, the sample including all cohorts would have a much higher percentage of college graduates and a lower percentage of high school dropouts.

[6] An individual must be out of school for 12 consecutive months before their education status is determined. However, once that 12-month period has been reached, jobs and duration are measured retroactively from the beginning of the 12 months, that is, from the very first week they left school.

[7] To account for individuals who initially overstate their educational attainment, the highest degrees are compared to questions, asked in 1998 and afterwards, of highest degree ever earned and the date these degrees were obtained. Approximately 100 individuals were reassigned to lower categories based on their answers to this question.

[8] Approximately 3 percent of the sample was still attending school at their 35th birthday. However, much of this schooling appears to be a use of leisure time as compared to the pursuit of a degree. These individuals are characterized by intermittent school attendance, taking only a few credits, and never completing any additional degree.

[9] All comparisons are statistically significant.

[10] According to the Current Population Survey (CPS) at the Bureau of Labor Statistics, 64 percent of women with children under age 6 were in the civilian labor force in 2003, as were 72 percent of women with children under age 18.

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Job mobility and wage growth: evidence from the NLSY79

Data from the 1979 National Longitudinal Survey of Youth provide an unusually complete history of employment experiences; analyses of why workers separate from their employers, frequencies of these separations, and job mobility's impact on earnings reveal that today's labor markets are far more dynamic than previously realized

Audrey Light

Longitudinal data have contributed immeasurably to our understanding of individuals' labor market activities, especially when it comes to analyzing job mobility and wage growth. Without the ability to "see" workers move from employer to employer, we would know very little about why workers separate from their employers, how often separations occur, and how job mobility affects earnings.[1] Analyses of these issues have revealed labor markets to be far more dynamic than was previously realized.

One phenomenon that has received considerable scrutiny is the persistent, voluntary job mobility of young workers. In the mid 1970s, economists began using search-theoretic models to explain why information costs compel workers to systematically "shop" for a better job.[2] The idea is that workers cannot immediately locate firms where their skills are valued the most highly, so upon accepting a job offer they continue to search for an even better outside opportunity. Workers might also learn over time that their current job is not as productive as they initially predicted. New information regarding outside offers or the current job is predicted to lead to a worker-initiated job separation. Empirical researchers have used longitudinal data to determine which theoretical models are supported by the data and to identify the contribution of "job shopping" to life-cycle wage growth.

A related issue of long-standing concern is the effect of job *immobility* on wage growth. Human capital models predict that wages rise with job seniority when workers "lock in" and invest in firm-specific skills. Because these skills cannot be transferred to a new job if a separation occurs, workers and firms agree to share the costs and benefits of the investment—and the worker's return on the shared investment takes the form of within-job wage growth above and beyond any gains due to the acquisition of general (transferable) skills. A variety of agency models provide alternative explanations for upward sloping wage-tenure profiles. In these models, employers defer wages as a means of discouraging workers from quitting or shirking; stated differently, they require workers to "post a bond" as an incentive to sustain the employment relationship.[3] Longitudinal data have proved to be essential for assessing the merits of these theoretical models and identifying the effect of tenure on wages.

Knowledge of the relative contributions of job mobility and immobility to life-cycle wage growth is fundamental to a number of important policy issues. For example, the well-being of low-skill labor market entrants is highly dependent on whether they are consigned to a lifetime of low-wage jobs, or whether they can advance in the wage distribution via life-cycle wage growth. As a result, policymakers might ask what can be done to enhance workers' wage growth. If job-specific skill investments are an important source of wage growth, then policies that promote on-the-job training might be useful to the low-wage population. If "job shopping" provides the lion's share of wage growth, then programs that provide job-search assistance might be warranted.

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Of course, not all job separations are worker-initiated quits, so it is equally important to focus attention on issues related to involuntary job displacements. Researchers have relied on longitudinal data to determine which workers are particularly vulnerable to layoffs; which industries are the most volatile; and how wages are affected in both the short run and the long run when workers are displaced from their jobs.

Advantages of NLSY79 data

Analysts have been studying job mobility and wage growth for decades, but they gained an important new data source when the 1979 National Longitudinal Survey of Youth (NLSY79) was launched. The NLSY79 plays a central role in this type of research because it provides an unusually complete history of each respondent's employment experiences, including a record of virtually every job held. In this section, the key attributes of these data are highlighted; additional details can be found in the *NLSY79 User's Guide*.[4]

During each interview, NLSY79 respondents report information on every job currently in progress or held since the last interview. When the first interview was conducted in 1979, respondents who were older than 18 retrospectively identified each job held since age 18. (The 12,686 respondents ranged in age from 14 to 22 at that time; 43 percent were older than 18.) For the younger respondents, the job history begins between ages 15 and 17. As a result of this sampling and data collection strategy, analysts can initialize respondents' careers at a uniform point in the life cycle (the 18th birthday, the first exit from school, and so forth) and obtain a remarkably complete record of jobs held from that point forward for a large sample of individuals.

While the advantage of sampling young people is that complete histories (without left-censoring) are obtained, NLSY79-based research has necessarily been limited to early-career activities. The NLSY79 has taken a back seat to other longitudinal surveys—most notably, the Panel Study of Income Dynamics (PSID)—for the study of job mobility and wage growth among prime-age workers. Now that the youngest respondents (those born in 1964) have entered their 40s, however, the NLSY79 will be increasingly useful for the analysis of job mobility in the mid-career.

The NLSY79 provides much more than a simple tally of cumulative jobs held over the career. At each interview, respondents report the start date and stop date of any job that began and/or "permanently" ended since the last interview. Because the recall period is relatively short and respondents report dates rather than time elapsed since the job began or ended (which would invite them to "round" their responses), analysts obtain high-quality data. Measurement error is inevitable in all survey data, but the NLSY79 is acknowledged to identify job durations and job tenure more cleanly than other surveys.[5]

In addition to start and stop dates, such job characteristics as industry, occupation, class of employer, rate of pay, and weekly hours are identified for most jobs. These characteristics are usually known for as many as five unique jobs held between each interview, although some characteristics are identified only when the job lasts at least 9 weeks and the respondent works at least 10 hours per week. When jobs last long enough to span interviews, multiple reports of these characteristics are recorded. For example, if a job begins 3 months before the 1980 interview and ends 3 months after the 1983 interview, the respondent reports his current wage, occupation, hours worked, and so forth during the 1980, 1981, 1982 and 1983 interviews; the stop date is then identified in 1984.

When respondents report that a job has ended, they are asked to provide their reason for leaving and whether a new job was lined up before they left. Analysts must contend with missing data, ambiguous responses (especially when reasons are recorded as "other"), and the possibility of misclassification, but they can make considerable progress in distinguishing between involuntary separations (layoffs, firings) and voluntary "quits." In combination with job start and stop dates, these data also allow analysts to classify job exits as "job to job" or "job to nonemployment."

The survey also identifies temporary nonwork spells within jobs—specifically, the start and stop date of each "within-job gap" lasting at least 1 week, along with the reason for not working. This information allows analysts to identify nonwork spells due to strikes, temporary layoffs, health-related leaves of absence, and so forth that do not lead to the permanent termination of the employment relationship. Moreover, the detailed information on work and nonwork spells collected at each interview is used to create three weekly "work history" arrays. One array identifies each respondent's labor market status (working, out of the labor force, active military service, and so forth) during each week from January 1, 1978, onward. Another array identifies the usual hours worked on all jobs held during each week, and the third array identifies the number of jobs held during each week. These variables allow analysts to construct extraordinarily detailed measures of cumulative labor market experience and job tenure, and to identify transitions between employment, unemployment, and nonemployment spells, as well as transitions into and out of jobs.

As discussed in other articles in this issue, the NLSY79 also contains detailed data on schooling attainment and enrollment, job training, geographic location, household composition, family formation, and much more. These data provide a rich set of controls for models of job durations, job exit probabilities, and wages, and they allow researchers to study the interdependence of job mobility and other events such as school completion, migration, and marriage.

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Overview of NLSY79-based research

Given the range of substantive issues that compel analysts to study job mobility and the advantages of using NLSY79 data for this purpose, it should come as no surprise that the existing NLSY79-based literature is very large. Rather than attempt a comprehensive survey of the literature, this article describes a dozen studies that, as a group, illustrate the ways in which NLSY79 data have been used to explore mobility- and wage-related issues.

In the first set of studies, analysts identify the determinants of job mobility by estimating models of job durations or separation probabilities. Studies of this nature include those by Henry S. Farber, Derek Neal, Anne Beeson Royalty, and Madeline Zavodny.[6] Farber focuses on the timing of job separations and the extent to which observationally equivalent workers differ in their separation probabilities. He finds, among other things, that the hazard rate rises with job tenure for about 3 months and declines thereafter—a pattern that is consistent with the view that agents gather information before deciding that a separation is optimal. Subsequent research has distinguished between different types of job separations. For example, Neal considers both "simple" job changes, where workers perform the same type of work on both jobs, and "complex" job changes that entail a change of career as well as a change of employer. His analysis lends support to the idea that workers first search for a suitable career and then concentrate on finding the best employer match within that career. Royalty reconsiders the conventional wisdom that women are more likely than men to leave their employers for nonemployment, but perhaps less likely to quit for a better job. By distinguishing between job-to-job and job-to-nonemployment transitions and estimating separation models for workers in distinct gender-schooling groups, she learns that this pattern only applies to less educated workers; men and women with more than 12 years of schooling prove to have similar separation patterns. Zavodny asks whether technology-intensive industries (measured by computer usage, the fraction of workers in science and engineering, and so forth) have more or less job stability than other industries. She finds that overall separation rates are lower in "high tech" industries than in "low tech" industries, but that the difference is entirely due to lower quit rates in the technology-intensive industries; among less educated workers, involuntary separations may be more likely in technology-intensive industries than in other sectors.

Wages are the outcome of interest in the next set of studies discussed. To maintain the focus on mobility-related research, studies that model wages as a function of past job mobility and/or current tenure, among other factors, are considered.[7] Pamela J. Loprest, Kristen Keith, and Abagail McWilliams conduct gender comparisons of the contemporaneous wage change associated with a change of employer. Loprest finds that men receive more wage growth than women over a 4-year period, and that this premium is largely due to a higher return to mobility. Keith and McWilliams find that between-job wage gains are greater for workers (both men and women) who engage in formal job search prior to their separation, but that men are more likely than women to conduct such activities. Audrey Light and Kathleen McGarry ask how "overall" mobility (defined as the number of job separations in the first 8 years of the career) affects both the level and slope of men's wage paths. They find that immobile workers have the highest and steepest wage paths, followed by moderately mobile men whose mobility appears to conform to "job shopping," while highly mobile workers fare the worse in terms of both wage levels and wage growth.

Turning to studies that focus on the wage-tenure relationship, Bernt Bratsberg and Dek Terrell assess race differences in the returns to tenure, using various instrumental variables to contend with the fact that tenure is endogenous to the wage-generating process. They find that estimated tenure slopes are sensitive to the estimation method, but are roughly similar for black and nonblack workers (all of whom are terminal high school graduates in their sample). However, blacks receive significantly lower returns than nonblacks to general labor market experience. The human capital interpretation of these findings is that blacks invest less intensively than whites in skills that are transferable across jobs, but receive similar returns to investments in firm-specific skills. The role of firm-specific skill investments is given a closer look by Daniel Parent, who estimates wage models that include measures of both job tenure (time with the current employer) and industry tenure (time with the current industry). He finds that tenure effects virtually disappear when industry tenure is included as a control, which suggests that workers are investing in skills that are specific to their industry rather than their current job. Randall J. Olsen's study is distinguished by the fact that he jointly estimates models of wages and job mobility. His unified, structural approach to assessing the relationship between job mobility on wages suggests that cumulative work experience (general skill acquisition) and job mobility are more important sources of early-career wage growth than is tenure (firm-specific skill acquisition).

Empirical patterns

In this section, some of the basic relationships between job mobility and wage growth seen in the NLSY79 are highlighted—specifically, the distribution of cumulative jobs held by NLSY79 respondents in the first 8 years of their careers, and the unconditional relationships between job mobility and both cumulative and year-to-year wage growth.

The first step of the analysis is to define a career start date—that is, the date when individuals make a transition from school

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to work. Many NLSY79 respondents are observed combining school and work or cycling between the two activities, so a judgment call is needed to determine when their work lives begin. Therefore, careers are initialized at the start of the first school exit that lasts at least 12 months.[8] A total of 5,321 respondents, not enrolled in school at the time of their 1979 interview, are eliminated from the sample. Reported school enrollment data are used to determine career start dates for the 7,365 remaining respondents. This date falls between April 1979 and June 1990 for all respondents, and precedes May 1983 for 75 percent of the sample.

In order to track job mobility and wages over a reasonably long period of time (but not so long that right-censoring affects a significant number of careers), respondents are required to be observed for 8 years beyond the start of the career. This selection rule eliminates 51 individuals who drop out of the survey before their 8-year window ends. To avoid having to contend with missing data, respondents who miss one or more interviews during the 8-year observation period are also eliminated. This leaves a final sample of 5,654 respondents.

Table 1 summarizes the number of jobs held by these 5,654 respondents between the beginning and end of the 8-year observation period. The cumulative job count includes jobs that are in progress at the start of the career, as well as any job whose start date precedes the end of the 8-year window. Table 1 shows that men are slightly more mobile than women during the first 8 years of their career: the mean job count is 4.8 for men and only 4.3 for women, and a higher proportion of men than women (25 percent versus 20 percent) hold seven or more jobs. At the other extreme, 11-12 percent of women and men hold no jobs or a single job during the period of observation. In contrast to these relatively small gender differences, table 1 reveals that job mobility varies dramatically across schooling levels. To assess the relationship between mobility and schooling, the men are classified into a "high school" subsample (those whose highest grade completed at the career start date is no greater than 12) and a "college" subsample. The high school sample averages 5.2 jobs during the 8-year window, which is almost one job more than the mean for the college sample. Almost one-third of high school educated men holds seven or more jobs, versus only 18 percent of the college sample.

In table 2, the cumulative job count over the 8-year observation period is linked to cumulative wage growth. For this exercise, attention is confined to 4,189 respondents for whom a "valid" wage (an average, hourly wage between $1 and $1,000) is reported to have been earned within 9 months of the career start date and the career end date. Each average hourly wage is divided by the gross domestic product (GDP) implicit price deflator, and the 8-year difference in log-wages is used as the measure of cumulative wage growth.

Table 2 reveals that, on average, overall wage growth declines with mobility for both men and women. Among women who hold a single job in 8 years, the average change in log-

Table 1. Distribution of number of jobs held during first 8 years of career

Number of jobs	Women		Men					
	All schooling levels		All schooling levels		Schooling less than or equal to grade 12		Schooling greater than grade 12	
	Number	Percent of sample	Number	Percent of sample	Number	Percent of sample	Number	Percent of sample
0	87	3.0	58	2.1	42	2.5	16	1.4
1	265	9.2	241	8.7	106	6.4	135	12.1
2	423	14.7	353	12.7	180	10.9	173	15.5
3	446	15.5	374	13.5	193	11.7	181	16.2
4	442	15.4	408	14.7	240	14.5	168	15.0
5	370	12.9	325	11.7	198	12.0	127	11.4
6	283	9.8	313	11.3	194	11.7	119	10.6
7	218	7.6	240	8.7	164	9.9	76	6.8
8	132	4.6	173	6.2	132	8.0	41	3.7
9	96	3.3	94	3.4	72	4.4	22	2.0
10 or more	117	4.1	196	7.1	136	8.2	60	5.4
All	2,879	100.0	2,775	100.0	1,657	100.0	1,118	100.0
Mean	4.3	–	4.8	–	5.2	–	4.3	–
Standard deviation	2.6	–	2.9	–	2.9	–	2.7	–
Maximum	17	–	19	–	19	–	15	–

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Table 2. Wage growth during first 8 years of career by number of jobs held

Number of jobs	Women			Men								
	All schooling levels			All schooling levels			Schooling less than or equal to grade 12			Schooling greater than grade 12		
	Number of observations	Mean	Standard deviations	Number of observations	Mean	Standard deviation	Number of observations	Mean	Standard deviation	Number of observation	Mean	Standard deviation
1	123	.59	.56	137	.66	.71	42	.40	.44	95	.77	.77
2–3	557	.57	.68	562	.68	.69	257	.58	.64	305	.77	.71
4–6	836	.46	.63	858	.51	.63	489	.43	.60	369	.63	.65
7 or more	491	.40	.68	625	.47	.77	435	.45	.77	190	.51	.76
All	2,007	.49	.66	2,182	.55	.70	1,223	.46	.67	959	.66	.71

NOTE: Wage growth is defined as $\ln(W_8)-\ln(W_1)$, where W_1 and W_8 are average hourly wages reported at the beginning and end of the 8-year observation period. Sample sizes are smaller than in table 1 because of missing wages.

Table 3. Percent of weeks employed during first 8 years of career by number of jobs held

Number of jobs	Women			Men								
	All schooling levels			All schooling levels			Schooling less than or equal to grade 12			Schooling greater than grade 12		
	Number of observations	Mean	Standard deviation	Number of observations	Mean	Standard deviation	Number of observations	Mean	Standard deviation	Number of observations	Mean	Standard deviation
1	123	90.0	22.0	137	94.4	16.2	42	87.6	22.2	95	97.3	11.7
2–3	557	83.6	23.5	562	87.1	23.0	257	78.9	28.7	305	94.0	13.5
4–6	836	77.4	23.1	858	80.4	21.6	489	74.4	23.5	369	83.3	15.6
7 or more	491	74.8	19.0	625	77.2	18.3	435	73.6	18.7	190	85.2	14.7
All	2,007	79.2	22.7	2,182	82.0	21.4	1,223	75.5	23.4	959	90.4	14.9

NOTE: The work history "status array" is used to identify the cumulative number of weeks worked (excluding within-job employment gaps) during the 8-year observation period. Only respondents who report wages at the beginning and end of this period are included in each sample.

wage is 0.59. The average wage gain is virtually the same among women who hold 1-2 jobs, but it is considerably smaller (0.40–0.46) among the more mobile women. A similar pattern is seen among the men, although their average wage growth is markedly higher than the women's. However, when the sample of men is broken down by schooling attainment, the negative correlation between overall mobility and overall wage growth holds only for the more highly schooled men. Among the high school sample, the average change in log-wage is 0.58 for those who hold 2-3 jobs, but only 0.40–0.46 for men in any other mobility category, including those who hold a single job in 8 years.

What are the explanations for the patterns seen in table 2? To the extent that "job shopping" dominates early-career mobility (that is, to the extent that workers move to jobs where their skills are more highly valued), it should be associated with wage growth. However, high mobility can also go hand in hand with a high frequency of involuntary discharges and/or a tenuous attachment to the workforce. Workers who are frequently fired or have frequent nonwork spells are not expected to receive substantial amounts of wage growth.

To explore some of these issues, the work history "status array" is used to identify the number of weeks in which respondents are known to be working during the 8-year window. In table 3, sample means for this employment measure (expressed as a percentage of total weeks) are reported for the same sample of workers used for table 2. Table 3 reveals that the average percentage of weeks worked declines with job mobility for each group of workers. In the "all schooling levels" groups, the average worker (male or female) who holds only one job in 8 years works at least 90 percent of the time, while average work effort falls to around 75 percent for workers who hold seven or more jobs. Clearly, the negative relationship between overall mobility and overall wage growth seen in table 2 reflects the fact that highly mobile workers tend to be nonemployed for a substantial portion of their

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Table 4. Annual wage growth for job movers and job stayers

Number of jobs	Women			Men								
	All schooling levels			All schooling levels			Schooling less than or equal to grade 12			Schooling greater than grade 12		
	Number of observations	Mean	Standard deviation	Number of observations	Mean	Standard deviation	Number of observations	Mean	Standard deviation	Number of observations	Mean	Standard deviation
Job stayer ...	13,085	.048	.44	14,265	.050	.44	7,173	.045	.40	7,092	.054	.48
Job mover ...	3,637	.027	.62	3,755	.046	.69	2,277	.042	.60	1,478	.052	.81
Voluntary job mover	2,959	.044	.61	3,210	.060	.70	1,869	.055	.61	1,341	.068	.80

NOTE: Wage growth is defined as the 1-year change in log average hourly wages (or one-half the 2-year change) during the 8-year observation period. Job movers change employers between wage reports; the subsample of voluntary movers excludes those who report that they moved because of a layoff, discharge, end of temporary job, or plant closing.

early careers. Workers who change jobs less often are much more likely to work continuously—and, perhaps, to engage in productive "job shopping." Whether the above-average wage growth of workers who undergo moderate mobility is due to work continuity, job mobility, or a combination of the two cannot be determined from tables 2 and 3.

Rather than look exclusively at cumulative wage growth, the analysis concludes with an examination of year-to-year changes in employers and log-wages. Beginning with each worker's entire sequence of reported wages during the 8-year observation period, the change in log-wages for each successive pair of wages is computed and confined to those differences where the elapsed time between wages is approximately 1 year (10-14 months) or 2 years (20-28 months); the 2-year differences are divided in half.[9] Each year-to-year change in log-wages is then classified according to whether the two wages were earned on the same job or on different jobs.

Table 4 reports the mean log-wage changes for job stayers and job movers. Among women, the average wage change is quite a bit higher (0.048) for job stayers than for job movers (0.027), while for each sample of men these two means are almost identical. The bottom row of table 4 reports mean changes in log-wages for a subsample of movers who make voluntary job changes—defined as any change *not* reported as a layoff, discharge, plant closing, or end of temporary work; all quits and all separations for which the reason is "other" or unknown are considered to be voluntary. By crudely narrowing the sample to job changes that might be voluntary, much larger mean changes in log-wages are obtained. Women receive an average, annual boost in log-wages of 0.044–0.048 regardless of whether they maintain their current job or undergo a voluntary job transition. For men, the average wage boost associated with a voluntary job change is about 0.01 log points higher than the average wage change for job stayers, although the difference in means is not always statistically significant at conventional levels. Nonetheless, table 4 suggests that the average wage gain associated with a voluntary job change is quite substantial for all groups of workers.

THIS BRIEF ANALYSIS HAS DEMONSTRATED that the typical worker holds about five jobs in the first 8 years of the career, but that workers vary considerably in their mobility rates. Highly mobile workers receive less cumulative wage growth, on average, than their less mobile counterparts—a difference that is at least partially attributable to the fact that employment continuity is negatively correlated with mobility. Finally, there is cursory evidence that workers who change jobs voluntarily receive significant contemporaneous wage boosts that, on average, are at least as large as the wage gains received by job stayers. Each of these patterns has been explored in greater detail in other studies, and the NLSY79 will undoubtedly reveal much more about these relationships in the future. □

Notes

[1] Throughout this article, job mobility refers to a change of employer, and not to an intra-firm change in position, rank, or work assignment.

[2] Examples of such models include Kenneth Burdett, "A Theory of Employee Job Search and Quit Rates," *American Economic Review*, Vol. 68, no. 1, 1978, pp. 212–220; and Boyan Jovanovic, "Job Matching and the Theory of Turnover," *Journal of Political Economy*, Vol. 87, No. 5, part 1, 1979, pp. 972–990.

[3] For a model of firm-specific human capital, see Gary Becker, "Investment in Human Capital: A Theoretical Analysis," *Journal of Politi-*

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cal Economy, Vol. 70, No. 1, pp. 9–49. Agency models include Edward Lazear, "Why is There Mandatory Retirement?" *Journal of Political Economy*, Vol. 87, No. 6, 1979, pp. 1261–84; and Joanne Salop and Steven Salop, "Self-Selection and Turnover in the Labor Market," *Quarterly Journal of Economics*, Vol. 90, No. 4, 1976, pp. 619–627.

[4] The *NLSY79 User's Guide* is available at **http://www.bls.gov/nls/79guide/nls79usg.htm**.

[5] In contrast, the PSID makes it considerably more difficult to identify unique jobs and to measure tenure on each job. See James N. Brown and Audrey Light, "Interpreting Panel Data on Job Tenure," *Journal of Labor Economics*, Vol. 10, No. 3, 1992, pp. 219–257.

[6] See Henry S. Farber, "The Analysis of Interfirm Worker Mobility," *Journal of Labor Economics*, Vol. 12, No. 4, 1994, pp. 554–593; Derek Neal, "The Complexity of Job Mobility Among Young Men," *Journal of Labor Economics*, Vol. 17, No. 2, 1999, pp. 237–261; Anne Beeson Royalty, "Job-to-Job and Job-to-Nonemployment Turnover by Gender and Education Level," *Journal of Labor Economics*, Vol. 16, No. 2, 1998, pp. 392–443; and Madeline Zavodny, "Technology and Job Separation Among Young Adults," *Economic Inquiry*, Vol. 41, No. 2, 2003, pp. 264–278.

[7] Studies that control for past job separations include Kristen Keith and Abagail McWilliams, "The Returns to Mobility and Job Search by Gender," *Industrial and Labor Relations Review*, Vol. 52, No. 3, 1999, pp. 460–477; Audrey Light and Kathleen McGarry, "Job Change Patterns and the Wages of Young Men," *Review of Economics and Statistics*, Vol. 80, No. 2, 1998, pp. 276–286; and Pamela J. Loprest, "Gender Differences in Wage Growth and Job Mobility," *American Economic Review*, Vol. 82, No. 2, 1992, pp. 526–532. Studies that focus on the wage-tenure relationship include Bernt Bratsberg and Dek Terrell, "Experience, Tenure, and Wage Growth of Young Black and White Men," *The Journal of Human Resources*, Vol. 33, No. 3, 1998, pp. 658–682; Daniel Parent, "Industry-Specific Capital and the Wage Profile: Evidence from the National Longitudinal Survey of Youth and the Panel Study of Income Dynamics," *Journal of Labor Economics*, Vol. 18, No. 2, 2000, pp. 306–323; and Randall J. Olsen, "Job Switching, Earnings Growth and the Rate of Return to Tenure," Ohio State University working paper, November 2001.

[8] For a discussion of the ambiguity in career start dates, see Audrey Light, "Estimating Returns to Schooling: When Does the Career Begin?" *Economics of Education Review*, Vol. 17, No. 1, pp. 31–45.

[9] Because interviews were conducted annually from 1979 to 1994, and the 8-year observation period ends well before 1996 for most respondents, the majority of successive wage reports are approximately 1 year apart. One-half the 2-year differences is used to avoid discarding wage data for those respondents whose 8-year period extends in the mid-1990s; these are invariably younger respondents who stay in school a relatively long time. For this exercise, the dependent variable is again the average hourly wages divided by the GDP implicit price deflator.

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Self-employment, entrepreneurship, and the NLSY79

Researchers have used the rich data from the 1979 cohort of the National Longitudinal Survey of Youth to investigate the relationship between self-employment and various job and earnings outcomes; future inquiry may afford valuable insights into other interesting consequences of self-employment

Robert W. Fairlie

A relatively small, but growing, body of literature uses microdata from the 1979 National Longitudinal Survey of Youth (NLSY79) to study self-employment and entrepreneurship among young adults. The topics covered in these studies include, but are not limited to, the determinants of entrepreneurship, earnings growth among entrepreneurs, the returns to self-employment, the relationship between criminal activities and self-employment, and job satisfaction among the self-employed.

The NLSY79 is a nationally representative sample of 12,686 men and women who were between the ages of 14 and 22 when they were first interviewed in 1979.[1] Survey respondents were interviewed annually from 1979 to 1994 and biannually starting in 1996. Most previous studies using this survey exclude the sample of 1,280 youths designed to represent the population enlisted in the four branches of the military as of September 30, 1978, but retain the supplemental sample of 5,295 civilian black, Hispanic, and economically disadvantaged nonblack, non-Hispanic youth. The NLSY79 contains a wealth of information on the demographic, economic, family background, educational, and psychological characteristics of respondents. Detailed measures of the group's labor market and life experiences from early adulthood to the mid-forties can also be created for survey respondents.

The NLSY79 is an excellent source of data for conducting research on self-employment and entrepreneurship. The wealth of information available in the survey allows one to build rich empirical models of the entrepreneurial process. Measures of previous wage and salary, self-employment, and unemployment experience can be created, and the NLSY79 contains several uncommon variables, such as those associated with detailed asset categories, family background information, data on criminal activities, Armed Forces Qualification Test (AFQT) scores, and psychological characteristics. Furthermore, a plethora of measures of the dynamics of self-employment may be extracted from the longitudinal data in the survey. For example, measures of transitions to and from self-employment, number of years of self-employment, and whether an individual ever tries self-employment can easily be created. Finally, the returns to self-employment, measured as earnings, job satisfaction, net worth, or other outcomes, can be estimated. Changes over time in labor market status can be used to identify the effects of self-employment, potentially removing biases created by unobserved heterogeneity across individuals. Given these advantages, it is somewhat surprising that more researchers have not used the NLSY79 to study self-employment. In the sections that follow, this article presents estimates of self-employment from the NLSY79, reviews findings from previous studies that used the survey, and discusses some of the merits of the data sets making up the survey.

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Self-employment in the NLSY79

In most previous studies using the NLSY79, self-employed workers are defined as those individuals who identify themselves as self-employed in their own business, professional practice, or farm in response to the class-of-worker question relating to the current or most recent job. Unpaid family workers are not counted as self-employed. Individuals who report being enrolled in school and workers who report working fewer than 300 hours in the previous calendar year are often excluded. The hours restriction rules out very small scale business activities.

Self-employment rates increase rapidly as the NLSY79 cohort ages. (See chart 1.) The self-employment rate is defined as the fraction of workers that is self-employed. At age 22, only 5.1 percent of men and 2.6 percent of women are self-employed. By age 42, however, 12.1 percent of men and 9.8 percent of women are self-employed.

The following tabulation shows that self-employment rates also differ substantially by race and its ethnicity:

	NLSY79 data			
	Men		*Women*	
Race or ethnicity	*Self-employment rate (percent)*	*Sample size*	*Self-employment rate (percent)*	*Sample size*
Black	5.3	14,448	3.2	13,469
Hispanic	7.4	10,153	4.9	8,404
White	10.1	31,803	6.9	29,006

As in previous studies, blacks and Hispanics are much less likely to be self-employed than are whites.[2] Only 5.3 percent of black men are self-employed, compared with 10.1 percent of white men. The Hispanic male rate of 7.4 percent is also lower than the white rate, but higher than the black rate. Among women, the black-white and Hispanic-white self-employment rate ratios are similar to those for men. The main difference is that women's self-employment rates are lower than men's for all three racial and ethnic groups.

The determinants of self-employment. A few patterns are beginning to emerge in the young and expanding literature on self-employment. The empirical studies in this literature generally find that being male, white, older, married, and an immigrant and having a self-employed parent, more assets, and more education increase self-employment. In contrast, theoretical models of self-employment posit that attitudes toward risk, entrepreneurial ability, and preferences for autonomy are central to the individual's decision to become self-employed or engage in wage and salary work.[3] Perhaps not surprisingly, there is very little empirical evidence on the importance of these unobservable characteristics in the self-employment decision. One article that uses the NLSY79 offers indirect evidence by examining the relationship between drug dealing and legitimate self-employment:[4] a review of ethnographic studies in the criminology literature indicates that drug dealing may serve as a useful proxy for a low aversion to risk, entrepreneurial ability, and a preference for autonomy.

The 1980 wave of the NLSY contains a special section on participation in illegal activities, including questions on selling marijuana and other "hard" drugs. The answers to these questions, together with data from subsequent years of the survey, are used to examine the relationship between drug dealing as a youth and legitimate self-employment in later years. Using various definitions of drug dealing and specifications of the econometric model, the survey finds drug dealers to be 11 percent to 21 percent more likely than those who are not drug dealers to choose self-employment, all else being equal. After ruling out a few alternative explanations, this article interprets these results as providing indirect evidence that aversion to risk, entrepreneurial ability, and preferences for autonomy are important determinants of self-employment.

In addition to offering detailed information on criminal activities in the 1980 wave, the NLSY79 includes information on whether respondents were interviewed in jail or prison in each year. This information is useful because convictions and incarcerations may have different effects on current and future wage and salary and self-employment earnings. In particular, ex-offenders who choose self-employment do not face discrimination, either pure or statistical, by employers in the labor market, but may face other forms of discrimination, such as that by consumers or lending institutions. Using the NLSY79, the aforementioned study by Robert Fairlie provides evidence on the relationship between incarceration and self-employment.[5] Estimates from probit regressions indicate that having a previous incarceration increases the probability of self-employment by 0.36 percentage point to 0.39 percentage point, or 5.2 percent to 5.9 percent. Thus, self-employment may provide an important alternative to wage and salary work for at least some ex-convicts.

Another finding reported in Fairlie is that AFQT scores have a small and insignificant effect in probit regressions for the probability of self-employment.[6]

Interestingly, previous research using the NLSY79 finds that AFQT scores have a *large positive* effect on earnings. The general argument is that the scores represent a measure of basic skills that help predict job performance. Although youths who have low levels of these basic skills may have limited opportunities in the wage and salary sector, that barrier does not translate into higher probabilities of self-employment.

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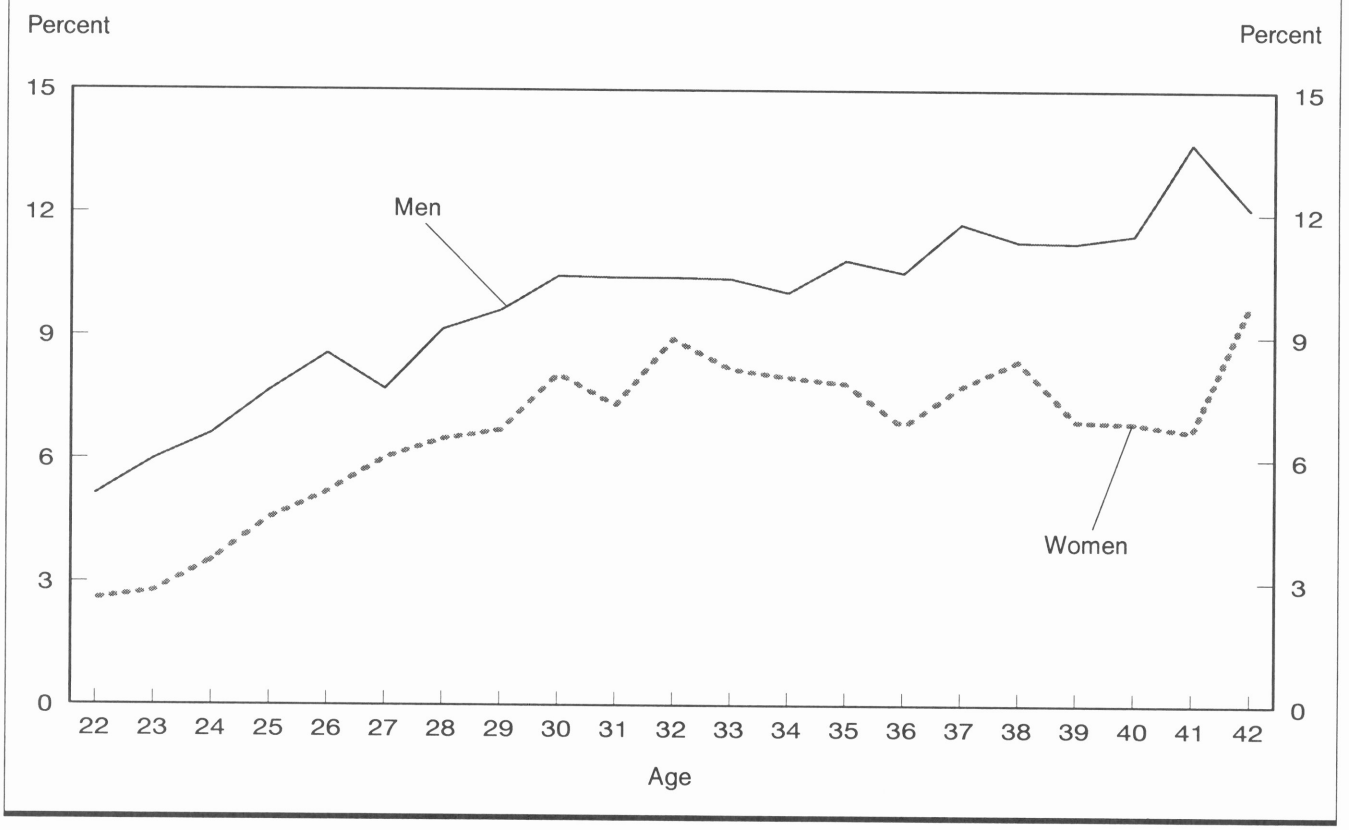
Chart 1. Self-employment rates by age, NLSY (1979–2002)



The longitudinal nature of the NLSY79 also allows one to explore the effects of previous labor market experience on current self-employment. Ellen Rissman analyzes one aspect of the dynamic relationship between unemployment and self-employment among men.[7] She finds that the probability of being self-employed in the current year increases significantly if the person was unemployed in the previous year. Stratifying her sample by race, she also finds a positive and significant effect for whites, but not for nonwhites.

The dynamics of self-employment. Previous research on self-employment generally takes a point-in-time focus; longitudinal data in the NLSY79, however, allow for numerous dynamic measures of the concept. For example, Rissman finds that 3.4 percent of wage and salary workers in any given year become self-employed the following year and, conversely, 36.9 percent of the self-employed during a given year make the transition to wage and salary work the next year.[8] Also, Marianne A. Ferber and Jane Waldfogel find that 24.8 percent of men and 16.5 percent of women in their sample from the NLSY79 report ever being self-employed.[9] By contrast, they find *current* self-employment rates of 8.8 percent and 5.5 percent for men and women, respectively. Finally, Donald Williams finds that, by 1987, just 3.1 percent of NLSY79 respondents had 2 or more years of self-employment experience and only 1.2 percent of respondents had 3 or more years of self-employment experience.[10]

Although numerous possibilities exist for measuring self-employment dynamics, most previous research has focused on annual transitions to and from self-employment. Estimates for transition matrices that include wage and salary employment, self-employment, and nonemployment are reported in table 1.[11] One-year transition matrices are reported for the 1979–94 period, and 2-year transitions are reported for the 1994–2002 period. Estimates from 1979–94 indicate that 3.4 percent of young men who were wage and salary workers became self-employed the following year. The entry rate for the nonemployed is 2.2 percent. Estimates for 2-year transitions from 1994–2002 indicate a lower self-employment rate from wage and salary work and a higher entry rate from nonemployment. For men, the exit rates from self-employment are 31.6 percent and 24.9 percent for the earlier and later periods, respectively. Self-employment entry rates are generally lower, and exit rates higher, for young women. Overall, the estimates indicate that substantial mobility exists between sectors and into and out of employment among young workers.

The importance of assets has taken center stage in the literature on the determinants of self-employment. Several

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Table 1. Labor market transition matrices, National Longitudinal Survey of Youth, 1979–2002

[In percent]

Gender, category, and year *t*	Nonemployment,[1,2] *t* + 1/*t* + 2	Wage and salary employment,[2] *t* + 1/*t* + 2	Self-employment,[2] *t* + 1/*t* + 2	Share of total, year *t*	*N*
Men					
1979–94, year *t*:					
Nonemployment	72.1	25.7	2.3	7.0	3,675
Wage and salary employment	1.0	95.5	3.4	85.1	33,917
Self-employment	.7	30.8	68.4	7.9	2,661
1994–2002, year *t*:					
Nonemployment	65.6	29.1%	5.3	6.9	1,284
Wage and salary employment	2.8	94.0	3.1	83.6	11,249
Self-employment	2.0	22.8	75.1	9.5	1,112
Women					
1979–94, year *t*:					
Nonemployment	75.4	21.4	3.3	19.1	9,584
Wage and salary employment	3.7	94.1	2.2	76.1	31,452
Self-employment	4.6	29.0	66.5	4.8	1,641
1994–2002, year *t*:					
Nonemployment	68.7	28.1	3.2	18.8%	2,844
Wage and salary employment	6.1	91.5	2.4	75.0%	10,585
Self-employment	10.2	28.6	61.2	6.2%	727

[1] Those unemployed and not in the labor force.
[2] Measured in year *t* + *1* for 1979–94 and year *t* + *2* for 1994–2002.
NOTE: The sample consists of youths aged 22 to 45 years who are not enrolled in school. All estimates are calculated with the use of annual sample weights provided by the National Longitudinal Survey of Youth.

recent studies explore this issue by modeling the decision of wage and salary workers or other nonbusiness owners to switch into self-employment over a fixed period.[12] The focus on transitions to self-employment attempts to avoid the endogeneity problem of including assets in a static model of self-employment. The problem is that a positive relationship found in a cross-sectional analysis may simply reflect the possibility that business owners accumulate more wealth instead of wealth increasing the likelihood of owning a business. Although individuals may save in anticipation of becoming self-employed, a measure of assets in year $t - 1$ should be more exogenous to the entrepreneurial decision than a contemporaneous measure of assets.

Fairlie follows this approach, using net worth data from the NLSY79.[13] Specifically, he estimates probit regressions for the probability of entry into self-employment from wage and salary work that include a measure of net worth. The NLSY did not collect information on assets prior to 1985 and in 1991. For other years, a measure of net worth can be created from the detailed NLSY questions on assets.[14] The coefficients on net worth and its square are statistically significant and indicate a concave relationship. Evaluated at the mean level of net worth (which equals $36,900), the coefficients imply that increasing net worth by $10,000 raises the probability of a transition into self-employment by 0.00044. This percentage represents only 1.5 percent of the sample's entry rate into self-employment. Thus, the estimates of the coefficients provide some evidence that young men face liquidity constraints, but these constraints do not appear to be overly restrictive.

Creating detailed measures of previous work experience to include in her regressions, Hiromi Taniguchi examines the determinants of transitions from nonemployment to self-employment and to wage and salary employment among women in the NLSY79.[15] Her results indicate that both cumulative work experience and the number of jobs ever held increase the rate of entry into self-employment and wage/salary employment. She also finds that previous self-employment increases the rate of entry into self-employment and has a negative effect on entry into wage and salary employment.

Self-employment earnings in the NLSY79

Although self-employment income can be identified in the NLSY79, earnings among self-employed business owners are typically measured as total annual earnings, which are calculated by summing the responses to questions on military income, wage and salary income, and business or farm income (after expenses) in the previous calendar year. The income from all three sources is added because more than half of the self-employed with positive earnings in the NLSY79 report wage and salary income, but do not report business income.[16]

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This is partly due to incorporated business owners reporting their income as wage and salary income, as roughly 50 percent of unincorporated business owners with positive total earnings report zero business income. As suggested by Zagorsky, it may also be due to the ordering of questions on the questionnaire.[17] Respondents were asked, (1) "How much money did you get from the military?"; (2) "Excluding military pay, how much money did you get from wages, salary, commissions, or tips?"; and (3) "Excluding anything you already mentioned, did you receive any business income?" Thus, some of the self-employed may have reported their income in the second question and did not correct their mistake. Another possibility is that the self-employed report only their *labor* income from the business under wage and salary income.

The following tabulation shows the mean, median, and standard deviation of total annual earnings for self-employed and wage and salary workers:

	Men		*Women*	
	Self-employed	*Wage and salary*	*Self-employed*	*Wage and salary*
Mean	$52,300	$38,258	$28,217	$27,131
Median	38,000	33,021	20,029	23,407
Standard deviation	48,159	25,769	30,040	17,794
Sample size	3,725	43,852	1,570	35,367

Only full-time workers, defined here as those working at least 1,400 hours in the previous calendar year, are included, in order to control for differences in hours worked. Earnings observations in all years are inflated to 2002 dollars. The responses for each of the three sources of income (the self-employed, wage and salary workers, and the military) are top coded at $75,000 from 1979 to 1984, $100,000 from 1985 to 1994, and the top 2 percent for more recent years. Instead of these top codes, however, the 1994 top code, in 2002 dollars, which equals $121,390, is used for all years in what follows.[18] As is customary, all top-coded values are set to $150,000.

For men, the self-employed earn substantially more, on average, than do wage and salary workers. Men's average earnings are $14,042 higher among the self-employed, and median earnings are $4,979 higher. For women, average earnings among the self-employed are slightly higher than average earnings among wage and salary workers, but median earnings are lower. For both men and women, the standard deviation of self-employment income is substantially greater than that of wage and salary income.

Returns to capital. One issue that arises in comparing self-employment earnings with wage and salary earnings from survey data is the treatment of returns to capital. In the NLSY, the question regarding self-employment income asks, "How much did you receive after expenses?" from your farm or business in the past calendar year. Although some uncertainty is involved in answering this question, respondents are likely to interpret the question to include both the returns to labor and the returns to capital. As noted earlier, however, most of the self-employed report their earnings as wage and salary income and not business income. In the case of the respondent who does report self-employment income as business income, it would be preferable to remove the returns to capital before making comparisons with the earnings of wage and salary workers.

Unlike most other data sets, the NLSY79 contains detailed-enough information on assets to enable researchers to conduct a careful analysis of the issue of how returns to capital are treated. The NLSY79 contains data on the market value of the individual's farm, business, and other real estate and the total amount of debt owed on those assets. This information can be used to calculate the opportunity cost of capital and remove it from business income. With Standard & Poor's 500 as the alternative investment, adjusted self-employment earnings are 5.2 percent lower than unadjusted self-employment earnings for white men and 4.0 percent lower for white women.[19] Simple adjustments for the opportunity cost of capital also have a small effect on self-employment earnings for blacks and Latinos. Overall, estimates from the NLSY79 suggest that unadjusted self-employment earnings from survey data may provide reasonably accurate measures of the returns to labor.

Earnings regressions. As mentioned earlier, the NLSY79 contains detailed information on individual characteristics such as age, race, education, AFQT scores, and various measures of previous work experience. Earnings regressions that include these observable controls can be used to estimate the between self-employment earnings and wage and salary earnings. Unobserved differences, however, such as entrepreneurial ability and aversion to risk, may also exist between self-employed business owners and wage and salary workers. To address this issue, fixed-effects earnings regressions can be estimated with the longitudinal data in the NLSY79. The individual-level fixed effects control for all observable and unobservable characteristics that do not change over time. Because, over time, individuals make transitions between self-employment, on the one hand, and wage and salary work, on the other, comparisons of self-employment earnings with wage and salary earnings for the same individual in different years contribute to identifying the associated coefficients.

Estimating fixed-effects earnings regressions for young men from disadvantaged families yields some evidence that self-employed business owners earn more than do wage and salary workers.[20] Estimates for young women, however,

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provide some evidence of lower earnings among self-employed business owners than among wage and salary workers. The results from these earnings comparisons are somewhat sensitive to the use of different measures of income and different econometric models.

In a related study, Justin van der Sluis, Mirjam van Praag and Arjen van Witteloostuijn (2004) estimate the returns to education for entrepreneurs and for wage and salary workers.[21] Using instrumental-variable regressions, they find that the returns to education are 14 percent for the self-employed, much higher than the 10-percent estimated return for wage and salary workers. The detailed data available in the NLSY79 allow these researchers to control for ability and to use family background characteristics, including the mother's and father's education, the presence of library cards in the household at age 14, and magazines present in the household at age 14, as instrumental variables for education.

Earnings profiles. The longitudinal nature of the NLSY79 enables one to compare earnings profiles for self-employed workers and wage and salary workers. Charts 2 and 3 display earnings-age profiles for full-time self-employed and wage and salary workers. For men (chart 2), average self-employment earnings are always higher and appear to grow at a rate similar to that of wage and salary earnings. For women, average self-employment earnings start out lower than wage and salary earnings, but then grow at a faster rate.

To investigate the question of whether the self-employed experience faster earnings growth than do wage and salary workers, the NLSY79 allows fixed-effects regressions that include interactions between self-employment, on the one hand, and experience, potential experience, or tenure, on the other, to be estimated. Estimating fixed-effects regressions for hourly earnings for a sample of white, non-Hispanic men, Daiji Kawaguchi finds flatter earnings-experience/tenure profiles for self-employed workers than for wage and salary workers.[22] At 10 years of experience and job tenure, self-employed business owners earn 18 percent less than wage and salary workers. An earlier work by Fairlie compares men's and women's earnings profiles for whites, blacks, and Hispanics.[23] For white men, the point estimates from these earnings regressions indicate that the self-employed initially experience slower earnings growth than do wage and salary workers. After several years, the trend reverses, and self-employed persons experience faster earnings growth and higher earnings. For Hispanic men, the relative self-employment earnings coefficients suggest that the self-employed start at much lower earnings levels than do wage and salary workers, but experience faster growth rates. For white women, relative self-employment earnings start out positive and then become negative. Relative self-employment earnings coefficients are not statistically significant for black men, black women, or Hispanic women, possibly due to small sample sizes.

Self-employment and other outcomes. The detailed information available in the NLSY79 also allows for the analysis of the relationship between self-employment and other outcomes, such as future wage and salary income, job satisfaction, and net worth. One possibility is to examine the relationship between early-career self-employment experience and future labor market outcomes. The NLSY79 is an excellent instrument for this type of analysis because it follows individuals from ages 14 to 22 in 1979 to 37 to 45 in 2002.

A previously mentioned work by Fairlie examines the earnings patterns of less educated individuals who are self-employed early in their careers and makes comparisons with young, less educated wage and salary workers.[24] Self-employment status is determined between ages 22 and 26, and earnings are measured starting at age 27. Estimates from fixed-effects regressions indicate that the self-employed experience faster earnings growth, on average, than do wage and salary workers after a few initial years of slower growth. In a similar vein, Williams examines the relationship between self-employment at ages 16 to 20 and outcomes at ages 25 and 27.[25] He finds that self-employment as a youth is associated with a substantially higher probability of being self-employed in early adulthood (age 27), but also is associated with lower earnings at that age.

Another interesting question that can be answered with the NLSY79 is whether self-employment experience is rewarded in the wage and salary sector. Do self-employment spells limit opportunities for acquiring valuable labor market experience, especially firm- and sector-specific human capital, or do they provide workers with skills that are rewarded in the wage and salary sector? Again using data from the NLSY79, as well as data from the National Longitudinal Survey (NLS) of Young Women, Williams examines the effects of self-employment experience on future wage and salary earnings of men and women.[26] His estimates indicate a negative return for women and little or no return for men.

Most of the focus in the self-employment literature is on earnings, but other outcomes also are of interest. In particular, lower hourly earnings among the self-employed with high levels of tenure may be explained by nonpecuniary factors of the job, such as being one's own boss. Kawaguchi uses the NLSY79 to investigate whether self-employment is associated with higher levels of job satisfaction.[27] He finds that 65 percent of the self-employed report liking their job "very much," whereas only 45 percent of wage and salary workers report that level of job satisfaction. Estimates from regression models which control for individual heterogeneity confirm that the self-employed have higher levels of job satisfaction than wage and salary workers have.

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Chart 2. Average annual earnings by age for men, NLSY (1979–2002)

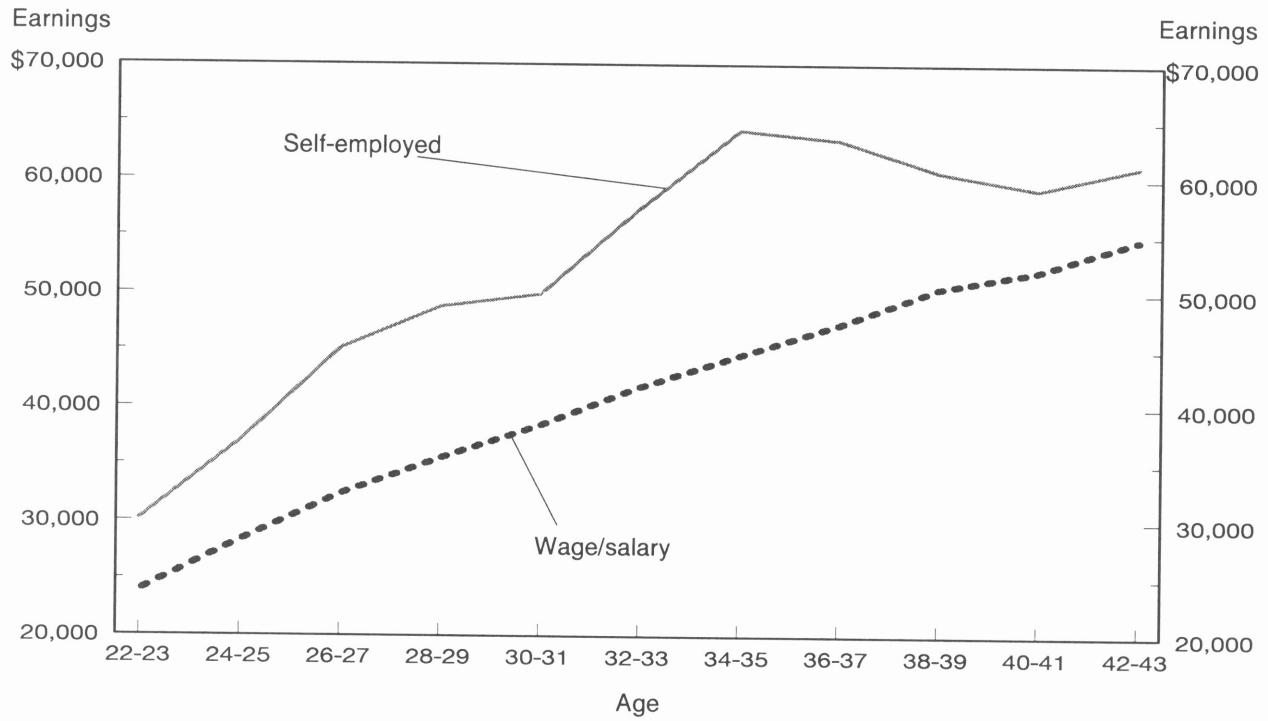
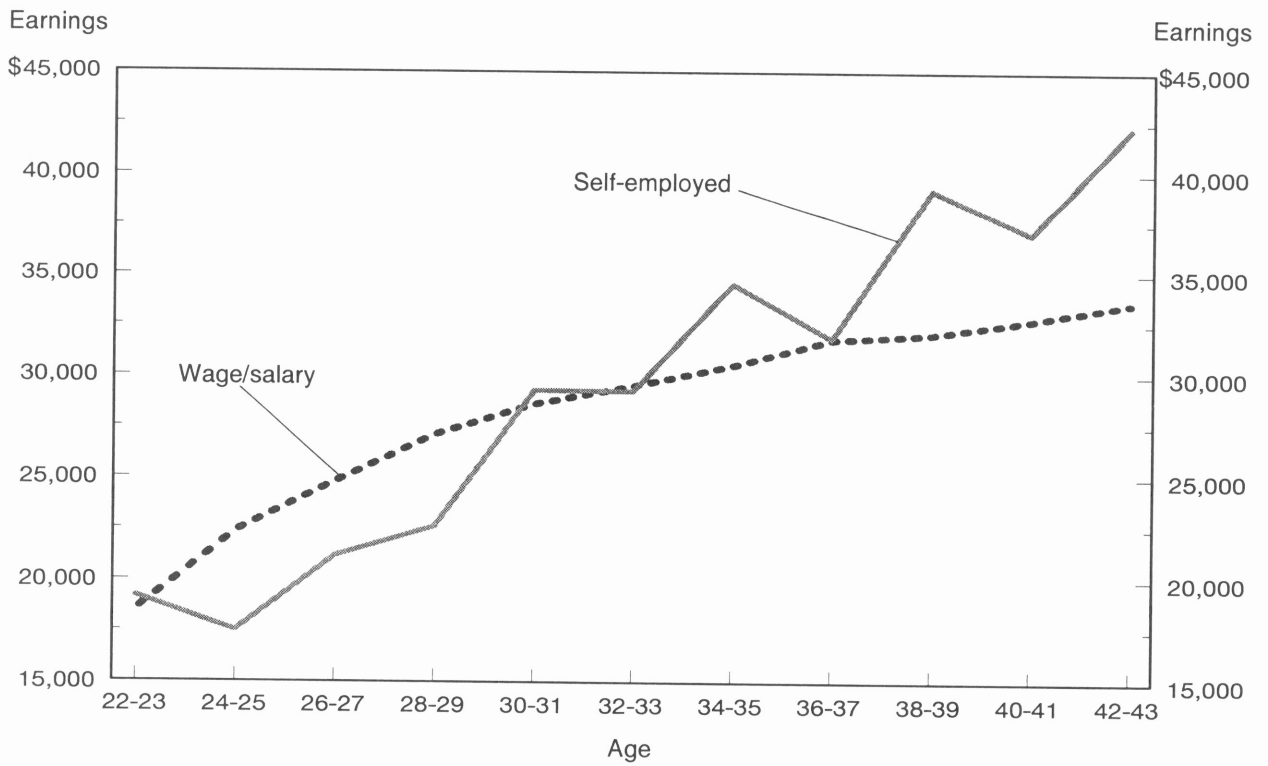


Chart 3. Average annual earnings by age for women, NLSY (1979–2002)



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RESEARCH USING THE NLSY79 has undoubtedly improved our understanding of the determinants of entrepreneurship, the dynamic process of self-employment, and self-employent earnings patterns. Although the relationship between self-employment and a few outcomes, such as future wage and salary earnings and job satisfaction, has been explored with the exceptionally rich data avaiiable in the NLSY79, more research may provide valuable insights into the consequences of self-employment. For example, the detailed data available in the survey allow one to explore the causal relationship between self-employment and several outcomes of interest, such as net worth, business net worth, health insurance and other fringe benefits, and public assistance programs. □

Notes

[1] See Center for Human Resource Research, *NLSY79 Users' Guide* (Columbus, OH, The Ohio State University, 1999), for a detailed description of the NLSY79.

[2] Estimates from the NLSY79 are comparable to those from 1990 census microdata using a similar age group. See Robert W. Fairlie, "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?" in Douglas Holtz-Eakin, ed., *Entrepreneurship and Public Policy* (Cambridge, MA, MIT Press, 2004), pp. 634–59. The census shows slightly lower rates, but the relative differences between the races are similar.

[3] See, for example, Richard Kihlstrom and Jean-Jacques Laffont, "A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion," *Journal of Political Economy*, vol. 87, no. 4, 1979, pp. 719–48; Robert E. Lucas,"On the Size Distribution of Firms," *Bell Journal of Economics*, vol. 9, no. 2, 1978, pp. 508–23; Boyan Jovanovic, "Selection and the Evolution of Industry," *Econometrica*, vol. 50, no. 3, 1982, pp. 649–70; and David Evans and Boyan Jovanovic, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints," *Journal of Political Economy*, vol. 97, no. 4, 1989, pp. 808–27.

[4] Robert W. Fairlie, "Drug Dealing and Legitimate Self-Employment,"*Journal of Labor Economics*, vol. 20, no. 3, 2002, pp. 538–67.

[5] *Ibid.*

[6] *Ibid.*

[7] Ellen R. Rissman, "Self-Employment as an Alternative to Unemployment," working paper no. 2003–34 (Chicago, Federal Reserve Bank of Chicago, 2003).

[8] *Ibid.*

[9] Marianne A. Ferber and Jane Waldfogel, "The long-term consequences of nontraditional employment," *Monthly Labor Review*, May 1998, pp. 3–12.

[10] Donald R. Williams, "Youth Self-Employment: Its Nature and Consequences," *Small Business Economics*, vol. 23, no. 4, 2004, pp. 323–36.

[11] All estimates are calculated with annual sample weights provided by the NLSY. "Nonemployment" denotes those not in the labor force.

[12] See, for example, Evans and Jovanovic, "Estimated Model of Entrepreneurial Choice"; David Evans and Linda Leighton, "Some Empirical Aspects of Entrepreneurship," *American Economic Review*, vol. 79, no. 3, 1989, pp. 519–35; Douglas Holtz-Eakin, David Joulfaian, and Harvey Rosen, "Entrepreneurial Decisions and Liquidity Constraints," *Rand Journal of Economics*, vol. 23, no. 2,1994 pp. 334-47; Thomas A. Dunn and Douglas J. Holtz-Eakin, "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links," *Journal of Labor Economics*, vol. 18, no. 2, 2000, pp. 82–305; Robert W. Fairlie,"The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment," *Journal of Labor Economics*, vol. 17, no. 1, 1999, pp. 80-108; and Erik Hurst and Annamaria Lusardi, "Liquidity Constraints, Household Wealth, and Entrepreneurship," *Journal of Political Economy*, vol. 112, no. 2, 2004, pp. 319–47.

[13] Fairlie, "Drug Dealing."

[14] The variable having to do with assets is not available in the public-use data, but can be obtained from Jay L. Zagorsky at the Center for Human Resource Research. See Jay L. Zagorsky, "Young Baby Boomers' Wealth," working paper (Columbus, OH, Center for Human Resource Research, 1998), for more details on the construction of this variable.

[15] Hiromi Taniguchi, "Determinants of Women's Entry into Self-Employment, "*Social Science Quarterly*, vol. 83, no. 3, 2002, pp. 875–93.

[16] Fairlie, "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?"

[17] Telephone conversation, August 1999.

[18] Especially problematic is the fact that 36 individuals have top-coded wage and salary income of more than $4 million each in 1996.

[19] Fairlie, "Earnings Growth."

[20] Robert W. Fairlie, "Entrepreneurship and Earnings among Young Adults from Disadvantaged Families," *Small Business Economics*, forthcoming.

[21] Justin Van der Sluis, Mirjam van Praag, and Arjen van Witteloostuijn, "Comparing the Returns to Education for Entrepreneurs and Employees," working paper (Amsterdam, University of Amsterdam, 2004).

[22] Daiji Kawaguchi, "Positive, Non-Earnings Aspects of Self-Employment: Evidence from Job Satisfaction Scores," working paper (Tsukuba City, University of Tsukuba, Institute of Policy and Planning Sciences, 2004).

[23] Fairlie, "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?"

[24] Fairlie, "Earnings Growth."

[25] Williams, "Youth Self-Employment."

[26] Donald R. Williams, "Consequences of Self-Employment for Women and Men in the United States," *Labour Economics*, vol. 7, no. 5, 2000, pp. 665–87.

[27] Kawaguchi, "Aspects of Self-Employment."

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Worker training: what we've learned from the NLSY79

The 1979 cohort of the National Longitudinal Survey of Youth has been a wellspring of knowledge about worker training and a valuable means of empirically testing human-capital theory

Harley J. Frazis
and
James R. Spletzer

How individuals obtain their skills and how they are paid for the use of those skills are concepts that are fundamental to the field of labor economics. Productive skills are often referred to as "human capital." The basic idea of human-capital theory is that workers invest in their own skills in order to earn higher wages, much as persons invest in financial or physical assets to earn income. Although this idea goes back at least to Adam Smith, modern human-capital research was originated in the late 1950s by economists Theodore Schultz, Jacob Mincer, and Gary Becker. Their ideas, focusing on investments in and returns to education and training, have provided the theoretical and empirical basis for decades of ensuing research.[1]

Much of the empirical research on the topic of human capital has analyzed the relationship between education and wages. This focus on education is due to the abundance of high-quality data sources with information on both education and wages. For example, analysts using cross-sectional data from the Current Population Survey (CPS) have found that individuals in the United States receive earnings that are approximately 10 percent higher for every additional year of schooling they have completed.[2] Kenneth I. Wolpin's article on education in this special edition of the *Monthly Labor Review* shows that, over the 15-year period between ages 25 and 39, a male college graduate earns 80 percent more than a male high school graduate without any college, and a male high school graduate earns 57 percent more than a high school dropout.

However, empirical research on training—the other key component of human capital—has lagged research on the economics of education. The human-capital model yields straightforward predictions about the relationship of on-the-job training to wages, wage growth, and job mobility; still, as will become clear, testing these predictions requires good longitudinal microdata.

The need for high-quality longitudinal microdata with detailed information about wages, mobility, and on-the-job training has led researchers to the National Longitudinal Surveys for empirical analyses of training. This article both provides a brief summary of the human-capital model as it relates to on-the-job training and summarizes the empirical training literature, with a special focus on the contributions that analyses of the data from the 1979 cohort of the

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National Longitudinal Survey of Youth (NLSY79) have made to that literature.

The human-capital model

Models of competitive labor markets imply that wages paid to workers reflect their productivity. For example, if education makes workers more productive, then higher wages are paid to more highly educated persons. Similarly, if on-the-job training makes workers more productive, then trained workers should receive higher wages than workers with no training. But education and on-the-job training differ in one key aspect: most workers finish their schooling before entering the labor market, whereas most on-the-job training occurs during a worker's tenure with an employer. While education and on-the-job training are both productivity-enhancing investments, they potentially differ with regard to whether the worker or the employer pays the costs.

Any investment in human capital involves current costs and future benefits. The costs associated with on-the-job training involve both direct costs, such as the salaries of the persons doing the training and any costs of materials, and indirect costs, such as the cost of taking trainees away from their current productive tasks. The benefits of on-the-job training accrue to both the firm providing the training and the worker receiving the training: because the worker is more productive after the training, the firm benefits from higher productivity and greater output, and the worker benefits from his or her higher productivity in the form of higher wages. One key theoretical issue regarding on-the-job training concerns the division of these costs and returns between the firm and the worker.

Gary Becker made progress on this cost-sharing issue by defining two types of training: *general training* and *specific training*. Completely general on-the-job training is training that provides the worker with skills that are productive at firms other than his or her current employer. Examples of completely general training are learning to use a word-processing or data-processing computer program that is available for purchase by any firm, pilots learning to fly a type of jet airplane that is in the fleet of several airlines, and doctors learning a new surgical technique that could be conducted at any hospital. By contrast, completely specific on-the-job training is training that enhances the productivity of the worker at only the firm providing the training. Examples of completely specific training are astronaut training (presumably specific to the National Aeronautics and Space Administration), learning to drive a tank (presumably specific to the U.S. Military), and learning to operate a machine that was developed and is used by only one manufacturing firm to produce its product. In the real world, almost all training involves a combination of both general and specific skills.

In a competitive labor market, workers are paid for the skills they possess. Becker reasoned that, because general training provides skills which are useful at all firms, the firm offering the general training will need to pay the trained worker a wage that reflects these skills; otherwise the worker will leave the firm to receive a higher wage at a different firm. Anticipating this possibility, a profit-maximizing firm will not pay any of the costs of general training because it cannot extract any of the returns from the training. In that case, the worker will pay all the costs of the general training—not just the direct costs, but also the indirect costs that reflect the worker's lost productivity to the firm. Human-capital theory thus predicts that, relative to workers who do not receive training, workers who receive general training will be paid lower wages while receiving the training and higher wages after the training is complete. This hypothesis is depicted in exhibit 1, which compares the wage profile of a worker who receives no training with that of a worker who receives general training.

Sharing the costs and returns of specific training is more complicated. On the one hand, assume, for the moment, that, as with general training, a worker pays all the costs and receives all the benefits of specific training. In such a case, a worker who might be fired or laid off after receiving the training would receive no future returns from his or her investment in specific training; thus, the worker would have less incentive to pay for the training, because the decision to lay the worker off is made by the firm. On the other hand, assume that a firm pays all the costs and receives all the benefits of specific training. In this case, the firm would receive no future returns from the investment if the trained worker quit for another job; thus, the firm would have less incentive to pay for the training, because the decision to quit is made by the worker. The solution to this dilemma is for the worker and the firm to share the costs and returns of specific training, with the exact division of the returns depending upon the wage elasticity of the worker's propensity to quit and the firm's propensity to lay the worker off.[3] This sharing is portrayed in exhibit 1: the wage profile of a worker who receives specific training shows the worker paying some (but not all) of the costs and receiving some (but not all) of the returns.

The sharing of the costs and returns to training has implications for worker mobility. Workers who have received specific training have higher productivity at their current employer than at other employers, and their wage at the current employer is higher than the wage they could obtain from other employers. This asymmetry results in workers with specific training having lower probabilities of quitting than workers with no specific training. Similarly, because the productivity of workers with specific training exceeds their wage, the employer is less likely to lay off workers with

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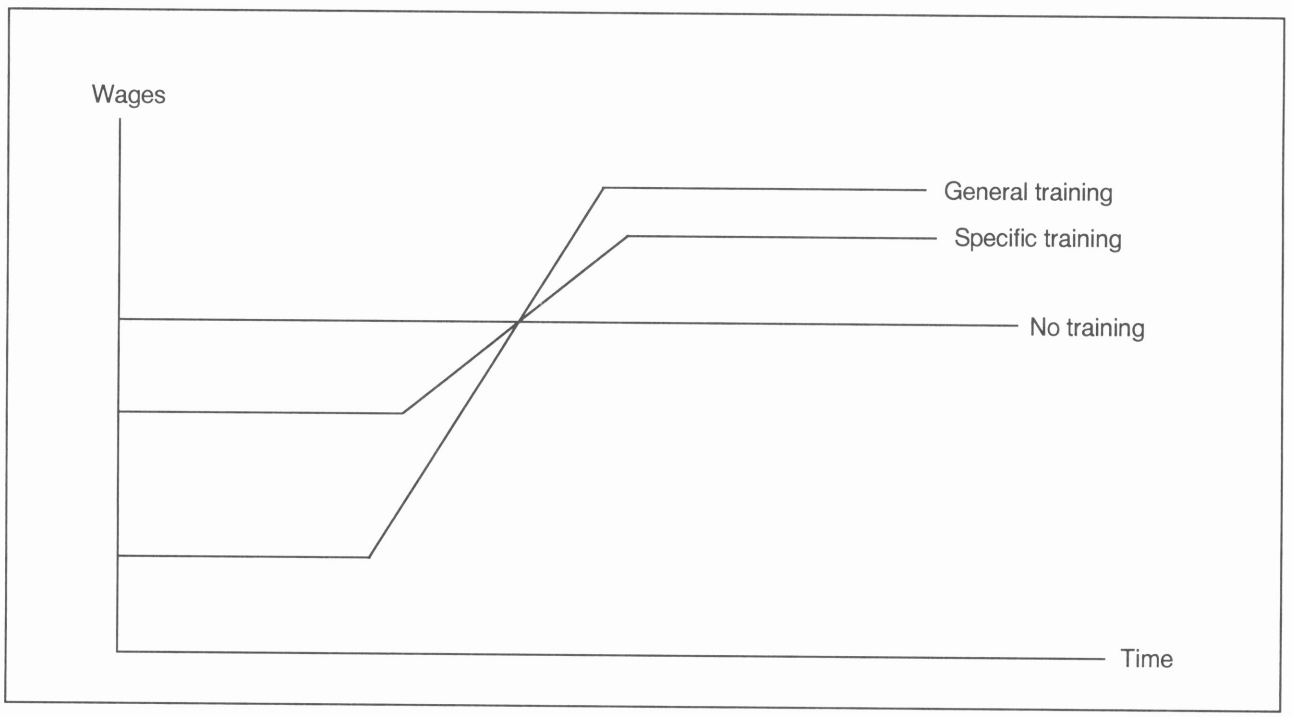
Exhibit 1. Wage profiles



specific training relative to workers with no specific training. By contrast, because workers with general training have the same productivity at the current employer as at other employers, and because the wage they receive from their current employer equals the wage they would expect from other employers, the provision of general training does not lower expected probabilities of quitting. Similarly, in the simple model presented here, firms could replace a worker with completely general training without loss of any productivity, so the provision of general training does not lower expected probabilities of layoffs.

In sum, this simple, yet elegant, human-capital model has several testable predictions. First, training lowers the starting wage: during training, a worker accepts a lower wage relative to a worker not receiving training, all other things being equal. Second, training raises future wages at the employer providing the training: a worker who has received on-the-job training should receive higher wages relative to a worker with no training—again, all other things being equal. Third, by definition from the preceding two predictions, training raises wage growth at the employer providing the training. Fourth, the foregoing three predictions vary in magnitude as a function of whether the training is specific or general. Finally, specific training lowers worker mobility, whereas general training has no effect on worker mobility, all other things being equal.

These testable predictions provide the framework for empirical analysis. It is obvious that several demands are being placed on the data. First and foremost, there needs to be information on training and individuals' wages. Furthermore, longitudinal microdata are necessary for analyzing wage growth and mobility. Finally, the information needs to be quite detailed in order to distinguish general training from specific training. The NLSY79 data satisfy all these criteria and make up one of the few data sets that provide detailed longitudinal information on all the necessary analytical variables. It is not surprising, then, that much of what we know about on-the-job training has come from analyses of the NLSY79 data.

Before we turn to the empirical findings, the importance of the phrase "all other things being equal" needs to be mentioned. A common finding from all data sets with training information is that individuals who receive training are not a random sample from the population of all workers. For example, those who are college educated and those with higher ability are more likely to receive training.[4] This nonrandom selection affects how we interpret the empirical analysis that follows. (This issue is more fully explained later in the article.)

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Table 1. Questions about training, NLSY79, 1988–2000[1]

Question	Mean[2]
19. Since [date of the last interview] did you attend any training program or any on-the-job training designed to help people find a job, improve job skills, or learn a new job?	
Yes: Continue to 20	.158
No: Skip to next section of questionnaire	.842
20. Which category on this card best describes where you received this training? [Code one only]	
Business school	.030
Apprenticeship program	.021
A vocational or technical institute	.097
A correspondence course	.029
Formal company training run by employer or military training	.375
Seminars or training program at work run by someone other than employer	.158
Seminars or training programs outside of work	.184
Vocational rehabilitation center	.013
Other (Specify: _____)	.078
21. Who paid for this training program? [Code all that apply]	
Self or family	.139
Employer	.739
Job Training Partnership Act	.021
Trade Adjustment Act	.001
Job Corps Program	.001
Work Incentive Program	.004
Veteran's Administration	.002
Vocation Rehabilitation	.011
Other (Specify _____)	.092
25. Altogether, for how many weeks did you attend this training?	5.7
31. How many hours per week (do/did) you usually spend in this training?	20.1

[1] The training questions in 1988, 1996, 1998, and 2000 had a 2-year reference period. The training questions in 1989–1994 had a 1-year reference period.

[2] All entries are unweighted tabulations from the 1988–2000 NLSY79 microdata. The sample size for question 19 is $N = 91,144$. All means for questions 20, 21, 25, and 31 are computed from the sample of respondents who said "yes" to question 19. The mean for question 25 is computed from the sample of respondents whose training program had been completed by the date of the interview.

Empirical findings from the early literature

Early on in the development of human-capital theory, economists recognized that on-the-job training was an important source of investment in human capital. Because on-the-job training data were not available, the earliest attempts to measure such training were indirect. As has been noted, models of competitive labor markets imply that workers will be paid in accordance with their productivity. The tendency of wages to increase with labor market experience was interpreted as evidence of training-induced increases in productivity. With additional assumptions, the wage-experience relationship could be used to infer an investment path and returns to the training investment.

Mincer's 1962 article attempted to estimate the amount of training by comparing the earnings path of individuals with different amounts of education and assuming that returns to training were the same as returns to schooling.[5] Mincer's 1974 book was probably more influential; in it, he showed that if time spent in training increased the logarithm of wages linearly, and if the percentage of working time spent in training declined with experience in a linear manner, then wages would be well described by a quadratic function of experience.[6] The quadratic earnings function was found to be a fair approximation of earnings and won wide acceptance.[7]

This evidence was clearly imperfect. Moreover, in the late 1970s, economists developed other theories to explain the tendency of wages to rise with experience, ranging from improvements in job matches through a worker's career to firms tilting their wage profiles to discourage shirking or encourage more stable workers to apply.[8] Evidently, more direct measures of on-the-job training were needed.

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One such measure was included in the Panel Study of Income Dynamics (PSID), a longitudinal survey administered annually since the 1960s. In 1976 and 1978, the PSID asked the question, "On a job like yours, how long would it take the average new person to become fully trained and qualified?" Articles by Greg J. Duncan and Saul Hoffman in 1979 and James N. Brown in 1989 used this question to identify periods of on-the-job training and adjust earnings equations accordingly.[9] The longitudinal structure of the PSID allowed Brown to directly examine the effect of training on wage increases, rather than inferring wage increases from cross-person comparisons. Both articles found a substantial effect of training on wages, providing evidence for the human-capital interpretation of wage increases. However, the PSID question clearly affords only a limited measure of on-the-job training. As Duncan and Hoffman noted, the intensity of training during the training period may vary between persons with identical answers to the question, and the type of training—formal, informal, or learning by doing—is completely unspecified.

Aside from the NLSY79, other attempts to measure on-the-job training in surveys of individuals include earlier cohorts of the National Longitudinal Surveys (NLS) and supplements to the CPS in 1983 and 1991. Lee A. Lillard and Hong W. Tan used the 1983 CPS and the early cohorts of the NLS to examine training and its effect on labor market outcomes.[10] The CPS supplement asks what training was needed for the respondent to obtain his or her current or previous job and inquires about training to improve skills on the current job. Because the CPS is not a longitudinal survey and because the period during which the training took place is unclear, only the association of training with differences in wages between persons (which is substantial) can be examined; wage changes due to training for a given individual cannot be tracked. The training questions in the earlier cohorts of the NLS are broadly similar to, but less extensive than, those in the NLSY79 (and the employment data in the earlier cohorts are not as good). Moreover, they cover only the "longest" training event between surveys, so they do not provide a comprehensive record of formal training. Exploiting the longitudinal nature of the NLS to examine the effect of training on wages several years later, Lillard and Tan found evidence that training does depreciate.

Training data in the NLSY79

This section describes several of the key training questions in the NLSY79 survey instrument. Readers interested in more documentation about the NLSY79 training questions may consult the NLS Users' Guide.[11] As mentioned there, the training questions in the survey changed in the mid-1980s. The initial, 1979–86 rounds of the NLSY79 were funded by the Employment and Training Administration (ETA) of the U.S. Department of Labor. The ETA was concerned with the efficacy of various federally funded employment and training programs in helping youths to acquire skills and secure employment. Data collection during the 1979–86 interviews was limited to only those training programs in which the respondent had been enrolled for 1 month or more; analysis of the microdata from 1988 to 2000 indicates that 66 percent of completed training spells are less than 4 weeks in duration. In 1987, when funding of the NLS shifted to the Department of Labor's Bureau of Labor Statistics, the collection of extensive information on government training ceased, and the "Other Training" section of the questionnaire was restructured. The limitation of 1 month's duration was dropped in the 1988 and later questionnaires. The 1987 survey was an abbreviated telephone interview, and only one question was asked about whether any training or assistance had been received from any government-sponsored program.

The key training questions from the 1988–2000 NLSY79 surveys are listed in table 1, along with unweighted means. In each of the surveys between 1988 and 2000, the incidence of training is elicited with the question, "Since [date of the last interview] did you attend any training program or any on-the-job training designed to help people find a job, improve job skills, or learn a new job?" The statistics in table 1 tell us that 15.8 percent of persons have received training since the date of their last interview.[12]

One advantage of a longitudinal survey such as the NLSY79 is that one can examine the incidence of training over several years. Table 2 reports the cumulative incidence of training spells for the sample of individuals who responded to every interview between 1989 and 1994. Surveys for these 6 years were chosen because each has an annual reference period for the training question. Over the course of those 6 years, when individuals in the NLSY79 ranged from 24 to 37 years of age, 53.2 percent of respondents never received any training. Of those persons who did get training at least once during the 6-year period, roughly half (24.1/46.8) received

Table 2. Cumulative incidence of training, sample of 8,095 individuals who responded to each interview, 1989–94

Number of training spells	Count	Percent
0	4,307	53.2
1	1,947	24.1
2	994	12.3
3	516	6.4
4	208	2.6
5	99	1.2
6	24	.3

NOTE: Entries are unweighted tabulations from the 1989–94 NLSY79 microdata.

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only one spell of training, and roughly one-quarter (12.3/46.8) received two spells of training.

Individuals who answer "yes" to the question on the incidence of training are then asked where they received their training. The most frequent type of training is formal company training (37.5 percent of all training spells); noncompany seminars or training programs also are a frequent type of training (34.2 percent of all training spells, broken down into 18.4 percent consisting of seminars or training programs outside of work, and 15.8 percent seminars or training programs at work run by someone other than the employer). Vocational or technical institutes are the fourth most-frequent type of training (9.7 percent of all training spells). As mentioned later in the article, researchers have found that this question about the type of training provides important information about the generality of training.

The next question in the training sequence asks who paid for the training program. The most frequent response is "the employer," who pays for 73.9 percent of all training spells. Researchers have made several interesting points regarding this question. First, the question supplies some of the data that are necessary to analyze the interesting theoretical question of who pays for general and specific training. (The empirical literature on the subject is summarized in a later section of the article.) Second, many researchers restrict their analyses to employer-paid training spells; the human-capital model is an on-the-job training model, and deleting nonemployer paid spells of training aligns the theory with the empirical work.

The duration of training is just as important as the incidence. Table 1 indicates that the mean completed training spell lasts 5.7 weeks and 20.1 hours per week. Table 3 gives statistics on the distribution of the duration of completed training spells. The distribution of weeks of training is heavily skewed to the right, with half of all completed training spells less than or equal to 1 week in duration, but 5 percent greater than 24 weeks. Total hours of training follow a similar pattern: half of all completed training spells are less than or equal to 35 total hours, but 5 percent are greater than 520 total hours.

Table 3. Distribution of training durations, NLSY79, 1988–2000

Percentile	Number of weeks	Hours per week	Total hours
Mean	5.7	20.1	118.3
25th	1	6	12
50th	1	16	35
75th	6	40	80
95th	24	40	520
99th	52	65	1,440

NOTE: Entries are unweighted tabulations from the 1988–2000 NLSY79 microdata.

Empirical findings

Wages and wage growth. Lisa Lynch's 1992 article in the *American Economic Review* is the most prominent early study using NLSY79 data to examine the effect of training on wages.[13] Lynch uses data from 1980 through 1983 to estimate the effect of training on 1983 wages for youths who had completed their education by 1980 with less than a college degree. (Note that 1980 is too early to have a substantial sample of college graduates from the 1979 survey.) She classifies training as on the job, off the job, and apprenticeship, and she reports descriptive statistics showing that 4.2 percent of individuals received on-the-job training for an average of 31.2 weeks, 14.7 percent of individuals received off-the-job training for an average of 40.9 weeks, and 1.8 percent of individuals received apprenticeship training for an average of 63.5 weeks. She takes advantage of the longitudinal nature of the NLSY79 to construct measures of cumulative weeks of training in each category.

Lynch estimates both an equation for 1983 wages and an equation for wage growth from 1980 to 1983. The wage growth equation is used to eliminate possible selection bias in the wage-level equation: workers who receive training may have some unobservable characteristic, such as high ability, that is positively correlated with both wages and training. In that case, because more able workers would get trained, comparing wage levels of different workers would bias wage differentials between trained and untrained workers. But examining wage changes for a given worker will correct this source of bias if ability is fixed over time for a given individual. Lynch's wage-level equation implies that off-the-job training and apprenticeship training from previous employers, and on-the-job training and apprenticeship training with the current employer, significantly raise wages. In addition, the wage growth equation implies that off-the-job training and apprenticeship training raise wages, but that on-the-job training has no effect on wages.

In a later study paralleling Lynch's methods, Jonathan Veum uses data from the 1986–90 surveys to measure the impact of training on wages.[14] Unlike Lynch, Veum is able to include in his analysis all training spells, whether they were less than or greater than 1 month in duration. His 1990 wage-level equation yields no statistically significant effect of any form of training when training is measured continuously, but does show some significant effects of company training and off-the-job seminars when training is measured in terms of its *incidence*. His results for wage growth between 1986 and 1990 are similar.

Daniel Parent uses a specification similar to that of Lynch and Veum, with data from the 1979–91 surveys.[15] Although the wage growth equations in the earlier papers eliminate bias due to unchanging personal characteristics, Parent notes that jobs with higher wages may also have more training

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irrespective of the individual. Parent gets around this problem by using information on the deviation of the stock of training from within-job means. He finds fairly substantial effects of both off-the-job and on-the-job training. His correction for job bias substantially reduces the effect of apprenticeships, although the effect of previous jobs' apprenticeship training remains statistically significant.

Paul Lengermann used the NLSY79 to examine the question investigated by Lillard and Tan: How does the effect of training on wages evolve over time?[16] Unlike those researchers, Lengermann examines wage *growth* in contrast to wage *levels*, so as to avoid bias due to the differing abilities of workers. He examines both spells of training that lasted 4 weeks or longer (available throughout the sample) and spells of training of less than 4 weeks (for which detailed information is available only after 1986). His data cover 1979–93, and his results indicate that (1) long spells of company training have substantial effects on wages and (2) those effects do not depreciate—indeed, they are estimated to increase from 4.4 percent in the first year to 8.2 percent after 9 years. The effect of long spells of school-based training is not statistically significant, although it also does not appear to depreciate. Short spells of training, perhaps not surprisingly, have less consistent effects.

So far, this article has concentrated on whether training increases wages by a statistically significant amount, rather than discussing the economic significance of the increase. This approach reflects the emphasis in the papers presented. Another question is, "Considering training as an investment, how does the rate of return compare with that from other investments, such as schooling?" Harley Frazis and Mark Loewenstein investigate this question, using data from the 1979–2000 surveys of the NLSY79.[17] Their analysis is restricted to training at least partially paid for by the employer. (See question 21 in table 1; for years prior to 1988, Frazis and Loewenstein impute whether the employer pays for training.) Like Parent, Frazis and Loewenstein control for jobs by restricting their investigation to within-job wage changes.

Frazis and Loewenstein show that estimates of the effect of training are highly dependent upon the assumed functional form of the relationship between wages and training. They find that the best-fitting functional form is one in which the logarithm of wages increases proportionately with the cube root of training. Using linear hours instead of the cube root results in a drastic underestimation of the effect of training at typical values, which may explain the insignificant effects found in some of the aforementioned papers. Frazis and Loewenstein find that, in their base specification, the median positive value of employer-financed training of 60 hours increases wages by about 5 percent, which, when annualized, implies a rate of return of 159 percent.

Frazis and Loewenstein consider several explanations for this very high estimated rate of return. Correcting for promotions (for which the NLSY79 collected data in 1988–90 and 1996–2000), direct costs of training, and heterogeneity in wage growth (as well as in wage levels) reduces estimated rates of return to 30 to 40 percent. While this estimate is still several times estimated rates of return to schooling in the literature, Frazis and Loewenstein note that returns to training appear to vary across jobs: managers and professionals have higher rates of return than do blue-collar workers, for example. In the presence of such variation, estimated rates of return can be regarded as the return of training to the trained. However, they are likely to be greater than the return that could be realized by employees who did not receive training.

Frazis and Loewenstein's research highlights the strengths of the NLSY79 data set in studying training. The large sample size, the long length of the panel, and detailed survey data about other labor market information, such as promotions, allow for relatively precise estimation of the effects of training while controlling for confounding influences.

Mobility. The most prominent early article analyzing the empirical relationship between worker mobility and training was written by Lynch.[18] Using data from the 1979–83 surveys of the NLSY79, Lynch estimated the probability of leaving the first job as a function of tenure for individuals who have permanently left school. Her estimates show that young persons who received formal on-the-job training from their employer are less likely to leave their job, whereas those who participated in training obtained from for-profit proprietary institutions outside the firm are more likely to leave their job (although this latter effect is not statistically different from zero). These results are consistent with the human-capital model if one makes the straightforward assumption that on-the-job training provides firm-specific skills and off-the-job training provides general labor market skills.

Further analysis of how training affects worker mobility is provided by Loewenstein and James Spletzer, who use NLSY79 data from the 1988–91 survey years.[19] After controlling for individual and job characteristics, they find that individuals who have received company training have a job separation rate that is 8 percent lower than individuals without such training, and individuals who received school training (business school, apprenticeship, vocational or technical institute, or correspondence courses) have no differences in job separation probabilities relative to persons who did not receive school training. The mean job separation rate in Loewenstein and Spletzer's sample is 53 percent. Assuming that company training is more specific than general and that school training is more general than specific, these empirical results are consistent with the basic predictions about worker mobility from the human-capital model.

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Loewenstein and Spletzer use their empirical findings to build on the predictions from the human-capital model. Because the returns to specific training are lost when a job match terminates, the model predicts that specific training should be selectively provided to workers who are less likely to leave the job. (Evidence supporting this theoretical prediction is mentioned shortly). If there is uncertainty about workers' future mobility, and if information about the quality of the employer-worker match is revealed over time, it may be optimal to delay training as a means of avoiding making a costly investment in a worker who may soon leave the firm. Such a decision to delay training may be optimal even though it entails forgoing the returns to training during the early part of the employment relationship. Loewenstein and Spletzer find that the NLSY79 data show a substantial amount of delayed training; for example, their estimates show that a similar proportion of workers get their first spell of training in their second year of tenure as in their first year of tenure.

As part of his research mentioned earlier, Parent found that both on-the-job and off-the-job training at the current employer reduced a worker's mobility, while training at previous employers appeared to increase mobility, although by a lesser magnitude. For workers with more than one spell of employment, it is possible to correct for bias caused by differences across workers in propensities to leave jobs. When Parent makes this correction, the effect of training at the current employer is strengthened.

It is interesting to flip the training-mobility relationship around and ask whether individuals with higher expected future job separation rates receive lower amounts of company training. This is the question asked by Anne Beeson Royalty, who uses NLSY79 data from survey years 1980–86 in her analysis.[20] She finds that a higher incidence of company-provided training is given to individuals with lower estimated probabilities of leaving the employer. Assuming that company training imparts firm-specific skills, Royalty's analysis shows that profit-maximizing employers target the provision of specific training toward those individuals who are less likely to leave.

General and specific training

Human-capital theory distinguishes between general human capital, which is useful at many employers, and specific human capital, which is useful only at the current firm. Researchers have associated types of training that raise wages at both current and future employers with general human capital, and types of training that raise wages only at the current employer with specific human capital. Furthermore, types of training that reduce mobility have been associated with specific training. Much of the empirical work in the training literature has taken advantage of the wealth of information in the NLSY79 data to explore the measurement and theoretical implications of general and specific training.

The findings reviewed in this article up to now present a fairly consistent fit between the theoretical human-capital model and the empirical training results. From her wage-level estimation, Lynch finds that wages are raised by on-the-job training from the current employer, but not from previous employers, whereupon she concludes that on-the-job training is primarily specific. She also finds that off-the-job training taken before the worker's tenure on the current job does raise wages, consistent with such training being primarily general. Lynch's analysis of mobility leads her to a similar conclusion: that on-the-job training is more specific, whereas off-the-job training is more general; Loewenstein and Spletzer's analysis of worker mobility finds similar results. The one study mentioned that does not slot nicely with the theoretical model is Parent's, which finds little difference between off-the-job and on-the-job training, with similar returns for training provided by current and previous employers (consistent with general training) and with both reducing mobility (consistent with specific training).

A detailed analysis of the costs and returns to training within and across jobs was conducted by Loewenstein and Spletzer.[21] The motivation for this study was to analyze questions in the NLSY79 that ask about who pays for the training (question 21 in table 1). Recall from the discussion of the human-capital model that there are two costs to employer-provided training: the direct costs, plus an indirect cost of lower wages during training. It is assumed that asking workers who pays for the training refers to direct costs only; it is a stretch to believe that noneconomists would think of indirect costs (lower wages due to reduced productivity) when answering this survey question. Loewenstein and Spletzer find that employers pay for 96 percent of formal company training spells. This percentage is not surprising, because formal company training almost surely has a large component of specificity and the human-capital model predicts that employers will share the costs of specific training with the worker. Loewenstein and Spletzer also show that employers pay for 42 percent of training spells in the aggregate category of "business school, apprenticeship, vocational or technical institute, and correspondence course." This aggregate category, referred to as *school training* in the discussion that follows, should have a large component of generality, and according to the human-capital model, employers should pay the direct costs of general training only if they can pass on the costs to workers by paying them lower wages during the training.

Loewenstein and Spletzer find no significant evidence that workers receiving employer-provided training—either general or specific—accept lower wages during the training period. While this finding may seem to contradict the human capital model, it is consistently found in the empirical

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literature—for example, by Lynch and Parent, as well as by researchers using training data from employer surveys.[22] The most likely explanation for this anomaly is that it is due to differences between trained and untrained workers that are difficult to control for empirically. If workers who receive training have higher ability than workers who do not receive training, and if this higher ability is observable to the employer, but unobservable to the data analyst, then workers who receive training will have higher wages relative to workers who do not receive training. Even if training lowers the starting wage, as is predicted by the human-capital model, higher wages attributable to differences in ability may make a lower starting wage difficult to observe in the data when one compares wages of untrained workers with wages of workers receiving training.

The human-capital model predicts that if employers are paying both the direct and indirect costs of training, as the NLSY79 data suggest, employers should also be realizing some of the returns. The empirical strategy that Loewenstein and Spletzer use to test this prediction is to compare the return to training when a worker remains at the employer providing the training with the return to training when the worker moves to a new employer. Loewenstein and Spletzer find that the return to training received from a previous employer is higher relative to the return to training received from the current employer when the training is arguably more general. Lengermann reports a similar result for long spells of company training. In combination with the absence of a starting-wage effect, Loewenstein and Spletzer's analysis shows that employers pay for some of the costs of general training and receive some of the returns. This finding is at odds with the standard human-capital model, but can be reconciled with several theoretical modifications to that model. For example, minimum wages, liquidity constraints, or contract enforcement considerations can result in the employer sharing the costs and returns of general training.[23]

This evidence that employers share the costs and returns of general training has led researchers to seek additional questions that measure the generality of training. In 1993, for the first and only time, the NLSY79 included the question "How many of the skills that you learned in this training program do you think could be useful in doing the same kind of work for an employer DIFFERENT than [current employer]?" There are five possible responses to this question: (1) all or almost all of the skills, (2) more than half of the skills, (3) about half of the skills, (4) less than half of the skills, and (5) none or almost none of the skills. In follow-up research, Loewenstein and Spletzer analyze the 1993 NLSY79 data and find that 63 percent of workers receiving employer-provided formal training respond that "all or almost all" of the skills they learned at one employer are useful in doing the same kind of work for a different employer.[24] This finding suggests that the skills individuals are learning in their employer-provided training have a large general component.

Loewenstein and Spletzer estimate wage and mobility equations with the 1993 general and specific training data as the key explanatory variable. Their wage regressions show, first, that there is no systematic relationship between the degree of generality of the training and its wage return in the job that provided the training and, second, that the return to training received from previous jobs exceeds the return to training received at the current job, for all degrees of generality. If these results are compared with those from a similar specification using data on the type of training (question 20 in table 1) instead of on the degree of generality, then the first result holds, whereas the second result holds for school training, but not for company training. This finding leads Loewenstein and Spletzer to discuss the pros and cons of the two training measures. They hypothesize that the type of training data conveys different information than does the self-assessed generality of training data. For training to be truly general, not only must the skills be useful at other employers, but also, other employers must observe and value the generality of those skills. The generality-of-training question in the 1993 NLSY79 asks the individual's opinion about whether the skills learned in the training are useful elsewhere, but this is not equivalent to asking alternative employers about the transferability of skills. By contrast, the question on type of training not only proxies for the generality of the skills imparted by training, but also conveys information about how likely other prospective employers are to observe these skills. For example, school training might easily be certified for other employers to see its value, but it may be difficult for prospective employers to observe the usefulness of skills learned in company training. Such reasoning leads Loewenstein and Spletzer to speculate that information on the type of training may be preferable to a directly asked question as a measure of generality. However, as they suggest, the evidence for such speculation is limited, and the research community would benefit from asking the question on degree of generality in more than 1 year.

HUMAN-CAPITAL THEORY GAINED ITS PRESENT PROMINENCE in labor economics more than four decades ago. The simple human-capital model has empirically testable predictions regarding the relationships among wages, mobility, and training. Testing these predictions requires microdata with detailed longitudinal information on training, individual wages, and job mobility—data that were not available at the time human-capital theory was originally developed. As we celebrate the 25th anniversary of the NLSY79 cohort, we are not surprised that much of the empirical knowledge about worker training has come from analyses of the data in that survey.

But any good literature review raises as many questions as it answers, and this article has tried to highlight some of

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the issues that could benefit from further analysis and enhancements to the questionnaire. Three specific topics warrant mention. First, there is new theoretical and empirical research into the topic of why employers appear to pay for general training, and the NLSY79 data are likely to play an important role in the continuing development of this literature. Second, training is not always a well-defined concept, and any survey's measures of the incidence and duration of training undoubtedly contain measurement error; analyzing the amount, consequences of, and statistical remedies for measurement error is a topic that is well worth exploring.[25] Finally, any distinctions there are among formal training, informal training, and learning by doing have been ignored in this article; the NLSY79 has asked questions regarding informal training, but economists have not yet studied the responses to those questions in depth.[26] □

Notes

[1] See Gary Becker, "Investment in Human Capital: A Theoretical Analysis," *Journal of Political Economy*, October 1962, pp. 9–49, and *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education* (Cambridge, MA, National Bureau of Economic Research, 1964); Theodore W. Schultz, "Investment in Human Capital," *American Economic Review*, March 1961, pp. 1–17; and Jacob Mincer, "Investment in Human Capital and Personal Income Distribution," *Journal of Political Economy*, August 1958, pp. 281–302.

[2] See David A. Jaeger, "Estimating the Returns to Education Using the Newest Current Population Survey Education Questions," *Economics Letters*, March 2003, pp. 385–94.

[3] The formal mathematical model was worked out by Masanori Hashimoto in "Firm-Specific Human Capital as a Shared Investment," *American Economic Review*, June 1981, pp. 475–82.

[4] This greater likelihood has been shown by many authors using many data sets. For example, see the analysis of the National Longitudinal Survey of the High School Class of 1972 (NLSHS72) data by Joseph G. Altonji and James R. Spletzer, "Worker Characteristics, Job Characteristics, and the Receipt of On-the-Job Training," *Industrial and Labor Relations Review*, 1991, pp. 58–79; the analysis of Current Population Survey (CPS) data by Norman Bowers and Paul Swaim, "Recent Trends in Job Training," *Contemporary Economic Policy*, 1994, pp. 79–88; the analysis of Panel Study of Income Dynamics (PSID) data by Greg J. Duncan and Saul Hoffman, "On-the-Job Training and Earnings Differences by Race and Sex," *Review of Economics and Statistics*, 1979, pp. 594–603; and the analysis of the NLSY79 data by the authors cited in the later sections of this article.

[5] Jacob Mincer, "On-the-job training: Costs, returns and some implications," *Journal of Political Economy*, October 1962, pt. 2, pp. 50–79.

[6] Jacob Mincer, *Schooling, Experience, and Earnings* (New York, Columbia University Press, 1974).

[7] Later research found that earnings profiles were better described by a *quartic* function of experience; see Kevin M. Murphy and Finis Welch, "Empirical Age-Earnings Profiles," *Journal of Labor Economics*, April 1990, pp. 202–29.

[8] See Boyan Jovanovic, "Job Matching and the Theory of Turnover," *Journal of Political Economy*, October 1979, pp. 972–90; Edward Lazear, "Agency, Earnings Profiles, Productivity, and Hours Restrictions," *American Economic Review*, September 1981, pp. 606–20; and Joanne Salop and Steven Salop, "Self-Selection and Turnover in the Labor Market," *Quarterly Journal of Economics*, November 1976, pp. 619–27.

[9] Greg J. Duncan and Saul Hoffman, "On-The-Job Training and Earnings Differences by Race and Sex," *Review of Economics and Statistics*, November 1979, pp. 594–603; and James N. Brown, "Why Do Wages Increase with Tenure? On-the-Job Training and Life-Cycle Wage Growth Observed within Firms," *American Economic Review*, December 1989, pp. 971–91.

[10] Lee A. Lillard and Hong W. Tan, "Private Sector Training: Who Gets It and What Are Its Effects?" *Research in Labor Economics*, vol. 13, 1992, pp. 1–62.

[11] Found at **http://www.nlsinfo.org/nlsy79/docs/79html/79text/training.htm**.

[12] As mentioned in footnote 1 of table 1, the training questions in 1988, 1996, 1998, and 2000 have a 2-year reference period, whereas the training questions in 1989–94 have a 1-year reference period.

[13] Lisa M. Lynch, "Private Sector Training and the Earnings of Young Workers," *American Economic Review*, March 1992, pp. 299–312.

[14] Jonathan R. Veum, "Sources of Training and their Impact on Wages," *Industrial and Labor Relations Review*, July 1995, pp. 812–26.

[15] Daniel Parent, "Wages and Mobility: The Impact of Employer-Provided Training," *Journal of Labor Economics*, April 1999, pp. 298–317.

[16] Paul A. Lengermann, "How Long Do the Benefits of Training Last? Evidence of Long Term Effects across Current and Previous Employers," *Research in Labor Economics*, vol. 18, 1999, pp. 439–61.

[17] Harley Frazis and Mark A. Loewenstein, "Reexamining the Returns to Training: Functional Form, Magnitude, and Interpretation," BLS working paper no. 367, *Journal of Human Resources*, forthcoming, spring 2005.

[18] Lisa M. Lynch, "The Role of Off-the-Job vs. On-the-Job Training for the Mobility of Women Workers," *American Economic Review Papers and Proceedings*, May 1991, pp. 151–56.

[19] Mark A. Loewenstein and James R. Spletzer, "Delayed Formal On-the-Job Training," *Industrial and Labor Relations Review*, October 1997, pp. 82–99.

[20] Anne Beeson Royalty, "The Effects of Job Turnover on the Training of Men and Women," *Industrial and Labor Relations Review*, April 1996, pp. 506–21.

[21] Mark A. Loewenstein and James R. Spletzer, "Dividing the Costs and Returns to General Training," *Journal of Labor Economics*, January 1998, pp. 142–71.

[22] See, for example, John M. Barron, Dan A. Black, and Mark A. Loewenstein, "Job Matching and On-the-Job Training," *Journal of Labor*

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Economics, January 1989, pp. 1–19; and John M. Barron, Mark C. Berger, and Dan A. Black, "Do Workers Pay for On-the-Job Training?" *The Journal of Human Resources*, spring 1999, pp. 235–52.

[23] For recent studies on the growing literature of why employers may share the costs of, and returns to, general training, see John Bishop, "What We Know about Employer-Provided Training: A Review of the Literature," *Research in Labor Economics*, vol. 16, 1997, pp. 19–87; Daron Acemoglu and Jorn-Steffen Pischke, "Why Do Firms Train? Theory and Evidence," *Quarterly Journal of Economics*, February 1998, pp. 79–119, and "The Structure of Wages and Investment in General Training," *Journal of Political Economy*, June 1999, pp. 539–72; Alison Booth and Mark Bryan, "Who Pays for General Training? New Evidence for British Men and Women," discussion paper no. 486 (Bonn, Institute for the Study of Labor (IZA), 2002); and Alison Booth and Gylfi Zoega, "Is Wage Compression a Necessary Condition for Firm-Financed General Training?" *Oxford Economic Papers*, January 2004, pp. 88–97.

[24] Mark A. Loewenstein and James R. Spletzer, "General and Specific Training: Evidence and Implications," *Journal of Human Resources*, fall 1999, pp. 710–33.

[25] For an analysis of the extent of measurement error in training in an employer data set, see John M. Barron, Mark C. Berger, and Dan A. Black, "How Well Do We Measure Training?" *Journal of Labor Economics*, July 1997, pt. 1, pp. 507–28. For a start on the extremely complicated topic of statistical consequences of, and remedies for, measurement error, see Harley Frazis and Mark Loewenstein, "Estimating Linear Regressions with Mismeasured, Possibly Endogenous, Binary Explanatory Variables," *Journal of Econometrics*, November 2003, pp. 151–78, and the working-paper version of "Reexamining the Returns to Training."

[26] A first pass at analyzing these responses is Mark A. Loewenstein and James R. Spletzer, "Formal and Informal Training: Evidence from the NLSY79," *Research in Labor Economics*, vol. 18, 1999, pp. 403–38.

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Children of the NLSY79: a unique data resource

The survey provides a wealth of information on the education, socioeconomic background, and cognitive, social, and emotional development of children aged 14 and younger; and on the workforce participation, education, marital, and fertility behaviors of young adults aged 15 or older; the data have been heavily used by researchers across a wide range of disciplines

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A remarkable design aspect of the National Longitudinal Survey of Youth 1979 (NLSY79) is the availability of longitudinal data on *all* children born to women in the original NLSY79 sample. The resulting data from the Children of the NLSY79 provide a resource that is unique in many respects. Perhaps not surprisingly, these data have been used by researchers across a wide range of disciplines, including child development, demography, economics, epidemiology, family studies, social policy, and sociology. Much of the usefulness of these data stem from two key factors: they can be linked to the rich longitudinal data for the NLSY79 mothers, and the child and young adult surveys are themselves longitudinal, covering a wide range of ages from early childhood and adolescence through the young adult years.

Sample design

As noted in other articles in this issue of the *Monthly Labor Review*, the main respondents in the NLSY79 are a nationally representative sample of individuals aged 14–22 in 1979, with surveys conducted annually through 1994 and biennially since 1996. The child sample—consisting of offspring aged 14 or younger—was begun in 1986, while the young adult sample—consisting of offspring aged 15 or older—was begun in 1994, with both the child and young adult samples fielded biennially since initial data collection.[1] The survey instruments differ substantially in the child and young adult surveys, as reviewed below. Because of the longitudinal design of the child and young adult samples, offspring are interviewed initially in the child sample, and then in the young adult sample as they reach adolescence. Thus by design, sample sizes in the two samples will vary from wave to wave, but as of the 2002 wave, the child sample contained 11,340 children, and the young adult sample contained 4,648 young adults.

These data do not provide a nationally representative sample of children or young adults, although they are appropriately regarded as representative of the population of offspring born to U.S. women who were aged 14–22 in 1979. Sample coverage of this latter population is excellent. However, the child and young adult samples do not cover children of NLSY79 women who were concealed from the survey (for example, children born to a NLSY79 woman but given up for adoption), children who died before the initial 1986 children survey, or children in NLSY79 households who were lost to the survey because they were not interviewed. The numbers of children in the latter

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category far outweigh the numbers in the other two categories, but, by current survey standards, sample attrition is modest. In the 2002 wave, for example, roughly 84 percent of NLSY79 women who had one or more births were successfully interviewed, compared with only 74 percent of women who had no children.

Child assessment battery

A major interview component of the Children of the NLSY79 is the child assessment battery, which gauges the child's socio-emotional and cognitive development from birth to age 14 and provides measures of the home environment that are thought to be important for child development. The validity and reliability for these child assessments are high, with these measures available for roughly 90 percent of surveyed children. (An exception is the Home Observation of the Environment-Short Form (HOME–SF) (see below) for infants under age 3.) While these child assessment instruments were designed to be administered in a face-to-face interview, they are nevertheless close in quality to similar diagnostic instruments used in the clinical settings of child assessments. The battery covers multiple domains of a child's developmental trajectories, as well as the home environment for the child.

Home observation of the environment. The quality of a child's home environment is measured by the HOME–SF.[2] This instrument assesses the cognitive stimulation and emotional support for children under the age of 15. Examples of questions include, "How many children's books does your child have?" and "If your child got so angry that he/she hit you, what would you do?" with the specific questions administered varying according to age suitability. These data have been widely analyzed, with the instrument adopted by other surveys (for example, the child assessment module in the New Immigrant Survey[3]).

Socio-emotional development. Data on child temperament are obtained from mothers for children under age 3 and from interviewers for children between ages 3 and 6. This temperament scale is intended to measure the child's activity level, affective attributes, attachment styles, compliance, sociability, and more generally, how a child usually acts. It was adapted from Rothbart's Infant Behavior Questionnaire and Kagan's compliance scale.[4] The Behavior Problem Index (BPI), completed by mothers with children from age 4 to age 14, has been widely used to gauge problem behaviors in children.[5] Researchers have typically distinguished between two major BPI subscales: "externalizing behaviors" measuring behaviors such as aggression, over-activity, and conflictual relations with peers; and "internalizing behaviors" measuring frustration and negative affect toward oneself. Although many other studies (usually small-scale studies) have collected BPI data, a unique aspect of the data from the Children of the NLSY79 survey is its longitudinal nature, with BPI measures repeated every 2 years since 1986. Thus, for some children, BPI is measured at as many as six longitudinal data points.

Cognitive development. The major instruments evaluating the cognitive development for the NLSY79 children are three subscales of the Peabody Individual Achievement Tests (PIAT)—Mathematics, Reading Recognition, and Reading Comprehension—for children between ages 5 to 14 and the Peabody Picture Vocabulary Test – Revised (PPVT–R) for children. The Memory for Digit Span subscale of the widely known Wechsler Intelligence Scale for Children – Revised (WISC–R) is also included. These assessments of cognitive ability are administered in all waves since 1986. Thus, as in the case of BPI, repeated measures of cognitive ability are available for individual children, which have proven of great value to the research community. Less widely used measures of cognitive ability in these data include "body parts recognition" (for children between ages 1 to 3 years; in the 1986 and 1988 waves), "memory for locations" (for children between 8 months and 4 years of age; in the 1986 and 1988 waves), and the short-term memory of auditory stimuli subscale from the McCarthy Scales of Children's Abilities (for children between ages 3 and 7 years; in the 1986 to 1994 waves). Taken together, these multiple-repeated measures provide a comprehensive developmental portrait of early cognitive ability.

Education, health, neighborhoods

Educational experiences are also assessed longitudinally, including the child's participation in the Head Start program, grade retention, number of the child's friends that the parent knows (a classic measure of "social capital"[6]), attendance in advanced classes, school activities, and basic school information. Researchers may request permission to view data on school characteristics, which were gathered in a 1995/1996 school survey, and on neighborhood characteristics, which are available from geocode information. These items, taken collectively, provide an unusually comprehensive portrait of the child's early formal schooling experiences in ways that exceed the educational data available for the original NLSY79 respondents.[7]

Various health-related questions include detailed perinatal conditions (for example, mother's smoking and drug use during pregnancy, her access to prenatal care, and child's birth weight), hospitalization history, general health conditions, specific illnesses, height, and weight. Many of these variables are available longitudinally.

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Young adult data

Yet another extremely important design decision in the offspring data is that the young adult survey instrument—administered when offspring are aged 15 or older—in many ways mirrors the survey instrument given to their NLSY79 mothers. The young adult ages are similar to NLSY79 mothers when they were first surveyed, and the period marks when adolescents and young adults begin transitioning from school to work. Thus, behavioral domains cover the continuing educational experiences of offspring, but also their employment histories, income, and program participation. Health-related behavioral items include detailed batteries on substance use (cigarette, alcohol, marijuana, and other drugs/substance), but also items related to both general and specific mental and physical health conditions. Demographic data include information on exposure to sex education, pregnancy, and detailed fertility and marital histories. Since 1994, a series of questions on computer use has been available, reflecting the survey's continuing sensitivity to various sources of social change.[8]

Advantages of the Children of the NLSY79

Several design elements of the Children of the NLSY79 make these data unique. For example, offspring data are available in the Panel Study of Income Dynamics (PSID), which is also a nationally representative longitudinal survey of respondents in the United States. However, the PSID child supplement consists of only two waves of data to-date; hence, the PSID parent/child data consists of a long panel of data for parents but only a short panel for children. By contrast, the National Survey of Families and Households (NSFH), another national probability survey, contains longitudinal data on both parents and offspring, but limits data on offspring to a single focal child within a specific age range. In addition, the NSFH contains only three waves of data, with interviews occurring 5 or more years apart. By contrast, the NLSY child and young adult surveys are administered biennially, contain *all* children born to a given mother, and provide a long panel of closely-spaced longitudinal data for both mothers and offspring.

As noted earlier, the major limitation of the NLSY79 data has to do with how the sample is generated. The sample cannot be regarded as a nationally representative sample of any cross-sectional population of children in the United States, but is representative of the population of children whose mothers were born between 1958 and 1965. Because children are added as they are born, the initial data in the child sample overrepresented children born to the youngest mothers, who tended to be from disadvantaged socioeconomic backgrounds. Children in the initial rounds of data were observed to do worse than other children of similar ages on a variety of indicators for cognitive, physical, and socio-emotional developments. These disadvantages are likely due to their disadvantaged social and economic circumstances. However, with time, more children have been added to the child sample as the NLSY79 women have completed their childbearing; hence, what was problematic in the early history of the child sample has become much less so as the joint mother-child age distribution has "normalized." Similar issues hold for the young adult data. The research community has been sensitive to these issues, and a variety of modeling strategies can be employed to deal with them.[9]

Retrospect and prospect

Although the majority of published refereed research papers have been in journals specializing in the areas of the family and child development, studies using these data have also appeared in fields such as demography, economics, epidemiology, and sociology. (See table 1.) The use of these data by researchers in child psychology, pediatrics, and psychiatry is particularly noteworthy because, traditionally, these fields have not relied on analyses of national probability samples, but have rather focused heavily on smaller experimental and clinical samples.

The topics examined with these data are very diverse. Published studies to-date have examined the consequences on children's well-being and cognitive and socio-emotional development of factors such as maternal employment, pov-

Table 1. Articles using data from the Children of the NLSY79 published in academic journals

Journal name	Rank	Number of articles
Journal of Marriage and the Family	1	31
Child Development	2	13
Journal of Human Resources	3	12
Demography	4	10
Pediatrics	5	9
Social Forces	5	9
Developmental Psychology	7	8
Journal of Family Issues	7	8
Perspectives on Sexual & Reproductive Health (previously, Family Planning Perspectives)	9	7
American Sociological Review	10	6
American Journal of Public Health	11	4
Intelligence	11	4
Journal of Health and Social Behavior	11	4
Archives of Pediatric & Adolescent Medicine	14	3
Journal of Economic Literature	14	3
Journal of Family and Economic Issues	14	3
Journal of Health Economics	14	3

NOTE: Journals that have only published less than three papers are not included, but they include such flagship journals as *American Journal of Sociology*, *Journal of Political Economy*, *American Economic Review*, *American Educational Research Journal*, and *Population and Development Review*.

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erty and program participation (for example, the Temporary Assistance for Needy Families (TANF) program and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)), parenting practices, and parental marital history. Similarly, pediatric researchers have used these data to estimate the association of child obesity and television viewing and how parents deal with children during mealtimes.[10]

Use of the young adult sample has increased over time as offspring have aged into this sample. A bibliography maintained by the NLS lists 45 journal articles, book chapters, theses and dissertations, conference papers, and working papers that have used the young adult data.[11] As noted above, early waves of the young adult data heavily overrepresented offspring born to very young mothers, but selection of offspring on mother's age has become far less problematic as offspring born to older mothers have aged into the young adult sample. As a consequence, research uses of the young adult data should continue to gain momentum as more waves of data become available and as parent/offspring characteristics become less skewed.

Researchers can employ advanced statistical techniques exploiting unique design elements in these data. For example, researchers have often noted that siblings are more likely to resemble one another on a variety of behavioral outcomes than are two otherwise similar but unrelated individuals chosen randomly from the same population. Such resemblance, it is argued, may reflect characteristics of siblings—how they were raised, characteristics of their parents and home environment, and genetic influences—that are not captured by the rich array of variables available in data such as the NLSY79. To deal with this issue, researchers have increasingly used a variety of statistical modeling techniques (for example, fixed effect models) that rely on the availability of sibling data to purge out the influence of hypothesized unobserved factors. An innovative elaboration of this idea involves comparisons of siblings, cousins, and unrelated individuals, a research design that is possible with the offspring data because both siblings and cousins can be identified. A similar idea relies on the identification of half-siblings, both among the original NLSY79 respondents and in the offspring data, which has been used to examine certain models of genetic similarity. □

Notes

[1] Members of the Center for Human Resource Research (CHRR) and, in particular, Frank Mott played a crucial role in developing and designing the child and young adult surveys. Because plans to collect data on offspring were not part of the original NLSY79 data design, external funding sources were required to collect these data. As a consequence, the availability of offspring data were dependent on the foresight of Frank Mott, who in the early 1980s spearheaded efforts by staff at CHRR and NLS to secure external support for collecting data on the Children of the NLSY79. It is also important to recognize that at the time of initial data collection, many of the substantive issues, as well as statistical and methodological techniques appropriate for these data, were in their infancy. In these and others ways, those who envisioned these data in the early 1980s were well ahead of their time.

[2] HOME–SF is a modification of the HOME inventory, see Bettye M. Caldwell and Robert H. Bradley, *Home Observation for Measurement of the Environment* (Little Rock, AR, University of Arkansas, Center for Child Development and Education, 1984).

[3] For further information about the New Immigrant Survey, see **http://nis.princeton.edu**.

[4] At the time of the first child survey in 1986, there was no existing temperament scale appropriate for use in a survey setting. As a result, the temperament scale developed and fielded by NLS investigators lacked a national norm. Subsequent work has established the psychometric and measurement properties of this scale. See Frank L. Mott, Paula C. Baker, David E. Ball, Canada K. Keck, and Steven M. Lenhart, *The NLSY Children 1992: Description and Evaluation* (Columbus, OH, Ohio State University, Center for Human Resource Research, 1995).

[5] The BPI was developed by Nicholas Zill and James L. Peterson, *Behavior Problems Index* (Washington, DC, Child Trends Inc., 1986) by adapting primarily the Achenbach Behavior Problems Checklist. See Thomas M. Achenbach and C. S. Edelbrock, *Manual for the Child Behavior Checklist and Revised Child Behavior Profile* (Burlington, VT, University of Vermont, Department of Psychology, 1983).

[6] See James S. Coleman, "Social Capital in the Creation of Human Capital," *American Journal of Sociology* 94, (The University of Chicago Press, 1988), pp.S95–S120.

[7] See Kenneth I. Wolpin, "Education data in the NLSY79: a premiere research tool," *Monthly Labor Review*, February 2005, 15–20.

[8] Data on substance use, health conditions, sex education, and computer use are also available in the child sample. The fact that similar items are present in both the child and young adult surveys permits investigators to compare and combine data from the two samples to assess, for example, issues of reliability and stability/change in these variables.

[9] See Mark R. Rosenzweig and Kenneth I. Wolpin, "Are There Increasing Returns to the Intergenerational Production of Human Capital? Maternal Schooling and Child Intellectual Achievement," *Journal of Human Resources* 29 (The University of Wisconsin Press, 1994), pp. 670–93.

[10] See Laura K. Certain and Robert S. Kahn, "Prevalence, Correlates, and Trajectories of Television Viewing Among Infants and Toddlers," *Pediatrics* 109 (American Academy of Pediatrics, 2002), pp.634–42; Myles S. Faith, Stanley Heshka, Kathleen L. Keller, Bettylou Sherry, Patty E. Matz, Angelo Pietrobelli, and David B. Allison, "Maternal-Child Feeding Patterns and Child Body Weight: Findings from a Population-Based Sample," *Archives of Pediatric and Adolescent Medicine* 157 (American Medical Association, 2003), pp.926–32.

[11] A searchable online bibliography of all sources that have used the NLS data is on the Internet at **http://www.nlsbibliography.org**.

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The problem of respondent attrition: survey methodology is key

Longitudinal surveys will suffer from attrition and nothing will change that; however, years of lessons learned in the field show that straightforward survey methodology can minimize the impact of losing respondents

Randall J. Olsen

The central problem of longitudinal surveys is attrition. The National Longitudinal Survey of Youth in 1979 (NLSY79), which this issue of the *Monthly Labor Review* features, is the gold standard for sample retention against which longitudinal surveys are usually measured. However, we cannot understand how the NLSY79 has done so well without considering what was done differently in the other cohorts of the NLS and what we have learned by formal evaluations of attrition aversion measures that evolved over a quarter century of field work. The lessons here are hard-won and, to some, unconventional.

Background

The NLS began in 1965 at the urging of an Assistant Secretary of Labor, Daniel Patrick Moynihan. He believed that although the Current Population Survey provided crucial snapshots of the Nation's labor force and labor market, the Nation needed a data source that was more dynamic and capable of tracking the long-run evolution of careers. The task of starting the study went to Howard Rosen at the Department of Labor, who enlisted Herb Parnes from Ohio State University, to assemble a team, design the surveys, and analyze the data. This team comprised representatives from the Census Bureau, Ohio State University, and the Department of Labor.

The original plan was to follow the cohorts for 5 years to study some of the pressing questions of the time—the shrinking labor force participation rate of older men, the problem of youth unemployment and the transition from school to work, and the growing labor force participation of women whose children were entering school, leading to steady growth in the number of working mothers. Childcare was an important issue along with the problem of how the family would pay for a college education for the children of the baby boom.

Over time, the project has expanded. (Table 1 shows the various cohorts of the NLS, their start and stop dates, sizes, and age ranges covered.) Because the project began with a 5-year horizon, neither the Census Bureau, Ohio State, nor the Department of Labor had a plan for sample retention over the long run; after all, longitudinal surveys were still quite rare. The studies shortly proved their worth and the project became open-ended in terms of duration. However, the original limitations on intended duration led to some problems with attrition that conflicted with a revised plan to follow the respondents over the balance of their lives. In particular, the "following-rule"[1] that the Census Bureau used specified that when a respondent missed two consecutive interviews, the Census Bureau would drop that respondent from the study.

The following-rule and the original 5-year ho-

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Table 1. Survey groups, sample sizes, interview years, and survey status, National Longitudinal Survey, 1966–2004

Survey group	Age cohort at first interview	Birth year cohort	Original sample	Initial year/ latest year	Number of surveys	Number at last interview	Status
Older Men	45–59	4/1/06–3/31/21	5,020	1966/1990	13	[1]2,092	Ended
Mature Women	30–44	4/1/22–3/31/37	5,083	1967/2003	21	2,236	Ended
Young Men	14–24	4/1/41–3/31/52	5,225	1966/1981	12	3,398	Ended
Young Women	14–24	1943–53	5,159	1968/2003	22	2,857	Ended
NLSY79	14–21	1957–64	[2]12,686	1979/2004	21	[3]7,724	Continuing
NLSY79 Children	birth–14	[4]	[5]	1986/2004	10	[3]3,229	Continuing
NLSY79 Young Adults	[6]15 and older	[4]	[5]	1994/2004	6	[3]4,238	Continuing
NLSY97	12–16	1980–84	8,984	1997/2004	7	7,756	Continuing

[1] Interviews in 1990 also were conducted with 2,206 widows or other family members of deceased respondents.

[2] After dropping the military (in 1985) and economically disadvantaged non-black/non-Hispanic oversamples (in 1991), the sample contains 9,964 respondents eligible for interview.

[3] The latest sample size available is from the 2002 survey. The 2004 survey is currently being fielded.

[4] NLSY79 Children and young adults included by relation to NLSY79 females, not birth year. Children are still being born.

[5] The size of the NLSY79 child sample depends on the number of children born to female NLSY79 respondents, attrition over time, and the gradual aging of the children into the young adult sample. The size of the young adult sample depends on the number of children who reach age 15 in each survey year.

[6] In 1998 only, the young adults eligible for interview were limited to those ages 15 to 20.

rizon struck with the greatest force on the Young Men's cohort. In 1981, about two-thirds of the cohort responded to the survey. Some analysts believed that the rate of attrition reflected veterans' refusing to participate in a Government survey. Although the rate of attrition among black veterans was a few percentage points higher than that for nonveterans, for whites, the differential for veterans as a whole was essentially zero. Within the Young Men's cohort, blacks had the highest attrition rates. For whites, attrition in the Young Men's cohort was a bit higher than that for two women's cohorts, but male respondents have always had higher attrition than females.

The two-and-out-following-rule that the Census Bureau employed had serious ramifications, given the attrition pattern for the young men, and high attrition among blacks. By 1981, the Census Bureau had stopped tracking 11 percent of the young men because they had, at some point, missed two consecutive interviews. Blacks make up 28 percent of the young men's sample, but 57 percent of the cases dropped because of the following-rule were black. Our current rule-of-thumb is that in the next round, one can obtain an interview on about 25 percent of the respondents who have missed two interviews in a row. When interviewing began for the NLSY79, performance specifications did not allow respondents to be dropped simply based on consecutive missed interviews.

The original design for the surveys alternated in-person interviews with telephone and mail-out surveys, with the in-person version conducted every 5 years.[2] As a result, the content of the interview was more comprehensive every 5 years, with smaller updates in between. The NLS approach to the Mature Women's cohort is emblematic of the general approach of the survey. The 1967 interview of the women ages 30–44 focused on the longest held jobs between schooling and marriage, between marriage and the birth of her first child, and after the birth of the first child. The survey sought the most important (that is, longest held) job holdings, probed for significant periods not working, and ascertained why the woman did not work. The respondent answered CPS questions about the previous week; these questions accounted for a significant part of the interview.

This approach to collecting labor force behavior data left unanswered questions about work history, especially for women with frequent job transitions and women who missed the in-person interview. There were modules that collected retrospective data about fertility and marriage, but in the 1960s, marriages ending in divorce were less frequent, compared with current divorce rates. The NLS did not attempt to collect an event history on marriage, but nonetheless, the survey probably collected most of the transitions in marital status and cohabitation for the Mature Women and Older Men's cohorts.

The original cohort data collection effort frequently captured data on respondents' behavior by asking retrospective questions, sometimes at wide intervals, to capture particular data domains. For example, rather than collecting pregnancy roster data on the Young Women's cohort as those events occurred, the NLS would ask about many years' experience all at once. As Frank Mott documents, this strategy for data collection opens the way for more measurement error.[3]

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With the strategy used then, missing one interview can leave an important part of the data record distressingly incomplete.

It is in this context that we start this article by focusing on the historical record of the completion rates for the various cohorts of the NLS and how the strategy for both data collection and the rules for continuing to follow nonrespondents generate startling impacts on the completeness of the data coming out of a longitudinal study. This article continues by describing some of the fielding techniques the NLS program has employed to offset the secular trend toward lower completion rates.

The historical record

The remainder of this article describes the two original women's cohorts: the NLSY79 and the NLSY97. The two original men's cohorts were cancelled in the early 1980s.[4] In 1981, the Census Bureau completed interviews of 65 percent of the original respondents for the Young Men and 52.5 percent of the Mature Men. However, corrected for mortality, the numbers are higher, with 66.8 percent completed of the respondents still alive for the Young Men and 74.8 percent of the Mature Men. After 15 years, the completion rate for the Mature Women was 69.7 percent (73.5 percent of those still alive), and for the Young Women it was 68.8 percent (69.4 percent of those still alive). As mentioned earlier, the lower completion rate for the Young Men reflects a following-rule that dropped blacks at an unusually high rate.

The Census Bureau experience with the original cohorts was more favorable than its recent experience with respondents from the Survey of Program Dynamics (SPD). That survey continues the 1992–93 Survey of Income and Program Participation (SIPP) panel. By the end of the SIPP phase for the SPD respondents (the SIPP phase contained nine waves each 4 months apart), the completion rate was about 73.4 percent. The 1997 wave of the SPD completed 58.7 percent of the SIPP respondents, and by 2002, the completion rate stood at 53 percent of the 1992–93 SIPP respondents. The 10-year retention rate for the SIPP/SPD panel is below the 15-year retention rate for the original cohorts, whether or not one corrects the latter retention rates for mortality. A more striking contrast is the experience with the NLSY79, for which the National Opinion Research Center (NORC) does the data collection. The 15-year retention rate from 1979 to 1994 was 89.2 percent—almost 20 percentage points higher than the rate for the original cohorts. The disparity of experience with retention in longitudinal studies grows when we compare the NORC experience with the NLSY97 to their experience with the NLSY79. After seven rounds, NLSY97 retains 86.4 percent of the respondents, which is below the NORC experience in the NLSY79 after more than 19 years. Even if we examine the records of the Census Bureau and NORC separately, we see marked variation in outcomes. The reason for this disparity is complex.

Bounded interview event histories

The most important feature that distinguishes the NLSY79 (and NLSY97) from the initial design of the original cohorts of the NLS is the use of event histories in the NLSY79 and NLSY97. The article by James Walker in this issue addresses this feature in more detail, but when the case for event histories in the NLSY79 was made by Burton Singer, he had in mind their analytic usefulness and not their effect on attrition. (See accompanying articles in this issue.) As it turns out, event histories in longitudinal surveys force us to rethink our views on attrition.

As implemented in the NLSY79, event histories carried forward respondents' answers to questions from the previous interviews in some domain. For example, if the respondent was interviewed on July 21, 1987, and he was married, we would ask, "According to our records, when we last interviewed you on July 21, 1987, you were married. Is that correct?" If the respondent agrees, he would be asked whether his marital status has changed since that date, and if so, when that happened, what the change was, and the characteristics of that transition, such as the demographics of the new spouse, and so forth.[5] If the respondent disagrees with the data carried forward in our records, the interviewer obtains the corrected data and then carries the event history collection forward from the point of correction.[6] This approach allows one to deal with the "seam problem," namely how to deal with recollections of the same event whose timing differs across survey waves. Indeed, when the NLSY79 switched to computer-assisted interviewing and, at the same time, to collecting a true event history for education, the incidence of seam problems declined dramatically.

Perhaps more importantly, the use of bounded interview event histories makes the data collection protocol less dependent on the interview date. If a respondent misses an interview, at the next round he is asked to pick up the collection of the event history on, say, marital status at the point he left off on the most recent completed interview. We recover event history data from a respondent whenever he or she returns to the survey. This approach generates a substantially more complete data history for respondents than suggested by a simple examination of completion rates.

Chart 1 illustrates the effect of returning to respondents. The lower line is the round-by-round completion rate for the NLSY79 from the 1st through 20th rounds. The higher line shows the fraction of the data for the year preceding each of the 20 rounds that we recovered either from an interview in that or a subsequent round. Because we fill in missing data

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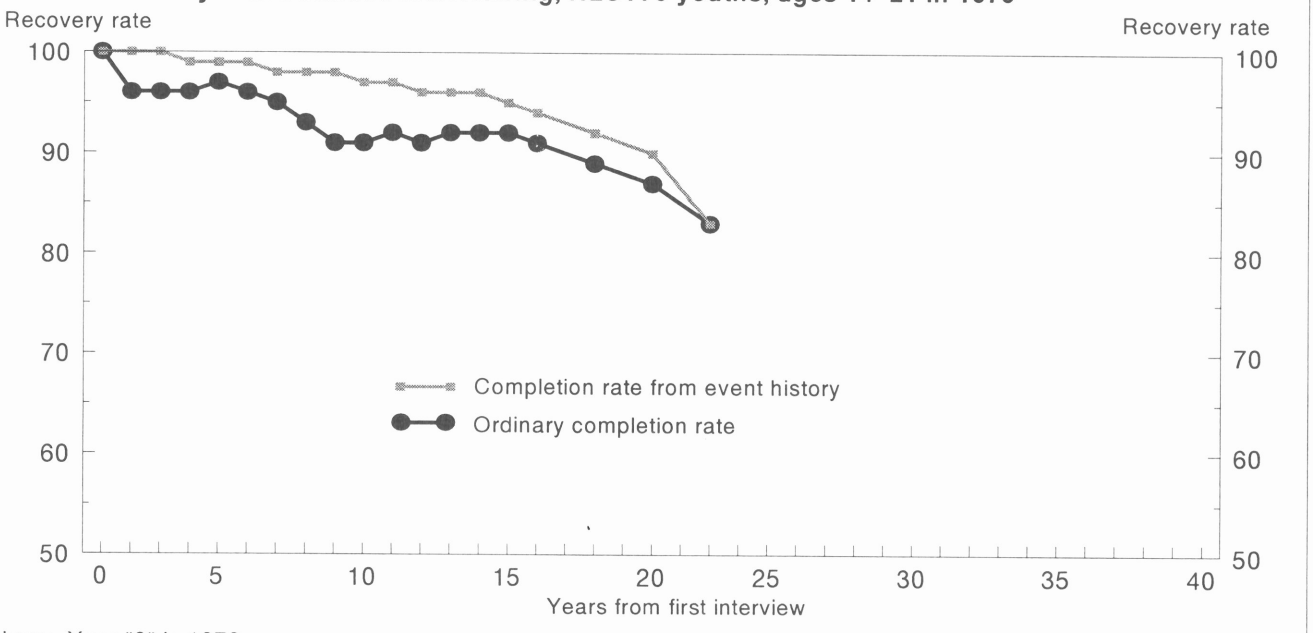
Chart 1. Comparison of data recovery rates from ordinary round-by-round interviews and event history with bounded interviewing, NLSY79 youths, ages 14–21 in 1979



NOTE: Year "0" is 1979.
SOURCE: Author's calculations.

for the event histories whenever we interview the respondent, analysts have well in excess of 90 percent of the data for 20 years after the initial interview. Bounded interviewing requires a sophisticated instrument, adds to interview length, and works best with salient events. With long retrospectives, accuracy may suffer, but missing data are the worst data. In the NLSY79 and NLSY97, we employ event histories for employment, marriage and cohabitation, fertility, training, education, and program recipiency. These histories are the core of the NLS.

Using bounded interviewing event histories generates a more complete data record, especially when combined with a field strategy that emphasizes returning to past nonrespondents. Charts 2 and 3 illustrate how the decision on which respondents to contact in a longitudinal survey is crucial to generating a complete data record.

In the Young Women's and Mature Women's cohorts, the Census Bureau originally adopted the strategy that it would not return to any respondent who refused two straight interviews. In the mid-1980's, the Census Bureau changed that strategy. Starting in 1985, the Census Bureau returned to past nonrespondents to the Young Women's survey, and in 1986, the Census Bureau no longer dropped respondents missing two straight interviews, but did not return to past nonrespondents.

Chart 2 shows that the rate of attrition slowed after the Census Bureau no longer dropped nonrespondents after they missed two straight interviews, effective in 1985. The event history completion rate naturally shows less data loss once the Census Bureau changed their following-rules. Chart 3 illustrates the impact of the Census Bureau's decision in 1986 to return to some (but not all) of the Young Women who had been dropped from the survey roster after two straight noninterviews. The completion rate jumped up when the Census Bureau started the new following-rules, and in subsequent rounds, the completion rate dropped more slowly. The impact on the event history completion rate of former nonrespondents, (especially in contrast to chart 2 for the Mature Women), provides stark evidence that an aggressive following-rule plus bounded interviewing event histories are valuable data-collection strategies for the NLS. Next, we turn to encouraging the respondents to give us more interviews.

Encouraging respondent cooperation

The NLS has a life-cycle perspective; it tries to follow respondents from their first interview to the end of their life. Sometimes funding constraints limit how long it can follow a cohort, but the project tries to keep its focus on how lives of individuals evolve in their entirety. This scientific agenda requires patience and a focus on long-term cooperation. The other long-term survey best known among social scientists is the Panel Study of Income Dynamics (PSID). That study focuses on the household rather than on the individual, so if we lose the cooperation of one reference person for the household, we seek another informant for that household. In

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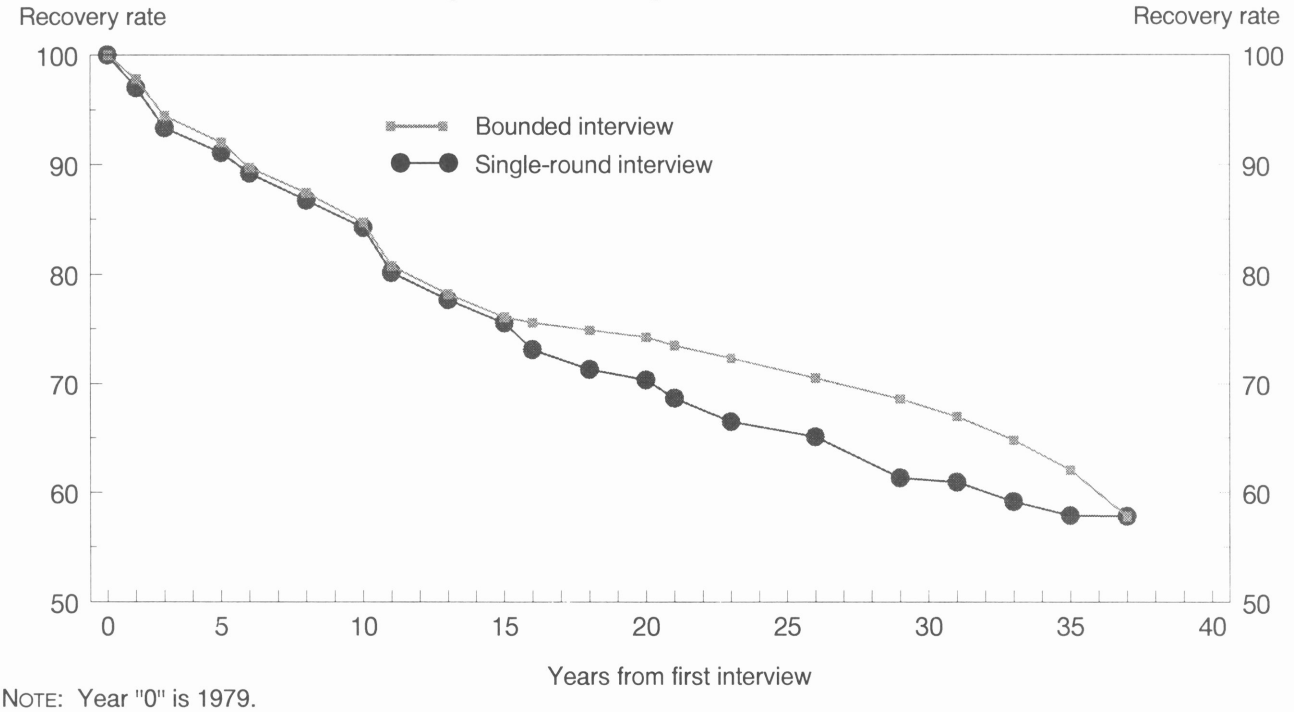
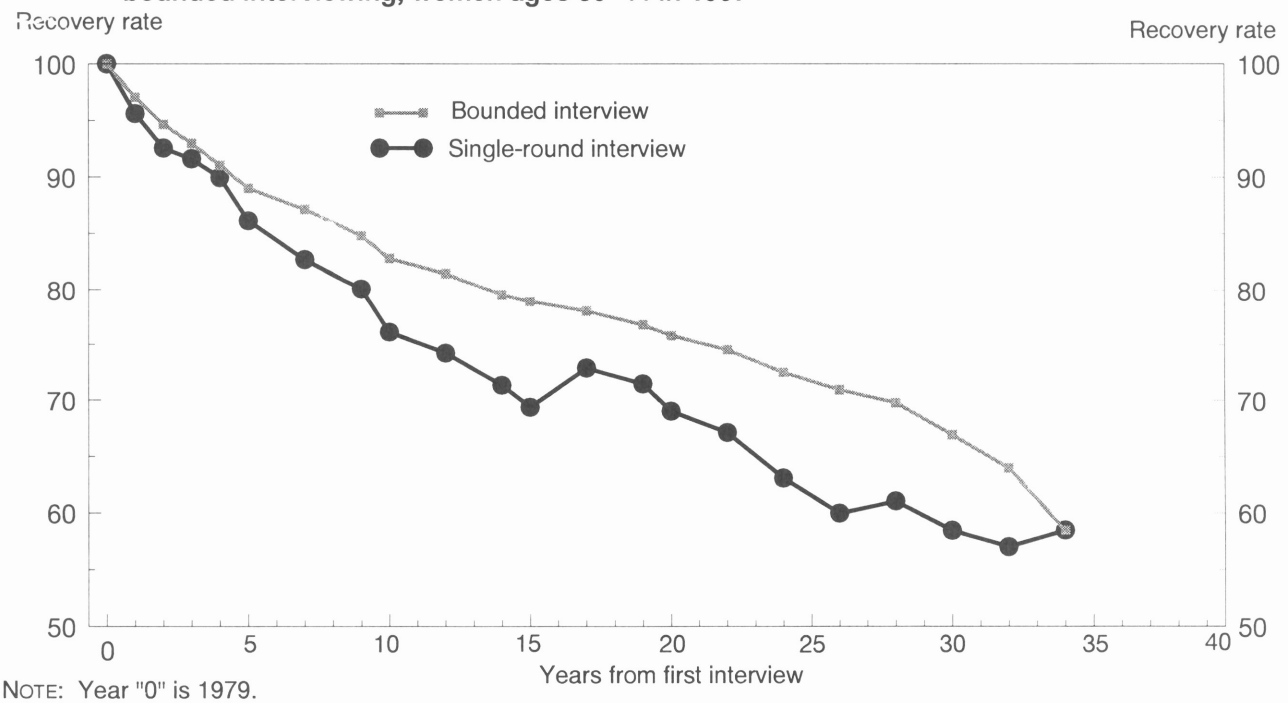
Chart 2. **Comparison of data recovery rates from single-round inteviewing and event history with bounded interviewing from women ages 14–24 in 1967**



NOTE: Year "0" is 1979.
SOURCE: Author's calculations.

Chart 3. **Comparison of data recovery rates between single-round inteviewing and event history bounded interviewing, women ages 30–44 in 1967**



NOTE: Year "0" is 1979.
SOURCE: Author's calculations.

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the case of the NLS, we only use proxy respondents for ill individuals or in other unusual cases. This puts a premium on retaining the good will of respondents. We seek the goodwill of the respondents in three major ways: informing the respondent about survey objectives and findings, using incentive payments, and employing the mode of interview that the respondent prefers.

Fundamentally, to gain respondent cooperation, field staff must stress that the study is important, if not for the respondent, then for society at large. The questions have to be valid and must relate to the objectives of the study that form the basis for its societal usefulness. For the doubting respondent, the study must provide evidence that it is substantiated by findings, recommendations, or a body of research consistent with the message that it is important. Interviewers play a pivotal role in the "selling of the survey." Thus, a less appreciated corollary of convincing respondents that the study is important is that the *interviewers* must be convinced the study is important. What good is a salesperson who does not believe in the product?

The NLS program mails out informative brochures to respondents and provides the interviewers with packets of materials that provide support for the central thesis that the study has societal importance. It also provides items to rebut common objections to cooperating with the survey. However, the most important tool we have is the enthusiasm and commitment of the interviewers. We communicate this in two forms—first by engaging and "selling" the interviewers when they attend training, and second through their interaction with the field managers who have day-to-day responsibility for overseeing the field work. Tepid and boring training sessions for interviewers are not only ineffective venues for learning, but they communicate a subliminal message to interviewers that the larger survey is equally boring and, hence, unimportant.

Although we attempt to communicate the scientific importance and social utility of the survey, some respondents remain unconvinced. Respondents are not monolithic. About half the respondents are extremely cooperative and easy to work with. As of 2002, almost exactly 60 percent of the respondents in continuing sample types[7] had completed every interview. There is also a core group of very disaffected respondents for whom we have little hope they will complete the survey, although from time to time a few rejoin. For these hard-core refusers there is not much that will make a difference in their cooperativeness, at least nothing we have been able to identify and use. However, for a sizeable minority of the sample, respondent incentives, either money or in-kind, can play a useful role in securing cooperation with the survey. Small gifts that are tailored explicitly to the interests and situation of the respondent can be very effective—they say in a tangible way that we care about the respondent and pay attention. Although incentive payments likely influenced some of the respondents who have remained with the survey throughout, incentives appear to work on a minority of respondents—a fact that needs to be integrated with any plan to use incentives in longitudinal surveys.

In 2000, we conducted an experiment, with randomization of subject and treatment, investigating the effects of a $40 versus $80 incentive. With the two incentive amounts, we computed how much additional money we spent to obtain an additional interview. On the one hand, when additional incentives were offered to respondents not interviewed in 1998 (the previous round—the NLSY79 is now administered every 2 years), we made $167 in additional incentive payments, on average, for every additional interview when increasing the payment from $40 to $80. On the other hand, for respondents who had cooperated in 1998 we paid an additional $264 for each additional interview. This experiment was conducted when we had encountered strong resistance and sharply higher field costs when using an across-the-board $20 incentive. Had the experiment been mounted at the beginning of the field period, the higher payments would have been even more cost-ineffective.

Across-the-board incentive payments increase response rates at a substantial monetary cost. However, one unexpected result of the experiment in 2000 was a reduction in field costs that coincided with the higher incentive payments—field costs fell in a manner we had not seen in previous rounds. The savings in field costs very nearly offset the higher respondent fee costs. Survey organizations should consider the effects of incentive fees, not only on respondent cooperation, but also on the overall cost-effectiveness of a survey campaign.

The most frequent objection to differential fees cites equity issues. This objection, together with the surprising finding in the 2000 round that higher fees reduced field costs, led us to experiment in 2002 with a strategy aimed at using higher incentives with cooperative respondents. For this experiment, called the "Early Bird," we mailed a flyer to respondents offering a higher fee if they called in to make an appointment for an interview. Because interviewers expend substantial time locating, contacting, and making an appointment with respondents, the "Early Bird" offer saves money despite the higher respondent fee involved. Once the conventional field period begins, the offered incentive payment reverts to the normal level.[8] Respondents requesting a higher fee are encouraged to participate in the Early Bird program—interviewers redirect requests for a higher payment toward enrolling the respondent in a mutually advantageous compact exchanging more cooperation for a higher fee.

Although incentive payments encourage some respondents to participate, these payments cannot, within a reasonable range, convert all or even nearly all nonrespondents.

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Fees work for some and fail for others. In addition, for some groups of respondents, such fees can be very expensive in terms of how many cases the extra money spent produces. In short, respondent reactions to incentive fees are remarkably heterogeneous.[9]

Heterogeneity also rules when it comes to the interview mode that respondents prefer. The survey choices available to respondents are via telephone, in-person interview, or, to a lesser degree, Webpage. However, the NLS surveys are too complex to encourage most respondents to take a mail survey or a Web survey—most interviewers require about 2 days of training on the survey before they are ready to administer it. Some respondents, having done the survey 20 times before, are more "experienced" with the survey than new interviewers, but there are sections of the interview where interviewer training plays an important role. For this reason, the NLS program does not routinely offer respondents the choice to do the interview over the Web, although we could offer this option.[10] When it comes to telephone versus in-person interviews, some respondents insist on a telephone interview and others insist on in-person interviews. The initial approach to each respondent is usually over the telephone, except in unusual circumstances. At that point, respondents for the NLSY79 can choose how they want to do the interview. With the NLSY97, the survey contains a substantial self-administered section containing sensitive questions, and interviewers emphasize in-person interviews. The latter constraint generates comments from the field staff indicating the emphasis on in-person interviewing tends to increase costs; however, if the choice is between a telephone interview and no interview, the field staff always goes for the interview. The essential point is that respondents vary in their preferences, and insisting on either telephone or in-person interviews carries substantial risk of alienating respondents.

In this same vein, organizations conducting longitudinal surveys often question whether having the same interviewer do a case year after year encourages response.[11] Knowing whether continuity in the assigned interviewer encourages response would allow a field organization to assign cases more strategically and to make a more intelligent trade-off between reducing travel costs and reducing assignment turnover. Our ability to infer the relationship between attrition and interviewer turnover is reduced by the fact that field operations rarely employ random assignment of interviewer and respondent to a dyad. If one interviewer has trouble with a case, we assign a new interviewer and hope for better results. In short, random influences that make a respondent less likely to do an interview can also lead to a change in the assigned interviewer. Indeed, a case may have several interviewers assigned to it over the course of the field period. Because of these problems, we look at respondent attrition using variables that summarize his or her past tendency to do the survey, his or her attitude at the most recently completed interview, and respondent age. To capture the effect of interviewer continuity, we use two additional variables, whether the interviewer doing the respondent's most recent interview is still on staff and, if so, how many times that interviewer had interviewed the respondent. These two variables only measure the ability of the field staff to exploit interviewer continuity in the current round, not whether interviewer continuity held for the current round.

The results, in table 2, using 202,245 observations from rounds 2 through 20 of the NLSY79, suggest that interviewer continuity is not a major factor. There is a net advantage to interviewer continuity after the respondent has been interviewed twice by the same interviewer, and after that, having the same interviewer decreases attrition by about 0.7 percent for each additional round. If an interviewer had interviewed the respondent for the previous round, having that interviewer on staff again generates no positive effect (for the

Table 2. Probability of respondent cooperating with current NLSY79 round

Variable	Coefficient	Effect[1] (dP/dX)	Standard error	t-ratio
Sample size, N=202,245				
Intercept	−2.4002	...	0.2219	10.82
Respondent did round before?	2.8604	0.212	.0296	96.64
Previous interviewer on staff?	−.0914	−.007	.0289	3.16
Previous interview by phone?	−.5067	−.037	.0256	19.79
Number of interviews done by previous field interviewer, previous interviewer on staff	.0881	.007	.0089	9.90
Percent of previous interviews done	3.8157	.282	.0721	52.92
Respondent hostile at previous interview?	−1.5691	−.116	.0917	17.11
Respondent impatient, restless?	−.9364	−.069	.0421	22.24
Respondent cooperative, not interested	−.5107	−.038	.0249	2.51
Age R	.0142	.000	.0141	1.01
Age R squared	−.0011	.000	.0002	5.50

[1] The effect on the probability of an interview on a unit of change in the explanatory variable.

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NLSY79, if the same interviewer is available, she will most likely have any of her previous cases that are in the same geographic area).

Also in table 2, the estimated model is a logit. The third column gives the effect on the probability of an interview of a unit change in the explanatory variable. The standard error is for the coefficient. Results show that it is, by far, more important to keep the respondent interested in the project and happy with how they are treated than to keep the same interviewer. Of course, interviewer continuity may make it easier for the field staff to remember how best to deal with a particular respondent.

LONGITUDINAL SURVEYS WILL SUFFER from attrition and nothing will change that. However, certain survey methodologies can minimize the impact of attrition. First, if consistent with its objectives, the survey should utilize event histories to recover data not collected when a respondent misses a round. Second, the following-rules must emphasize persistence. If a respondent refuses a round, return in the next round. When respondents miss a round, in about half the cases they will grant an interview for the next round. If they miss two straight interviews, the probability of success drops to about 25 percent, but certainly not to zero. Third, targeted incentive payments should be used because they are cost effective ways of holding attrition in check. Fourth, allow respondents to choose the interview mode. Just as differences in respondents make incentives effective only for some respondents, differences among respondents make it important to acquiesce to their preferences over interview mode (phone versus personal or even Web). Finally, longitudinal surveys must be "sold." They must be sold to the interviewers who face the job of convincing the respondent that the survey is important, and they must be sold to the respondent who, in the majority of cases, will offer their cooperation so long as the study engages their attention and they are confident that they are providing their time for a worthy endeavor. □

Notes

[1] This is the rule determining to which respondents interviewers would return in the event the respondent did not complete one or more interviews.

[2] Census interviewed the young men and young women in person for several consecutive years and then reverted to the interview pattern for the two older cohorts—personal, skip a year, telephone, skip a year, telephone, personal. In the late 1980s the women's interviews were done in person, although many cases were done over the phone when circumstances dictated.

[3] See Frank Mott, "Looking Backward: Post Hoc Reflections on Longitudinal Surveys," in Erin Phelps, Frank Furstenberg, and Anne Colby, eds., *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage, 2002).

[4] The two original men's cohorts—NLSY79 and NLSY97 were cancelled in the early 1980s.

[5] With the rise of nonmarital unions, event histories on marriage and cohabitation have become more complex. The approach of asking the retrospective question with explicit reference to the respondent's previous answers is referred to as "bounded interviewing."

[6] The discrepancy is handled at Ohio State. This style of data collection generates fewer "seam problems" than histories that are not collected using bounded interviewing. Our current practice is to accept the date given initially and place the "seam" on the day after the date of interview.

[7] The low-income, non-black, non-Hispanic oversample was nearly eliminated in 1993 and most of the military oversamples were dropped earlier.

[8] Currently the normal incentive is $40.

[9] In the past 15 years, we have also experimented with monetary incentives to interviewers. Unfortunately, those experiments failed. At best, they simply shifted the timing of when cases were completed.

[10] Our CAPI system is based entirely on Web browsers. Some interviews done over the phone utilize the Web to present the interview to the interviewer, so offering a Web interview to respondents is a minor step.

[11] The other side of repeated contact is that the respondent may be more likely to give normative responses to an interviewer once they have established rapport.

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Measuring health

As Thomas Hale wrote almost 4 years ago in this *Review*, measuring health or disability status in household surveys is a difficult and often frustrating task. Michael Baker, Mark Stabile, and Catherine Deri show that the difficulties and frustrations continue. A broad range of analysts, they say in a recent article in *The Journal of Human Resources*, recognize that subjective self reports of physical capacity can be biased as respondents may report a spurious incapacity to justify nonparticipation in the labor market. Baker, Stabile, and Deri go on to ask if self reports of "objective" health measures—the existence of specific diseases or ailments—share any of the same weaknesses.

Unfortunately, the evidence seems to suggest that such objective measures are also, as we say in the statistics trade, difficult to interpret. The authors find that there is considerable error, both false positives and false negatives when comparing responses to the Canadian National Population Health Survey that could be linked to the administrative records of the Ontario Heath Insurance Plan. They also find that these errors are statistically related to labor market status. Thus, they conclude that the self reports of objective health indicators "share many of the weaknesses of other measures of health commonly used in the literature."

Affording gas

Recent fluctuations in gas prices could make one wonder if there could soon be evidence of a presumed complementary goods relationship between gasoline and low-gas-mileage passenger vehicles. William T. Gavin doubts it. In the November 2004 Federal Reserve Bank of St. Louis publication *National Economic Trends*, Gavin notes that while it was true that the amount of gas an hour of work could buy fell from a little more than 14 gallons in February 1999 to just under 8 gallons in May 2004, it was important to realize that February 1999 was the record high point for that calculation. In his view, the subsequent rises in gas prices relative to wages served to bring gasoline affordability back to something only a little below its long-term average. Thus, he concludes, "Unless this modestly higher price persists and continues to rise in tandem with or faster than wages, we should not expect it to dent consumer demand for SUVs." [Editor's note: As of the January payroll survey reference week, an hour of work was worth 8.9 gallons of gasoline.]

Raising productivity

As has been the case in the past, productivity growth slowed at the beginning of the 2001 recession and sped up again once the recession was over, according to a recent report in the *Current Issues in Economics and Finance* series published by the Federal Reserve Bank of New York. But, note authors Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh, "the drop-off in productivity in 2001 was not as large as it had been in earlier recessions and the productivity recovery was much stronger." As they are quick to point out, this created some problems for business cycle analysts who had to deal with the differing trends in output and employment growth as they sought to identify the trough of the recession.

Using the standard techniques of growth accounting, Jorgenson, Ho, and Stiroh attribute much of the recent vigorous growth in productivity to accelerated capital deepening attributable to information technology and to a rebound in the rate of total factor productivity growth to about the rate that was recorded in the 1960s and very early 1970s. The rebound in total factor productivity itself reflected a disproportionate contribution from information technology: Despite accounting for only 5 percent of aggregate output, information technology producers accounted for about 35 percent of the increase in total factor productivity.

The authors project a continuation of these trends through 2014. Their base-case scenario implies an annual average growth in productivity of about 2.6 percent. This can be compared to the 2.2-percent per year rate of productivity growth the same team of authors projected in a report released in 2002. The authors attribute their revision to a projected continuation of recent productivity trends, particularly in the high-tech sectors, offset only slightly by a projection of slightly higher "drag" on productivity growth from demographic trends. Jorgenson, Ho, and Stiroh conclude modestly that "there is little evidence to suggest that the technology-led productivity resurgence is over or that the U.S. economy will revert to the slower pace of productivity growth observed in the 1970s and 1980s." □

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Essays on economics

The Lost Art of Economics: Essays on Economics and the Economics Profession. By David Colander. Northampton, MA, Edward Elgar, 2003, 224 pp., $30/paperback.

Few students of economics have managed to avoid the question of whether their chosen field qualifies as a true science. In this thought-provoking collection of essays, David Colander, a professor of economics at Middlebury College in Vermont, addresses this question with well-written, and often entertaining prose. A self-described "economic gadfly" and "slightly out of sync" economist, he steps back from the theories, practices, and educational establishment of the field to critique how this "science" is taught and done. He argues that, in the real world where economic policies are implemented, successful economic analysis must account for institutions as they exist. It must consider the complex aspects of the economy and economic behavior that cannot be easily quantified, or derived from a simplified, codified theoretical model. In short, he argues for the practice of economics as an art, where theoretical models provide background and elements of judgment, intuitive thought, and even some ad hoc empirics enter into the process before policy prescriptions are drawn.

The author organizes his essays into six parts. In the first part he presents Milton Friedman's *Theory of Positive Economics* as the foundation for the current methodological approach of the economics field. Under this approach theoretical models are constructed, based on (necessarily) simplified assumptions, and the (presumably observable, or testable) economic implications are then derived from these models. He argues that, ironically, Friedman himself was mainly more of a practitioner of economics as an art, and that this has been lost to the literature on history of economic thought. In the second part, he lays out the methodology of the "art of economics," and, using monetary policy as the example, shows how academic economists are too far into the realm of abstract theory to provide many useful policy ideas for applied problems. He argues that the theoretical models should be separated from applied policy questions because, in the complex real world, one cannot really test the hypotheses of the abstract model. Instead, the model should serve as a general guide, because "the question in applied policy economics concerns whether the theory fits the application, not whether the theory is true."

Taking this basic premise, he describes in the third part of his essay collection how it can be used to better educate and interest students in economics. Particularly at the introductory (or principles courses) level, he decries the attempt to combine the basic theories of economic behavior with modeling techniques as denying justice to both; it makes for economic stories that are probably uninteresting to students. In his fourth section are two more personal essays, one of which details his own story as an economics student and induction into the profession. The second essay provides suggestions for making a living within the academic world of economics as one with his iconoclastic views. While these essays may be of interest mainly to those who are Ph.D students and academic economists, they do reveal the faults of a rigid "publish-or-perish" institutional structure that may discourage innovative thinking (a problem not necessarily unique to economics as a scholarly field). He argues that this structure has encouraged economists to pursue problems and policy issues that more easily yield to quantification rather than those that are more important to address and thus—econometrics has ascended from the role of toolkit to the final arbiter of which issues an economist will choose to study.

The essays in the fifth and sixth parts of the book provide a critique of the educational institution of graduate education in economics, and a speculative scenario of what the profession, and thus the graduate curriculum, may look like in the year 2050. The author proposes a second track of economics education that will appeal to the generalist inductivist student—one in which formal abstract theorem-and-proof is deemphasized, and more weight is given to interpreting and understanding the basic theory of economics and doing technical work at a more practical level. Interestingly, this appears to already be happening in other fields; some universities are now offering a professional science master's degree, combining natural and physical sciences with finance and business courses for students who will need both in a practical career (*Wall Street Journal*, Aug. 3, 2004). The author predicts that, by 2050, economists will have abandoned positivism and will be addressing more complex and specific problems with more emphasis on computational simulation—making use of new computation horsepower to mine data for patterns and to create data by simulation, but also combining this with more general, intuitive insight and knowledge of economic institutions in the real world.

—Mary Kokoski

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Bureau of Labor Statistics

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Notes on Current Labor Statistics

This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics: series on labor force; employment; unemployment; labor compensation; consumer, producer, and international prices; productivity; international comparisons; and injury and illness statistics. In the notes that follow, the data in each group of tables are briefly described; key definitions are given; notes on the data are set forth; and sources of additional information are cited.

General notes

The following notes apply to several tables in this section:

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect on the data of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might prevent short-term evaluation of the statistical series. Tables containing data that have been adjusted are identified as "seasonally adjusted." (All other data are not seasonally adjusted.) Seasonal effects are estimated on the basis of current and past experiences. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted data appear in tables 1–14, 17–21, 48, and 52. Seasonally adjusted labor force data in tables 1 and 4–9 were revised in the February 2005 issue of the *Review*. Seasonally adjusted establishment survey data shown in tables 1, 12–14, and 17 were revised in the March 2004 *Review*. A brief explanation of the seasonal adjustment methodology appears in "Notes on the data."

Revisions in the productivity data in table 54 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month-to-month and quarter-to-quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All-Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the "real" earnings shown in table 14—are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current-dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1982 = 100, the hourly rate expressed in 1982 dollars is $2 ($3/150 x 100 = $2). The $2 (or any other resulting values) are described as "real," "constant," or "1982" dollars.

Sources of information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. Definitions of each series and notes on the data are contained in later sections of these Notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Bulletin 2490. Users also may wish to consult *Major Programs of the Bureau of Labor Statistics*, Report 919. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule appearing on the back cover of this issue.

More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in the Bureau's monthly publication, *Employment and Earnings*. Historical unadjusted and seasonally adjusted data from the household survey are available on the Internet:

http://www.bls.gov/cps/

Historically comparable unadjusted and seasonally adjusted data from the establishment survey also are available on the Internet:

http://www.bls.gov/ces/

Additional information on labor force data for areas below the national level are provided in the BLS annual report, *Geographic Profile of Employment and Unemployment.*

For a comprehensive discussion of the Employment Cost Index, see *Employment Cost Indexes and Levels, 1975–95*, BLS Bulletin 2466. The most recent data from the Employee Benefits Survey appear in the following Bureau of Labor Statistics bulletins: *Employee Benefits in Medium and Large Firms; Employee Benefits in Small Private Establishments;* and *Employee Benefits in State and Local Governments.*

More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report* and *Producer Price Indexes*. For an overview of the 1998 revision of the CPI, see the December 1996 issue of the *Monthly Labor Review*. Additional data on international prices appear in monthly news releases.

Listings of industries for which productivity indexes are available may be found on the Internet:

http://www.bls.gov/lpc/

For additional information on international comparisons data, see *International Comparisons of Unemployment*, Bulletin 1979.

Detailed data on the occupational injury and illness series are published in *Occupational Injuries and Illnesses in the United States, by Industry*, a BLS annual bulletin.

Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

Symbols

n.e.c. = not elsewhere classified.
n.e.s. = not elsewhere specified.
p = preliminary. To increase the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.
r = revised. Generally, this revision reflects the availability of later data, but also may reflect other adjustments.

Comparative Indicators

(Tables 1–3)

Comparative indicators tables provide an overview and comparison of major BLS statistical series. Consequently, although many of the included series are available monthly, all measures in these comparative tables are presented quarterly and annually.

Labor market indicators include employment measures from two major surveys and information on rates of change in compensation provided by the Employment Cost Index (ECI) program. The labor force participation rate, the employment-population ratio, and unemployment rates for major demographic groups based on the Current Population ("household") Survey are presented, while measures of employment and average weekly hours by major industry sector are given using nonfarm payroll data. The Employment Cost Index (compensation), by major sector and by bargaining status, is chosen from a variety of BLS compensation and wage measures because it provides a comprehensive measure of employer costs for hiring labor, not just outlays for wages, and it is not affected by employment shifts among occupations and industries.

Data on **changes in compensation, prices, and productivity** are presented in

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table 2. Measures of rates of change of compensation and wages from the Employment Cost Index program are provided for all civilian nonfarm workers (excluding Federal and household workers) and for all private nonfarm workers. Measures of changes in consumer prices for all urban consumers; producer prices by stage of processing; overall prices by stage of processing; and overall export and import price indexes are given. Measures of productivity (output per hour of all persons) are provided for major sectors.

Alternative measures of wage and compensation rates of change, which reflect the overall trend in labor costs, are summarized in table 3. Differences in concepts and scope, related to the specific purposes of the series, contribute to the variation in changes among the individual measures.

Notes on the data

Definitions of each series and notes on the data are contained in later sections of these notes describing each set of data.

Employment and Unemployment Data

(Tables 1; 4–29)

Household survey data

Description of the series

Employment data in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 60,000 households selected to represent the U.S. population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

Employed persons include (1) all those who worked for pay any time during the week which includes the 12th day of the month or who worked unpaid for 15 hours or more in a family-operated enterprise and (2) those who were temporarily absent from their regular jobs because of illness, vacation, industrial dispute, or similar reasons. A person working at more than one job is counted only in the job at which he or she worked the greatest number of hours.

Unemployed persons are those who did not work during the survey week, but were available for work except for temporary illness and had looked for jobs within the preceding 4 weeks. Persons who did not look for work because they were on layoff are also counted among the unemployed. **The unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **civilian labor force** consists of all employed or unemployed persons in the civilian noninstitutional population. Persons **not in the labor force** are those not classified as employed or unemployed. This group includes discouraged workers, defined as persons who want and are available for a job and who have looked for work sometime in the past 12 months (or since the end of their last job if they held one within the past 12 months), but are not currently looking, because they believe there are no jobs available or there are none for which they would qualify. The **civilian noninstitutional population** comprises all persons 16 years of age and older who are not inmates of penal or mental institutions, sanitariums, or homes for the aged, infirm, or needy. The **civilian labor force participation** rate is the proportion of the civilian noninstitutional population that is in the labor force. The **employment-population ratio** is employment as a percent of the civilian noninstitutional population.

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the intercensal years. These adjustments affect the comparability of historical data. A description of these adjustments and their effect on the various data series appears in the Explanatory Notes of *Employment and Earnings*. For a discussion of changes introduced in January 2003, see "Revisions to the Current Population Survey Effective in January 2003" in the February 2003 issue of *Employment and Earnings* (available on the BLS Web site at: **http://www.bls.gov/cps/rvcps03.pdf**).

Effective in January 2003, BLS began using the X-12 ARIMA seasonal adjustment program to seasonally adjust national labor force data. This program replaced the X-11 ARIMA program which had been used since January 1980. See "Revision of Seasonally Adjusted Labor Force Series in 2003," in the February 2003 issue of *Employment and Earnings* (available on the BLS Web site at **http:www.bls.gov/cps/cpsrs.pdf**) for a discussion of the introduction of the use of X-12 ARIMA for seasonal adjustment of the labor force data and the effects that it had on the data.

At the beginning of each calendar year, historical seasonally adjusted data usually are revised, and projected seasonal adjustment factors are calculated for use during the January–June period. The historical seasonally adjusted data usually are revised for only the most recent 5 years. In July, new seasonal adjustment factors, which incorporate the experience through June, are produced for the July–December period, but no revisions are made in the historical data.

FOR ADDITIONAL INFORMATION on national household survey data, contact the Division of Labor Force Statistics: (202) 691–6378.

Establishment survey data

Description of the series

Employment, hours, and earnings data in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by about 160,000 businesses and government agencies, which represent approximately 400,000 individual worksites and represent all industries except agriculture. The active CES sample covers approximately one-third of all nonfarm payroll workers. Industries are classified in accordance with the 2002 North American Industry Classification System. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

An **establishment** is an economic unit which produces goods or services (such as a factory or store) at a single location and is engaged in one type of economic activity.

Employed persons are all persons who received pay (including holiday and sick pay) for any part of the payroll period including the 12th day of the month. Persons holding more than one job (about 5 percent of all persons in the labor force) are counted

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in each establishment which reports them.

Production workers in the goods-producing industries cover employees, up through the level of working supervisors, who engage directly in the manufacture or construction of the establishment's product. In private service-providing industries, data are collected for nonsupervisory workers, which include most employees except those in executive, managerial, and supervisory positions. Those workers mentioned in tables 11–16 include production workers in manufacturing and natural resources and mining; construction workers in construction; and nonsupervisory workers in all private service-providing industries. Production and nonsupervisory workers account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Hours represent the average weekly hours of production or nonsupervisory workers for which pay was received, and are different from standard or scheduled hours. **Overtime hours** represent the portion of average weekly hours which was in excess of regular hours and for which overtime premiums were paid.

The **Diffusion Index** represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. Table 17 provides an index on private nonfarm employment based on 278 industries, and a manufacturing index based on 84 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

Notes on the data

Establishment survey data are annually adjusted to comprehensive counts of employment (called "benchmarks"). The March 2003 benchmark was introduced in February 2004 with the release of data for January 2004, published in the March 2004 issue of the *Review*. With the release in June 2003, CES completed a conversion from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS) and completed the transition from its original quota sample design to a probability-based sample design. The industry-coding update included reconstruction of historical estimates in order to preserve time series for data users. Normally 5 years of seasonally adjusted data are revised with each benchmark revision. However, with this release, the entire new time series history for all CES data series were re-seasonally adjusted due to the NAICS conversion, which resulted in the revision of all CES time series.

Also in June 2003, the CES program introduced concurrent seasonal adjustment for the national establishment data. Under this methodology, the first preliminary estimates for the current reference month and the revised estimates for the 2 prior months will be updated with concurrent factors with each new release of data. Concurrent seasonal adjustment incorporates all available data, including first preliminary estimates for the most current month, in the adjustment process. For additional information on all of the changes introduced in June 2003, see the June 2003 issue of *Employment and Earnings* and "Recent changes in the national Current Employment Statistics survey," *Monthly Labor Review*, June 2003, pp. 3–13.

Revisions in State data (table 11) occurred with the publication of January 2003 data. For information on the revisions for the State data, see the March and May 2003 issues of *Employment and Earnings*, and "Recent changes in the State and Metropolitan Area CES survey," *Monthly Labor Review*, June 2003, pp. 14–19.

Beginning in June 1996, the BLS uses the X-12-ARIMA methodology to seasonally adjust establishment survey data. This procedure, developed by the Bureau of the Census, controls for the effect of varying survey intervals (also known as the 4- versus 5-week effect), thereby providing improved measurement of over-the-month changes and underlying economic trends. Revisions of data, usually for the most recent 5-year period, are made once a year coincident with the benchmark revisions.

In the establishment survey, estimates for the most recent 2 months are based on incomplete returns and are published as preliminary in the tables (12–17 in the *Review*). When all returns have been received, the estimates are revised and published as "final" (prior to any benchmark revisions) in the third month of their appearance. Thus, December data are published as preliminary in January and February and as final in March. For the same reasons, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Fourth-quarter data are published as preliminary in January and February and as final in March.

FOR ADDITIONAL INFORMATION on establishment survey data, contact the Division of Current Employment Statistics: (202) 691–6555.

Unemployment data by State

Description of the series

Data presented in this section are obtained from the Local Area Unemployment Statistics (LAUS) program, which is conducted in cooperation with State employment security agencies.

Monthly estimates of the labor force, employment, and unemployment for States and sub-State areas are a key indicator of local economic conditions, and form the basis for determining the eligibility of an area for benefits under Federal economic assistance programs such as the Job Training Partnership Act. Seasonally adjusted unemployment rates are presented in table 10. Insofar as possible, the concepts and definitions underlying these data are those used in the national estimates obtained from the CPS.

Notes on the data

Data refer to State of residence. Monthly data for all States and the District of Columbia are derived using standardized procedures established by BLS. Once a year, estimates are revised to new population controls, usually with publication of January estimates, and benchmarked to annual average CPS levels.

FOR ADDITIONAL INFORMATION on data in this series, call (202) 691–6392 (table 10) or (202) 691–6559 (table 11).

Quarterly Census of Employment and Wages

Description of the series

Employment, wage, and establishment data in this section are derived from the quarterly tax reports submitted to State employment security agencies by private and State and local government employers sub-

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ject to State unemployment insurance (UI) laws and from Federal, agencies subject to the Unemployment Compensation for Federal Employees (UCFE) program. Each quarter, State agencies edit and process the data and send the information to the Bureau of Labor Statistics.

The Quarterly Census of Employment and Wages (QCEW) data, also referred as ES-202 data, are the most complete enumeration of employment and wage information by industry at the national, State, metropolitan area, and county levels. They have broad economic significance in evaluating labor market trends and major industry developments.

Definitions

In general, the Quarterly Census of Employment and Wages monthly employment data represent the number of **covered workers** who worked during, or received pay for, the pay period that included the 12th day of the month. **Covered private industry employment** includes most corporate officials, executives, supervisory personnel, professionals, clerical workers, wage earners, piece workers, and part-time workers. It excludes proprietors, the unincorporated self-employed, unpaid family members, and certain farm and domestic workers. Certain types of nonprofit employers, such as religious organizations, are given a choice of coverage or exclusion in a number of States. Workers in these organizations are, therefore, reported to a limited degree.

Persons on paid sick leave, paid holiday, paid vacation, and the like, are included. Persons on the payroll of more than one firm during the period are counted by each UI-subject employer if they meet the employment definition noted earlier. The employment count excludes workers who earned no wages during the entire applicable pay period because of work stoppages, temporary layoffs, illness, or unpaid vacations.

Federal employment data are based on reports of monthly employment and quarterly wages submitted each quarter to State agencies for all Federal installations with employees covered by the Unemployment Compensation for Federal Employees (UCFE) program, except for certain national security agencies, which are omitted for security reasons. Employment for all Federal agencies for any given month is based on the number of persons who worked during or received pay for the pay period that included the 12th of the month.

An **establishment** is an economic unit, such as a farm, mine, factory, or store, that produces goods or provides services. It is typically at a single physical location and engaged in one, or predominantly one, type of economic activity for which a single industrial classification may be applied. Occasionally, a single physical location encompasses two or more distinct and significant activities. Each activity should be reported as a separate establishment if separate records are kept and the various activities are classified under different NAICS industries.

Most employers have only one establishment; thus, the establishment is the predominant reporting unit or statistical entity for reporting employment and wages data. Most employers, including State and local governments who operate more than one establishment in a State, file a Multiple Worksite Report each quarter, in addition to their quarterly UI report. The Multiple Worksite Report is used to collect separate employment and wage data for each of the employer's establishments, which are not detailed on the UI report. Some very small multi-establishment employers do not file a Multiple Worksite Report. When the total employment in an employer's secondary establishments (all establishments other than the largest) is 10 or fewer, the employer generally will file a consolidated report for all establishments. Also, some employers either cannot or will not report at the establishment level and thus aggregate establishments into one consolidated unit, or possibly several units, though not at the establishment level.

For the Federal Government, the reporting unit is the **installation**: a single location at which a department, agency, or other government body has civilian employees. Federal agencies follow slightly different criteria than do private employers when breaking down their reports by installation. They are permitted to combine as a single statewide unit: 1) all installations with 10 or fewer workers, and 2) all installations that have a combined total in the State of fewer than 50 workers. Also, when there are fewer than 25 workers in all secondary installations in a State, the secondary installations may be combined and reported with the major installation. Last, if a Federal agency has fewer than five employees in a State, the agency headquarters office (regional office, district office) serving each State may consolidate the employment and wages data for that State with the data reported to the State in which the headquarters is located. As a result of these reporting rules, the number of reporting units is always larger than the number of employers (or government agencies) but smaller than the number of actual establishments (or installations).

Data reported for the first quarter are tabulated into **size** categories ranging from worksites of very small size to those with 1,000 employees or more. The size category is determined by the establishment's March employment level. It is important to note that each establishment of a multi-establishment firm is tabulated separately into the appropriate size category. The total employment level of the reporting multi-establishment firm is not used in the size tabulation.

Covered employers in most States report total **wages** paid during the calendar quarter, regardless of when the services were performed. A few State laws, however, specify that wages be reported for, or based on the period during which services are performed rather than the period during which compensation is paid. Under most State laws or regulations, wages include bonuses, stock options, the cash value of meals and lodging, tips and other gratuities, and, in some States, employer contributions to certain deferred compensation plans such as 401(k) plans.

Covered employer contributions for old-age, survivors, and disability insurance (OASDI), health insurance, unemployment insurance, workers' compensation, and private pension and welfare funds are not reported as wages. Employee contributions for the same purposes, however, as well as money withheld for income taxes, union dues, and so forth, are reported even though they are deducted from the worker's gross pay.

Wages of covered Federal workers represent the gross amount of all payrolls for all pay periods ending within the quarter. This includes cash allowances, the cash equivalent of any type of remuneration, severance pay, withholding taxes, and retirement deductions. Federal employee remuneration generally covers the same types of services as for workers in private industry.

Average annual wage per employee for any given industry are computed by dividing total annual wages by annual average employment. A further division by 52 yields average weekly wages per employee. Annual pay data only approximate annual earnings because an individual may not be employed by the same employer all year or may work for more than one employer at a time.

Average weekly or annual wage is affected by the ratio of full-time to part-time workers as well as the number of individuals in high-paying and low-paying occupations. When average pay levels between States and industries are compared, these factors should be taken into consideration. For example, industries characterized by high proportions of part-time workers will

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show average wage levels appreciably less than the weekly pay levels of regular full-time employees in these industries. The opposite effect characterizes industries with low proportions of part-time workers, or industries that typically schedule heavy weekend and overtime work. Average wage data also may be influenced by work stoppages, labor turnover rates, retroactive payments, seasonal factors, bonus payments, and so on.

Notes on the data

Beginning with the release of data for 2001, publications presenting data from the Covered Employment and Wages program have switched to the 2002 version of the North American Industry Classification System (NAICS) as the basis for the assignment and tabulation of economic data by industry. NAICS is the product of a cooperative effort on the part of the statistical agencies of the United States, Canada, and Mexico. Due to difference in NAICS and Standard Industrial Classification (SIC) structures, industry data for 2001 is not comparable to the SIC-based data for earlier years.

Effective January 2001, the program began assigning Indian Tribal Councils and related establishments to local government ownership. This BLS action was in response to a change in Federal law dealing with the way Indian Tribes are treated under the Federal Unemployment Tax Act. This law requires federally recognized Indian Tribes to be treated similarly to State and local governments. In the past, the Covered Employment and Wage (CEW) program coded Indian Tribal Councils and related establishments in the private sector. As a result of the new law, CEW data reflects significant shifts in employment and wages between the private sector and local government from 2000 to 2001. Data also reflect industry changes. Those accounts previously assigned to civic and social organizations were assigned to tribal governments. There were no required industry changes for related establishments owned by these Tribal Councils. These tribal business establishments continued to be coded according to the economic activity of that entity.

To insure the highest possible quality of data, State employment security agencies verify with employers and update, if necessary, the industry, location, and ownership classification of all establishments on a 3-year cycle. Changes in establishment classification codes resulting from the verification process are introduced with the data reported for the first quarter of the year. Changes resulting from improved employer reporting also are introduced in the first quarter. For these reasons, some data, especially at more detailed geographic levels, may not be strictly comparable with earlier years.

County definitions are assigned according to Federal Information Processing Standards Publications as issued by the National Institute of Standards and Technology. Areas shown as counties include those designated as independent cities in some jurisdictions and, in Alaska, those areas designated by the Census Bureau where counties have not been created. County data also are presented for the New England States for comparative purposes, even though townships are the more common designation used in New England (and New Jersey).

The Office of Management and Budget (OMB) defines metropolitan areas for use in Federal statistical activities and updates these definitions as needed. Data in this table use metropolitan area criteria established by OMB in definitions issued June 30, 1999 (OMB Bulletin No. 99-04). These definitions reflect information obtained from the 1990 Decennial Census and the 1998 U.S. Census Bureau population estimate. A complete list of metropolitan area definitions is available from the National Technical Information Service (NTIS), Document Sales, 5205 Port Royal Road, Springfield, Va. 22161, telephone 1-800-553-6847.

OMB defines metropolitan areas in terms of entire counties, except in the six New England States where they are defined in terms of cities and towns. New England data in this table, however, are based on a county concept defined by OMB as New England County Metropolitan Areas (NECMA) because county-level data are the most detailed available from the Quarterly Census of Employment and Wages. The NECMA is a county-based alternative to the city- and town-based metropolitan areas in New England. The NECMA for a Metropolitan Statistical Area (MSA) include: (1) the county containing the first-named city in that MSA title (this county may include the first-named cities of other MSA, and (2) each additional county having at least half its population in the MSA in which first-named cities are in the county identified in step 1. The NECMA is officially defined areas that are meant to be used by statistical programs that cannot use the regular metropolitan area definitions in New England.

FOR ADDITIONAL INFORMATION on the covered employment and wage data, contact the Division of Administrative Statistics and Labor Turnover at (202) 691–6567.

Job Openings and Labor Turnover Survey

Description of the series

Data for the **Job Openings and Labor Turnover Survey** (JOLTS) are collected and compiled from a sample of 16,000 business establishments. Each month, data are collected for total employment, job openings, hires, quits, layoffs and discharges, and other separations. The JOLTS program covers all private nonfarm establishments such as factories, offices, and stores, as well as Federal, State, and local government entities in the 50 States and the District of Columbia. The JOLTS sample design is a random sample drawn from a universe of more than eight million establishments compiled as part of the operations of the Quarterly Census of Employment and Wages, or QCEW, program. This program includes all employers subject to State unemployment insurance (UI) laws and Federal agencies subject to Unemployment Compensation for Federal Employees (UCFE).

The sampling frame is stratified by ownership, region, industry sector, and size class. Large firms fall into the sample with virtual certainty. JOLTS total employment estimates are controlled to the employment estimates of the Current Employment Statistics (CES) survey. A ratio of CES to JOLTS employment is used to adjust the levels for all other JOLTS data elements. Rates then are computed from the adjusted levels.

The monthly JOLTS data series begin with December 2000. Not seasonally adjusted data on job openings, hires, total separations, quits, layoffs and discharges, and other separations levels and rates are available for the total nonfarm sector, 16 private industry divisions and 2 government divisions based on the North American Industry Classification System (NAICS), and four geographic regions. Seasonally adjusted data on job openings, hires, total separations, and quits levels and rates are available for the total nonfarm sector, selected industry sectors, and four geographic regions.

Definitions

Establishments submit **job openings** information for the last business day of the reference month. A job opening requires that (1) a specific position exists and there is work available for that position; and (2) work could start within 30 days regardless of whether a suitable candidate is found; and (3) the employer is actively recruiting from outside the establishment to fill the position. Included are full-time, part-time, permanent,

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short-term, and seasonal openings. Active recruiting means that the establishment is taking steps to fill a position by advertising in newspapers or on the Internet, posting help-wanted signs, accepting applications, or using other similar methods.

Jobs to be filled only by internal transfers, promotions, demotions, or recall from layoffs are excluded. Also excluded are jobs with start dates more than 30 days in the future, jobs for which employees have been hired but have not yet reported for work, and jobs to be filled by employees of temporary help agencies, employee leasing companies, outside contractors, or consultants. The job openings rate is computed by dividing the number of job openings by the sum of employment and job openings, and multiplying that quotient by 100.

Hires are the total number of additions to the payroll occurring at any time during the reference month, including both new and rehired employees and full-time and part-time, permanent, short-term and seasonal employees, employees recalled to the location after a layoff lasting more than 7 days, on-call or intermittent employees who returned to work after having been formally separated, and transfers from other locations. The hires count does not include transfers or promotions within the reporting site, employees returning from strike, employees of temporary help agencies or employee leasing companies, outside contractors, or consultants. The hires rate is computed by dividing the number of hires by employment, and multiplying that quotient by 100.

Separations are the total number of terminations of employment occurring at any time during the reference month, and are reported by type of separation—quits, layoffs and discharges, and other separations. Quits are voluntary separations by employees (except for retirements, which are reported as other separations). Layoffs and discharges are involuntary separations initiated by the employer and include layoffs with no intent to rehire, formal layoffs lasting or expected to last more than 7 days, discharges resulting from mergers, downsizing, or closings, firings or other discharges for cause, terminations of permanent or short-term employees, and terminations of seasonal employees. Other separations include retirements, transfers to other locations, deaths, and separations due to disability. Separations do not include transfers within the same location or employees on strike.

The separations rate is computed by dividing the number of separations by employment, and multiplying that quotient by 100. The quits, layoffs and discharges, and other separations rates are computed similarly, dividing the number by employment and multiplying by 100.

Notes on the data

The JOLTS data series on job openings, hires, and separations are relatively new. The full sample is divided into panels, with one panel enrolled each month. A full complement of panels for the original data series based on the 1987 Standard Industrial Classification (SIC) system was not completely enrolled in the survey until January 2002. The supplemental panels of establishments needed to create NAICS estimates were not completely enrolled until May 2003. The data collected up until those points are from less than a full sample. Therefore, estimates from earlier months should be used with caution, as fewer sampled units were reporting data at that time.

In March 2002, BLS procedures for collecting hires and separations data were revised to address possible underreporting. As a result, JOLTS hires and separations estimates for months prior to March 2002 may not be comparable with estimates for March 2002 and later.

The Federal Government reorganization that involved transferring approximately 180,000 employees to the new Department of Homeland Security is not reflected in the JOLTS hires and separations estimates for the Federal Government. The Office of Personnel Management's record shows these transfers were completed in March 2003. The inclusion of transfers in the JOLTS definitions of hires and separations is intended to cover ongoing movements of workers between establishments. The Department of Homeland Security reorganization was a massive one-time event, and the inclusion of these intergovernmental transfers would distort the Federal Government time series.

Data users should note that seasonal adjustment of the JOLTS series is conducted with fewer data observations than is customary. The historical data, therefore, may be subject to larger than normal revisions. Because the seasonal patterns in economic data series typically emerge over time, the standard use of moving averages as seasonal filters to capture these effects requires longer series than are currently available. As a result, the stable seasonal filter option is used in the seasonal adjustment of the JOLTS data. When calculating seasonal factors, this filter takes an average for each calendar month after detrending the series. The stable seasonal filter assumes that the seasonal factors are fixed; a necessary assumption until sufficient data are available. When the stable seasonal filter is no longer needed, other program features also may be introduced, such as outlier adjustment and extended diagnostic testing. Additionally, it is expected that more series, such as layoffs and discharges and additional industries, may be seasonally adjusted when more data are available.

JOLTS hires and separations estimates cannot be used to exactly explain net changes in payroll employment. Some reasons why it is problematic to compare changes in payroll employment with JOLTS hires and separations, especially on a monthly basis, are: (1) the reference period for payroll employment is the pay period including the 12th of the month, while the reference period for hires and separations is the calendar month; and (2) payroll employment can vary from month to month simply because part-time and on-call workers may not always work during the pay period that includes the 12th of the month. Additionally, research has found that some reporters systematically underreport separations relative to hires due to a number of factors, including the nature of their payroll systems and practices. The shortfall appears to be about 2 percent or less over a 12-month period.

FOR ADDITIONAL INFORMATION on the Job Openings and Labor Turnover Survey, contact the Division of Administrative Statistics and Labor Turnover at (202) 961-5870.

Compensation and Wage Data

(Tables 1–3; 30–36)

Compensation and waged data are gathered by the Bureau from business establishments, State and local governments, labor unions, collective bargaining agreements on file with the Bureau, and secondary sources.

Employment Cost Index

Description of the series

The **Employment Cost Index** (ECI) is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor.

Statistical series on total compensation

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costs, on wages and salaries, and on benefit costs are available for private nonfarm workers excluding proprietors, the self-employed, and household workers. The total compensation costs and wages and salaries series are also available for State and local government workers and for the civilian nonfarm economy, which consists of private industry and State and local government workers combined. Federal workers are excluded.

The Employment Cost Index probability sample consists of about 4,400 private nonfarm establishments providing about 23,000 occupational observations and 1,000 State and local government establishments providing 6,000 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

Beginning with June 1986 data, fixed employment weights from the 1980 Census of Population are used each quarter to calculate the civilian and private indexes and the index for State and local governments. (Prior to June 1986, the employment weights are from the 1970 Census of Population.) These fixed weights, also used to derive all of the industry and occupation series indexes, ensure that changes in these indexes reflect only changes in compensation, not employment shifts among industries or occupations with different levels of wages and compensation. For the bargaining status, region, and metropolitan/nonmetropolitan area series, however, employment data by industry and occupation are not available from the census. Instead, the 1980 employment weights are reallocated within these series each quarter based on the current sample. Therefore, these indexes are not strictly comparable to those for the aggregate, industry, and occupation series.

Definitions

Total compensation costs include wages, salaries, and the employer's costs for employee benefits.

Wages and salaries consist of earnings before payroll deductions, including production bonuses, incentive earnings, commissions, and cost-of-living adjustments.

Benefits include the cost to employers for paid leave, supplemental pay (including nonproduction bonuses), insurance, retirement and savings plans, and legally required benefits (such as Social Security, workers' compensation, and unemployment insurance).

Excluded from wages and salaries and employee benefits are such items as payment-in-kind, free room and board, and tips.

Notes on the data

The Employment Cost Index for changes in wages and salaries in the private nonfarm economy was published beginning in 1975. Changes in total compensation cost—wages and salaries and benefits combined—were published beginning in 1980. The series of changes in wages and salaries and for total compensation in the State and local government sector and in the civilian nonfarm economy (excluding Federal employees) were published beginning in 1981. Historical indexes (June 1981=100) are available on the Internet:

http://www.bls.gov/ect/

FOR ADDITIONAL INFORMATION on the Employment Cost Index, contact the Office of Compensation Levels and Trends: (202) 691–6199.

Employee Benefits Survey

Description of the series

Employee benefits data are obtained from the Employee Benefits Survey, an annual survey of the incidence and provisions of selected benefits provided by employers. The survey collects data from a sample of approximately 9,000 private sector and State and local government establishments. The data are presented as a percentage of employees who participate in a certain benefit, or as an average benefit provision (for example, the average number of paid holidays provided to employees per year). Selected data from the survey are presented in table 34 for medium and large private establishments and in table 35 for small private establishments and State and local government.

The survey covers paid leave benefits such as holidays and vacations, and personal, funeral, jury duty, military, family, and sick leave; short-term disability, long-term disability, and life insurance; medical, dental, and vision care plans; defined benefit and defined contribution plans; flexible benefits plans; reimbursement accounts; and unpaid family leave.

Also, data are tabulated on the incidence of several other benefits, such as severance pay, child-care assistance, wellness programs, and employee assistance programs.

Definitions

Employer-provided benefits are benefits that are financed either wholly or partly by the employer. They may be sponsored by a union or other third party, as long as there is some employer financing. However, some benefits that are fully paid for by the employee also are included. For example, long-term care insurance and postretirement life insurance paid entirely by the employee are included because the guarantee of insurability and availability at group premium rates are considered a benefit.

Participants are workers who are covered by a benefit, whether or not they use that benefit. If the benefit plan is financed wholly by employers and requires employees to complete a minimum length of service for eligibility, the workers are considered participants whether or not they have met the requirement. If workers are required to contribute towards the cost of a plan, they are considered participants only if they elect the plan and agree to make the required contributions.

Defined benefit pension plans use predetermined formulas to calculate a retirement benefit (if any), and obligate the employer to provide those benefits. Benefits are generally based on salary, years of service, or both.

Defined contribution plans generally specify the level of employer and employee contributions to a plan, but not the formula for determining eventual benefits. Instead, individual accounts are set up for participants, and benefits are based on amounts credited to these accounts.

Tax-deferred savings plans are a type of defined contribution plan that allow participants to contribute a portion of their salary to an employer-sponsored plan and defer income taxes until withdrawal.

Flexible benefit plans allow employees to choose among several benefits, such as life insurance, medical care, and vacation days, and among several levels of coverage within a given benefit.

Notes on the data

Surveys of employees in medium and large establishments conducted over the 1979–86 period included establishments that employed at least 50, 100, or 250 workers, depending on the industry (most service industries were excluded). The survey conducted in 1987 covered only State and local governments with 50 or more employ-

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ees. The surveys conducted in 1988 and 1989 included medium and large establishments with 100 workers or more in private industries. All surveys conducted over the 1979–89 period excluded establishments in Alaska and Hawaii, as well as part-time employees.

Beginning in 1990, surveys of State and local governments and small private establishments were conducted in even-numbered years, and surveys of medium and large establishments were conducted in odd-numbered years. The small establishment survey includes all private nonfarm establishments with fewer than 100 workers, while the State and local government survey includes all governments, regardless of the number of workers. All three surveys include full- and part-time workers, and workers in all 50 States and the District of Columbia.

FOR ADDITIONAL INFORMATION on the Employee Benefits Survey, contact the Office of Compensation Levels and Trends on the Internet:

http://www.bls.gov/ebs/

Work stoppages

Description of the series

Data on work stoppages measure the number and duration of major strikes or lockouts (involving 1,000 workers or more) occurring during the month (or year), the number of workers involved, and the amount of work time lost because of stoppage. These data are presented in table 36.

Data are largely from a variety of published sources and cover only establishments directly involved in a stoppage. They do not measure the indirect or secondary effect of stoppages on other establishments whose employees are idle owing to material shortages or lack of service.

Definitions

Number of stoppages: The number of strikes and lockouts involving 1,000 workers or more and lasting a full shift or longer.

Workers involved: The number of workers directly involved in the stoppage.

Number of days idle: The aggregate number of workdays lost by workers involved in the stoppages.

Days of idleness as a percent of estimated working time: Aggregate workdays lost as a percent of the aggregate number of standard workdays in the period multiplied by total employment in the period.

Notes on the data

This series is not comparable with the one terminated in 1981 that covered strikes involving six workers or more.

FOR ADDITIONAL INFORMATION on work stoppages data, contact the Office of Compensation and Working Conditions: (202) 691–6282, or the Internet:

http:/www.bls.gov/cba/

Price Data

(Tables 2; 37–47)

Price data are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period—December 2003 = 100 for many Producer Price Indexes (unless otherwise noted), 1982–84 = 100 for many Consumer Price Indexes (unless otherwise noted), and 1990 = 100 for International Price Indexes.

Consumer Price Indexes

Description of the series

The **Consumer Price Index** (CPI) is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI-W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all-urban consumer index (CPI-U), introduced in 1978, is representative of the 1993–95 buying habits of about 87 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI-W. In addition to wage earners and clerical workers, the CPI-U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items are kept essentially unchanged between major revisions so that only price changes will be measured. All taxes directly associated with the purchase and use of items are included in the index.

Data collected from more than 23,000 retail establishments and 5,800 housing units in 87 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 14 major urban centers are presented in table 38. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

Notes on the data

In January 1983, the Bureau changed the way in which homeownership costs are meaured for the CPI-U. A rental equivalence method replaced the asset-price approach to homeownership costs for that series. In January 1985, the same change was made in the CPI-W. The central purpose of the change was to separate shelter costs from the investment component of homeownership so that the index would reflect only the cost of shelter services provided by owner-occupied homes. An updated CPI-U and CPI-W were introduced with release of the January 1987 and January 1998 data.

FOR ADDITIONAL INFORMATION, contact the Division of Prices and Price Indexes: (202) 691–7000.

Producer Price Indexes

Description of the series

Producer Price Indexes (PPI) measure average changes in prices received by domestic producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,200 commodities and about 80,000 quotations per month, selected to represent the movement of prices of all commodities produced in the manufacturing; agriculture, forestry, and fishing; mining; and gas and electricity and public utilities sectors. The stage-of-processing structure of PPI organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition. The industry and product structure of PPI organizes data in accordance with the 2002 North American Industry Classification System and product codes developed by the U.S. Census Bureau.

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To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire. Most prices are obtained directly from producing companies on a voluntary and confidential basis. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

Since January 1992, price changes for the various commodities have been averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1987. The detailed data are aggregated to obtain indexes for stage-of-processing groupings, commodity groupings, durability-of-product groupings, and a number of special composite groups. All Producer Price Index data are subject to revision 4 months after original publication.

FOR ADDITIONAL INFORMATION, contact the Division of Industrial Prices and Price Indexes: (202) 691–7705.

International Price Indexes

Description of the series

The **International Price Program** produces monthly and quarterly export and import price indexes for nonmilitary goods and services traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national income accounts; it includes corporations, businesses, and individuals, but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents.

The product universe for both the import and export indexes includes raw materials, agricultural products, semifinished manufactures, and finished manufactures, including both capital and consumer goods. Price data for these items are collected primarily by mail questionnaire. In nearly all cases, the data are collected directly from the exporter or importer, although in a few cases, prices are obtained from other sources.

To the extent possible, the data gathered refer to prices at the U.S. border for exports and at either the foreign border or the U.S. border for imports. For nearly all products, the prices refer to transactions completed during the first week of the month. Survey respondents are asked to indicate all discounts, allowances, and rebates applicable to the reported prices, so that the price used in the calculation of the indexes is the actual price for which the product was bought or sold.

In addition to general indexes of prices for U.S. exports and imports, indexes are also published for detailed product categories of exports and imports. These categories are defined according to the five-digit level of detail for the Bureau of Economic Analysis End-use Classification, the three-digit level for the Standard International Trade Classification (SITC), and the four-digit level of detail for the Harmonized System. Aggregate import indexes by country or region of origin are also available.

BLS publishes indexes for selected categories of internationally traded services, calculated on an international basis and on a balance-of-payments basis.

Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. The trade weights currently used to compute both indexes relate to 2000.

Because a price index depends on the same items being priced from period to period, it is necessary to recognize when a product's specifications or terms of transaction have been modified. For this reason, the Bureau's questionnaire requests detailed descriptions of the physical and functional characteristics of the products being priced, as well as information on the number of units bought or sold, discounts, credit terms, packaging, class of buyer or seller, and so forth. When there are changes in either the specifications or terms of transaction of a product, the dollar value of each change is deleted from the total price change to obtain the "pure" change. Once this value is determined, a linking procedure is employed which allows for the continued repricing of the item.

FOR ADDITIONAL INFORMATION, contact the Division of International Prices: (202) 691–7155.

Productivity Data

(Tables 2; 48–51)

Business and major sectors

Description of the series

The productivity measures relate real output to real input. As such, they encompass a family of measures which include single-factor input measures, such as output per hour, output per unit of labor input, or output per unit of capital input, as well as measures of multifactor productivity (output per unit of combined labor and capital inputs). The Bureau indexes show the change in output relative to changes in the various inputs. The measures cover the business, nonfarm business, manufacturing, and nonfinancial corporate sectors.

Corresponding indexes of hourly compensation, unit labor costs, unit nonlabor payments, and prices are also provided.

Definitions

Output per hour of all persons (labor productivity) is the quantity of goods and services produced per hour of labor input. **Output per unit of capital services** (capital productivity) is the quantity of goods and services produced per unit of capital services input. **Multifactor productivity** is the quantity of goods and services produced per combined inputs. For private business and private nonfarm business, inputs include labor and capital units. For manufacturing, inputs include labor, capital, energy, nonenergy materials, and purchased business services.

Compensation per hour is total compensation divided by hours at work. Total compensation equals the wages and salaries of employees plus employers' contributions for social insurance and private benefit plans, plus an estimate of these payments for the self-employed (except for nonfinancial corporations in which there are no self-employed). **Real compensation per hour** is compensation per hour deflated by the change in the Consumer Price Index for All Urban Consumers.

Unit labor costs are the labor compensation costs expended in the production of a unit of output and are derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from current-dollar value of output and dividing by output.

Unit nonlabor costs contain all the components of unit nonlabor payments except unit profits.

Unit profits include corporate profits with inventory valuation and capital consumption adjustments per unit of output.

Hours of all persons are the total hours at work of payroll workers, self-employed persons, and unpaid family workers.

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Labor inputs are hours of all persons adjusted for the effects of changes in the education and experience of the labor force.

Capital services are the flow of services from the capital stock used in production. It is developed from measures of the net stock of physical assets—equipment, structures, land, and inventories—weighted by rental prices for each type of asset.

Combined units of labor and capital inputs are derived by combining changes in labor and capital input with weights which represent each component's share of total cost. Combined units of labor, capital, energy, materials, and purchased business services are similarly derived by combining changes in each input with weights that represent each input's share of total costs. The indexes for each input and for combined units are based on changing weights which are averages of the shares in the current and preceding year (the Tornquist index-number formula).

Notes on the data

Business sector output is an annually-weighted index constructed by excluding from real gross domestic product (GDP) the following outputs: general government, nonprofit institutions, paid employees of private households, and the rental value of owner-occupied dwellings. Nonfarm business also excludes farming. Private business and private nonfarm business further exclude government enterprises. The measures are supplied by the U.S. Department of Commerce's Bureau of Economic Analysis. Annual estimates of manufacturing sectoral output are produced by the Bureau of Labor Statistics. Quarterly manufacturing output indexes from the Federal Reserve Board are adjusted to these annual output measures by the BLS. Compensation data are developed from data of the Bureau of Economic Analysis and the Bureau of Labor Statistics. Hours data are developed from data of the Bureau of Labor Statistics.

The productivity and associated cost measures in tables 48–51 describe the relationship between output in real terms and the labor and capital inputs involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input.

Although these measures relate output to hours and capital services, they do not measure the contributions of labor, capital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; shifts in the composition of the labor force; capital investment; level of output; changes in the utilization of capacity, energy, material, and research and development; the organization of production; managerial skill; and characteristics and efforts of the work force.

FOR ADDITIONAL INFORMATION on this productivity series, contact the Division of Productivity Research: (202) 691–5606.

Industry productivity measures

Description of the series

The BLS industry productivity indexes measure the relationship between output and inputs for selected industries and industry groups, and thus reflect trends in industry efficiency over time. Industry measures include labor productivity, multifactor productivity, compensation, and unit labor costs.

The industry measures differ in methodology and data sources from the productivity measures for the major sectors because the industry measures are developed independently of the National Income and Product Accounts framework used for the major sector measures.

Definitions

Output per hour is derived by dividing an index of industry output by an index of labor input. For most industries, **output** indexes are derived from data on the value of industry output adjusted for price change. For the remaining industries, output indexes are derived from data on the physical quantity of production.

The **labor input** series is based on the hours of all workers or, in the case of some transportation industries, on the number of employees. For most industries, the series consists of the hours of all employees. For some trade and services industries, the series also includes the hours of partners, proprietors, and unpaid family workers.

Unit labor costs represent the labor compensation costs per unit of output produced, and are derived by dividing an index of labor compensation by an index of output. **Labor compensation** includes payroll as well as supplemental payments, including both legally required expenditures and payments for voluntary programs.

Multifactor productivity is derived by dividing an index of industry output by an index of combined inputs consumed in producing that output. **Combined inputs** include capital, labor, and intermediate purchases. The measure of **capital input** represents the flow of services from the capital stock used in production. It is developed from measures of the net stock of physical assets—equipment, structures, land, and inventories. The measure of **intermediate purchases** is a combination of purchased materials, services, fuels, and electricity.

Notes on the data

The industry measures are compiled from data produced by the Bureau of Labor Statistics and the Census Bureau, with additional data supplied by other government agencies, trade associations, and other sources.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Industry Productivity Studies: (202) 691–5618.

International Comparisons

(Tables 52–54)

Labor force and unemployment

Description of the series

Tables 52 and 53 present comparative measures of the labor force, employment, and unemployment approximating U.S. concepts for the United States, Canada, Australia, Japan, and six European countries. The labor force statistics published by other industrial countries are not, in most cases, comparable to U.S. concepts. Therefore, the Bureau adjusts the figures for selected countries, for all known major definitional differences, to the extent that data to prepare adjustments are available. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country. For further information on adjustments and comparability issues, see Constance Sorrentino, "International unemployment rates: how comparable are they?" *Monthly Labor Review*, June 2000, pp. 3–20 (available on the BLS Web site at **http://www.bls.gov/opub/mlr/2000/06/art1full.pdf**).

Definitions

For the principal U.S. definitions of the labor force, employment, and unemployment, see the Notes section on Employment and

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Unemployment Data: Household survey data.

Notes on the data

The foreign country data are adjusted as closely as possible to U.S. concepts, with the exception of lower age limits and the treatment of layoffs. These adjustments include, but are not limited to: including older persons in the labor force by imposing no upper age limit, adding unemployed students to the unemployed, excluding the military and family workers working fewer than 15 hours from the employed, and excluding persons engaged in passive job search from the unemployed.

Data for the United States relate to the population 16 years of age and older. The U.S. concept of the working age population has no upper age limit. The adjusted to U.S. concepts statistics have been adapted, insofar as possible, to the age at which compulsory schooling ends in each country, and the Swedish statistics have been adjusted to include persons older than the Swedish upper age limit of 64 years. The adjusted statistics presented here relate to the population 16 years of age and older in France, Sweden, and the United Kingdom; 15 years of age and older in Australia, Japan, Germany, Italy, and the Netherlands. An exception to this rule is that the Canadian statistics are adjusted to cover the population 16 years of age and older, whereas the age at which compulsory schooling ends remains at 15 years. In the labor force participation rates and employment-population ratios, the denominator is the civilian noninstitutionalized working age population, except that the institutionalized working age population is included in Japan and Germany.

In the United States, the unemployed include persons who are not employed and who were actively seeking work during the reference period, as well as persons on layoff. Persons waiting to start a new job who were actively seeking work during the reference period are counted as unemployed under U.S. concepts; if they were not actively seeking work, they are not counted in the labor force. In some countries, persons on layoff are classified as employed due to their strong job attachment. No adjustment is made for the countries that classify those on layoff as employed. In the United States, as in Australia and Japan, passive job seekers are not in the labor force; job search must be active, such as placing or answering advertisements, contacting employers directly,or registering with an employment agency (simply reading ads is not enough to qualify as active search). Canada and the European countries classify passive jobseekers as unemployed. An adjustment is made to exclude them in Canada, but not in the European countries where the phenomenon is less prevalent. Persons waiting to start a new job are counted among the unemployed for all other countries, whether or not they were actively seeking work.

The figures for one or more recent years for France, Germany, and the Netherlands are calculated using adjustment factors based on labor force surveys for earlier years and are considered preliminary. The recent year measures for these countries are therefore subject to revision whenever more current labor force surveys become available.

There are breaks in series for the United States (1994, 1997, 1998, 1999, 2000, 2003), Australia (2001), and Germany (1999).

For the United States, beginning in 1994, data are not strictly comparable for prior years because of the introduction of a major redesign of the labor force survey questionnaire and collection methodology. The redesign effect has been estimated to increase the overall unemployment rate by 0.1 percentage point. Other breaks noted relate to changes in population controls that had virtually no effect on unemployment rates.

For a description of all the changes in the U.S. labor force survey over time and their impact, see Historical Comparability in the "Household Data" section of the BLS publication *Employment and Earnings* (available on the BLS Web site at **http://www.bls.gov/cps/eetech_methods.pdf**).

For Australia, the 2001 break reflects the introduction in April 2001 of a redesigned labor force survey that allowed for a closer application of International Labor Office guidelines for the definitions of labor force statistics. The Australian Bureau of Statistics revised their data so there is no break in the employment series. However, the reclassification of persons who had not actively looked for work because they were waiting to begin a new job from "not in the labor force" to "unemployed" could only be incorporated for April 2001 forward. This reclassification diverges from the U.S. definition where persons waiting to start a new job but not actively seeking work are not counted in the labor force. The impact of the reclassification was an increase in the unemployment rate by 0.1 percentage point in 2001.

For Germany, the 1999 break reflects the incorporation of an improved method of data calculation and a change in coverage to persons living in private households only.

For further qualifications and historical data, see *Comparative Civilian Labor Force Statistics, Ten Countries,* on the BLS Web site at **http://www.bls.gov/fls/flslforc.pdf**

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 691-5654 or **flshelp@bls.gov**

Manufacturing productivity and labor costs

Description of the series

Table 54 presents comparative indexes of manufacturing labor productivity (output per hour), output, total hours, compensation per hour, and unit labor costs for the United States, Australia, Canada, Japan, Korea, Taiwan, and nine European countries. These measures are trend comparisons—that is, series that measure changes over time—rather than level comparisons. There are greater technical problems in comparing the levels of manufacturing output among economies.

BLS constructs the comparative indexes from three basic aggregate measures—output, total labor hours, and total compensation. The hours and compensation measures refer to all employed persons (wage and salary earners plus self-employed persons and unpaid family workers) with the exception of Belguim and Taiwan, where only employees (wage and salary earners) are counted.

Definitions

Output, in general, refers to value added in manufacturing from the national accounts of each country. However, the output series for Japan prior to 1970 is an index of industrial production, and the national accounts measures for the United Kingdom are essentially identical to their indexes of industrial production.

The output data for the United States are the gross product originating (value added) measures prepared by the Bureau of Economic Analysis of the U.S. Department of Commerce. Comparable manufacturing output data currently are not available prior to 1977.

U.S. data from 1998 forward are based on the 1997 North American Industry Classification System (NAICS). Output is in real value-added terms using a chain-type annual-weighted method for price deflation. (For more information on the U.S. measure, see "Improved Estimates of Gross Product by Industry for 1947–98," *Survey of Current Business*, June 2000, and "Improved Annual Industry Accounts for 1998–2003," *Survey of Current Business*, June 2004). Most of the other economies now also use annual moving price weights, but earlier years were estimated using fixed price

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weights, with the weights typically updated every 5 or 10 years.

To preserve the comparability of the U.S. measures with those for other economies, BLS uses gross product originating in manufacturing for the United States for these comparative measures. The gross product originating series differs from the manufacturing output series that BLS publishes in its news releases on quarterly measures of U.S. productivity and costs (and that underlies the measures that appear in tables 48 and 50 in this section). The quarterly measures are on a "sectoral output" basis, rather than a value-added basis. Sectoral output is gross output less intrasector transactions.

Total labor hours refers to hours worked in all economies. The measures are developed from statistics of manufacturing employment and average hours. The series used for Australia, Canada, Demark, France (from 1970 forward), Norway, and Sweden are official series published with the national accounts. For Germany, BLS uses estimates of average hours worked developed by a research institute connected to the Ministry of Labor for use with the national accounts employment figures. For the United Kingdom from 1992, an official annual index of total manufacturing hours is used. Where official total hours series are not available, the measures are developed by BLS using employment figures published with the national accounts, or other comprehensive employment series, and estimates of annual hours worked.

Total compensation (labor cost) includes all payments in cash or in-kind made directly to employees plus employer expenditures for legally-required insurance programs and contractual and private benefit plans. The measures are from the national accounts of each economy, except those for Belgium, which are developed by BLS using statistics on employment, average hours, and hourly compensation. For Australia, Canada, France, and Sweden, compensation is increased to account for other significant taxes on payroll or employment. For the United Kingdom, compensation is reduced between 1967 and 1991 to account for employment-related subsidies. Self-employed workers are included in the all-employed-persons measures by assuming that their compensation is equal to the average for wage and salary employees.

Notes on the data

In general, the measures relate to total manufacturing as defined by the International Standard Industrial Classification. However, the measures for France include parts of mining as well.

The measures for recent years may be based on current indicators of manufacturing output (such as industrial production indexes), employment, average hours, and hourly compensation until national accounts and other statistics used for the long-term measures become available.

Official published data for Australia are in fiscal years that begin on July 1. The Australian Bureau of Statistics has finished calendar-year data for recent years for output and hours. For earlier years and for compensation, data are BLS estimates using 2-year moving averages of fiscal year data.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 691–5654.

Occupational Injury and Illness Data

(Tables 55–56)

Survey of Occupational Injuries and Illnesses

Description of the series

The Survey of Occupational Injuries and Illnesses collects data from employers about their workers' job-related nonfatal injuries and illnesses. The information that employers provide is based on records that they maintain under the Occupational Safety and Health Act of 1970. Self-employed individuals, farms with fewer than 11 employees, employers regulated by other Federal safety and health laws, and Federal, State, and local government agencies are excluded from the survey.

The survey is a Federal-State cooperative program with an independent sample selected for each participating State. A stratified random sample with a Neyman allocation is selected to represent all private industries in the State. The survey is stratified by Standard Industrial Classification and size of employment.

Definitions

Under the Occupational Safety and Health Act, employers maintain records of nonfatal work-related injuries and illnesses that involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment other than first aid.

Occupational injury is any injury such as a cut, fracture, sprain, or amputation that results from a work-related event or a single, instantaneous exposure in the work environment.

Occupational illness is an abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to factors associated with employment. It includes acute and chronic illnesses or disease which may be caused by inhalation, absorption, ingestion, or direct contact.

Lost workday injuries and illnesses are cases that involve days away from work, or days of restricted work activity, or both.

Lost workdays include the number of workdays (consecutive or not) on which the employee was either away from work or at work in some restricted capacity, or both, because of an occupational injury or illness. BLS measures of the number and incidence rate of lost workdays were discontinued beginning with the 1993 survey. The number of days away from work or days of restricted work activity does not include the day of injury or onset of illness or any days on which the employee would not have worked, such as a Federal holiday, even though able to work.

Incidence rates are computed as the number of injuries and/or illnesses or lost work days per 100 full-time workers.

Notes on the data

The definitions of occupational injuries and illnesses are from *Recordkeeping Guidelines for Occupational Injuries and Illnesses* (U.S. Department of Labor, Bureau of Labor Statistics, September 1986).

Estimates are made for industries and employment size classes for total recordable cases, lost workday cases, days away from work cases, and nonfatal cases without lost workdays. These data also are shown separately for injuries. Illness data are available for seven categories: occupational skin diseases or disorders, dust diseases of the lungs, respiratory conditions due to toxic agents, poisoning (systemic effects of toxic agents), disorders due to physical agents (other than toxic materials), disorders associated with repeated trauma, and all other occupational illnesses.

The survey continues to measure the number of new work-related illness cases which are recognized, diagnosed, and reported during the year. Some conditions, for example, long-term latent illnesses caused by exposure to carcinogens, often are difficult to relate to the workplace and are not adequately recog-

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nized and reported. These long-term latent illnesses are believed to be understated in the survey's illness measure. In contrast, the overwhelming majority of the reported new illnesses are those which are easier to directly relate to workplace activity (for example, contact dermatitis and carpal tunnel syndrome).

Most of the estimates are in the form of incidence rates, defined as the number of injuries and illnesses per 100 equivalent full-time workers. For this purpose, 200,000 employee hours represent 100 employee years (2,000 hours per employee). Full detail on the available measures is presented in the annual bulletin, *Occupational Injuries and Illnesses: Counts, Rates, and Characteristics.*

Comparable data for more than 40 States and territories are available from the BLS Office of Safety, Health and Working Conditions. Many of these States publish data on State and local government employees in addition to private industry data.

Mining and railroad data are furnished to BLS by the Mine Safety and Health Administration and the Federal Railroad Administration. Data from these organizations are included in both the national and State data published annually.

With the 1992 survey, BLS began publishing details on serious, nonfatal incidents resulting in days away from work. Included are some major characteristics of the injured and ill workers, such as occupation, age, gender, race, and length of service, as well as the circumstances of their injuries and illnesses (nature of the disabling condition, part of body affected, event and exposure, and the source directly producing the condition). In general, these data are available nationwide for detailed industries and for individual States at more aggregated industry levels.

FOR ADDITIONAL INFORMATION on occupational injuries and illnesses, contact the Office of Occupational Safety, Health and Working Conditions at (202) 691–6180, or access the Internet at: **http://www.bls.gov/iif/**

Census of Fatal Occupational Injuries

The Census of Fatal Occupational Injuries compiles a complete roster of fatal job-related injuries, including detailed data about the fatally injured workers and the fatal events. The program collects and cross checks fatality information from multiple sources, including death certificates, State and Federal workers' compensation reports, Occupational Safety and Health Administration and Mine Safety and Health Administration records, medical examiner and autopsy reports, media accounts, State motor vehicle fatality records, and follow-up questionnaires to employers.

In addition to private wage and salary workers, the self-employed, family members, and Federal, State, and local government workers are covered by the program. To be included in the fatality census, the decedent must have been employed (that is working for pay, compensation, or profit) at the time of the event, engaged in a legal work activity, or present at the site of the incident as a requirement of his or her job.

Definition

A fatal work injury is any intentional or unintentional wound or damage to the body resulting in death from acute exposure to energy, such as heat or electricity, or kinetic energy from a crash, or from the absence of such essentials as heat or oxygen caused by a specific event or incident or series of events within a single workday or shift. Fatalities that occur during a person's commute to or from work are excluded from the census, as well as work-related illnesses, which can be difficult to identify due to long latency periods.

Notes on the data

Twenty-eight data elements are collected, coded, and tabulated in the fatality program, including information about the fatally injured worker, the fatal incident, and the machinery or equipment involved. Summary worker demographic data and event characteristics are included in a national news release that is available about 8 months after the end of the reference year. The Census of Fatal Occupational Injuries was initiated in 1992 as a joint Federal-State effort. Most States issue summary information at the time of the national news release.

FOR ADDITIONAL INFORMATION on the Census of Fatal Occupational Injuries contact the BLS Office of Safety, Health, and Working Conditions at (202) 691–6175, or the Internet at: **http://www.bls.gov/iif/**

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1. Labor market indicators

Selected indicators	2003	2004	2002	2003				2004			
			IV	I	II	III	IV	I	II	III	IV
Employment data											
Employment status of the civilian noninstitutional population (household survey):[1]											
Labor force participation rate	66.2	66.0	66.4	66.3	66.4	66.2	66.1	66.0	66.0	66.0	66.0
Employment-population ratio	62.3	62.3	62.5	62.4	62.3	62.1	62.2	62.2	62.3	62.4	62.4
Unemployment rate	6.0	5.5	5.9	5.8	6.1	6.1	5.9	5.6	5.6	5.5	5.4
Men	6.3	5.6	6.1	6.1	6.5	6.4	6.1	5.7	5.7	5.6	5.6
16 to 24 years	13.4	12.6	12.5	12.8	13.9	13.7	13.0	12.6	12.9	12.5	12.6
25 years and older	5.0	4.4	4.9	5.0	5.2	5.1	4.9	4.5	4.5	4.4	4.3
Women	5.7	5.4	5.6	5.5	5.7	5.8	5.6	5.6	5.4	5.3	5.2
16 to 24 years	11.4	11.0	11.4	11.2	11.8	11.5	10.9	11.1	10.9	10.9	10.9
25 years and older	4.6	4.4	4.5	4.5	4.6	4.7	4.6	4.5	4.4	4.3	4.2
Employment, nonfarm (payroll data), in thousands:[1]											
Total nonfarm	129,931	131,481	108,664	130,047	129,878	129,820	130,002	130,367	131,125	131,731	132,294
Total private	108,356	109,863	108,654	108,428	108,309	108,260	108,453	108,986	109,737	110,095	110,593
Goods-producing	21,817	21,885	22,252	22,025	21,848	21,718	21,676	21,725	21,868	21,932	21,995
Manufacturing	14,525	14,329	14,979	14,775	14,570	14,410	14,340	14,285	14,338	14,353	14,337
Service-providing	108,114	109,597	107,995	108,022	108,030	108,102	108,326	108,816	109,457	109,799	110,300
Average hours:											
Total private	33.7	33.7	33.8	33.8	33.7	33.6	33.7	33.8	33.7	33.7	33.8
Manufacturing	40.4	40.8	40.4	40.4	40.2	40.2	40.6	41.0	40.8	40.8	40.6
Overtime	4.2	4.6	4.2	4.2	4.1	4.1	4.4	4.5	4.5	4.6	4.5
Employment Cost Index[2]											
Percent change in the ECI, compensation:											
All workers (excluding farm, household and Federal workers)	3.8	–	.6	1.4	.8	1.1	.5	1.4	.9	1.0	.5
Private industry workers	4.0	–	.4	1.7	.8	1.0	.4	1.5	.9	.8	.5
Goods-producing[3]	4.0	–	.9	1.8	.9	.7	.5	2.3	.9	.9	.6
Service-providing[3]	4.0	–	.2	1.5	.8	1.1	.5	1.1	1.0	.8	.3
State and local government workers	3.3	–	.9	.7	.4	1.7	.5	.7	.4	1.7	.6
Workers by bargaining status (private industry):											
Union	4.6	–	.9	1.6	1.2	1.0	.7	2.8	1.5	.8	.5
Nonunion	3.9	–	.4	1.6	.8	1.0	.4	1.3	.8	.9	.4

[1] Quarterly data seasonally adjusted.

[2] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter.

[3] Goods-producing industries include mining, construction, and manufacturing. Service-providing industries include all other private sector industries.

NOTE: Beginning in January 2003, household survey data reflect revised population controls. Nonfarm data reflect the conversion to the 2002 version of the North American Industry Classification System (NAICS), replacing the Standard Industrial Classification (SIC) system. NAICS-based data by industry are not comparable with SIC-based data.
Dash indiates data not available

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2. Annual and quarterly percent changes in compensation, prices, and productivity

Selected measures	2003	2004	2002	2003				2004			
			IV	I	II	III	IV	I	II	III	IV
Compensation data[1,2]											
Employment Cost Index—compensation (wages, salaries, benefits):											
Civilian nonfarm	3.8	–	0.6	1.4	0.8	1.1	0.5	1.4	0.9	1.0	0.5
Private nonfarm	4.0	–	.4	1.7	.8	1.0	.4	1.5	.9	.8	.5
Employment Cost Index—wages and salaries:											
Civilian nonfarm	2.9	–	.4	1.0	.6	.9	.3	.6	.6	.9	.3
Private nonfarm	3.0	–	.3	1.1	.7	.8	.4	.7	.7	.9	.2
Price data[1]											
Consumer Price Index (All Urban Consumers): All Items	2.3	3.3	-.1	1.8	–.3	–.2	–.2	1.2	1.2	.2	.2
Producer Price Index:											
Finished goods	3.2	4.1	-.1	3.7	–.8	.3	.0	1.2	1.2	.0	1.1
Finished consumer goods	4.2	4.6	-.3	2.4	1.8	.3	.0	1.5	1.4	–1.7	.9
Capital equipment	.4	2.4	.6	.6	–.6	–.1	.0	.6	.5	.4	1.6
Intermediate materials, supplies, and components	4.6	9.1	.1	6.5	–2.1	–.1	.0	2.5	3.0	1.9	.9
Crude materials	25.2	18.0	6.5	28.0	–10.6	3.4	14.4	6.0	7.6	–5.1	8.3
Productivity data[3]											
Output per hour of all persons:											
Business sector	4.5	4.0	1.2	3.9	7.6	8.5	2.4	3.9	1.5	2.3	2.5
Nonfarm business sector	4.4	4.1	1.6	3.7	6.7	9.0	3.1	3.7	3.9	1.9	.8
Nonfinancial corporations[4]	5.4	–	3.4	3.2	9.1	9.4	5.0	.1	2.7	–	–

[1] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted, and the price data are not compounded.

[2] Excludes Federal and private household workers.

[3] Annual rates of change are computed by comparing annual averages. Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

[4] Output per hour of all employees.

NOTE: Dash indicates data not available.

3. Alternative measures of wage and compensation changes

Components	Quarterly change					Four quarters ending—				
	2003	2004				2003	2004			
	IV	I	II	III	IV	IV	I	II	III	IV
Average hourly compensation:[1]										
All persons, business sector	4.0	2.8	5.2	3.8	4.2	5.3	4.6	4.4	4.0	4.0
All persons, nonfarm business sector	4.4	2.0	5.9	3.5	3.1	5.4	4.5	4.6	3.9	3.6
Employment Cost Index—compensation:										
Civilian nonfarm[2]	.5	1.4	.9	1.0	.5	3.8	3.8	3.9	3.8	3.7
Private nonfarm	.4	1.5	.9	.8	.5	4.0	3.9	4.0	3.7	3.8
Union	.7	2.8	1.5	.8	.5	4.6	5.7	6.0	5.8	5.6
Nonunion	.4	1.3	.8	.9	.4	3.9	3.6	3.5	3.4	3.4
State and local governments	.5	.7	.4	1.7	.6	3.3	3.3	3.4	3.4	3.5
Employment Cost Index—wages and salaries:										
Civilian nonfarm[2]	.3	.6	.6	.9	.3	2.9	2.5	2.5	2.4	2.4
Private nonfarm	.4	.7	.7	.9	.2	3.0	2.6	2.6	2.6	2.4
Union	.6	.6	1.0	.8	.4	2.4	2.5	2.9	3.0	2.8
Nonunion	.2	.7	.6	.8	.2	3.1	2.6	2.5	2.5	2.4
State and local governments	.4	.4	.2	1.0	.5	2.1	2.1	1.9	2.0	2.1

[1] Seasonally adjusted. "Quarterly average" is percent change from a quarter ago, at an annual rate.

[2] Excludes Federal and household workers.

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4. Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
TOTAL															
Civilian noninstitutional population[1]	221,168	223,357	222,509	222,161	222,357	222,550	222,757	222,967	223,196	223,422	223,677	223,941	224,192	224,422	224,640
Civilian labor force	146,510	147,401	146,808	146,785	146,529	146,737	146,788	147,018	147,386	147,823	147,676	147,531	147,893	148,313	148,203
Participation rate	66.2	66.0	66.0	66.1	65.9	65.9	65.9	65.9	66.0	66.2	66.0	65.9	66.0	66.1	66.0
Employed	137,736	139,252	138,409	138,481	138,334	138,408	138,645	138,846	139,158	139,639	139,658	139,527	139,827	140,293	140,156
Employment-population ratio[2]	62.3	62.3	62.2	62.3	62.2	62.1	62.2	62.2	62.3	62.5	62.4	62.3	62.4	62.5	62.4
Unemployed	8,774	8,149	8,399	8,303	8,195	8,330	8,143	8,172	8,228	8,184	8,018	8,005	8,066	8,020	8,047
Unemployment rate	6.0	5.5	5.7	5.7	5.6	5.7	5.6	5.6	5.6	5.5	5.4	5.5	5.4	5.5	5.4
Not in the labor force	74,658	75,956	75,701	75,377	75,828	75,812	75,969	75,950	75,809	75,599	76,001	76,410	76,299	76,109	76,437
Men, 20 years and over															
Civilian noninstitutional population[1]	98,272	99,476	98,927	98,866	98,966	99,065	99,170	99,279	99,396	99,512	99,642	99,776	99,904	100,017	99,476
Civilian labor force	74,623	75,364	75,103	75,139	74,854	75,035	74,908	75,095	75,631	75,567	75,615	75,462	75,632	75,866	75,754
Participation rate	75.9	75.8	75.9	76.0	75.6	75.7	75.5	75.6	75.8	75.9	75.9	75.6	75.7	75.9	75.7
Employed	70,415	71,572	71,135	71,283	71,014	71,158	71,158	71,226	71,575	71,830	71,847	71,701	71,895	71,134	72,020
Employment-population ratio[2]	71.7	71.9	71.9	72.1	71.8	71.8	71.8	71.7	72.0	72.2	72.1	71.9	72.0	72.1	71.9
Unemployed	4,209	3,791	3,968	3,856	3,840	3,877	3,751	3,869	3,786	3,737	3,768	3,761	3,736	3,733	3,733
Unemployment rate	5.6	5.0	5.3	5.1	5.1	5.2	5.0	5.2	5.0	4.9	5.0	5.0	4.9	4.9	4.9
Not in the labor force	23,649	24,113	23,824	23,726	24,112	24,029	24,261	24,184	24,035	23,945	24,026	24,314	24,272	24,151	24,372
Women, 20 years and over															
Civilian noninstitutional population[1]	106,800	107,658	107,404	107,131	107,216	107,299	107,389	107,483	107,586	107,687	107,801	107,920	108,032	108,129	107,658
Civilian labor force	64,716	64,923	64,743	64,475	64,636	64,723	64,776	64,803	64,989	65,085	64,909	65,008	65,126	65,244	65,260
Participation rate	60.6	60.3	60.3	60.2	60.3	60.3	60.3	60.3	60.4	60.4	60.2	60.2	60.3	60.3	60.3
Employed	61,402	61,773	61,523	61,237	61,456	61,424	61,591	61,723	61,731	61,902	61,877	61,939	62,024	62,145	62,208
Employment-population ratio[2]	57.5	57.4	57.3	57.2	57.3	57.2	57.4	57.4	57.4	57.5	57.4	57.4	57.4	57.5	57.5
Unemployed	3,314	3,150	3,302	3,238	3,179	3,299	3,185	3,080	3,259	3,183	3,032	3,069	3,102	3,099	3,051
Unemployment rate	5.1	4.9	5.1	5.6	4.9	5.1	409.0	4.8	5.0	4.9	4.7	4.7	4.8	4.7	4.7
Not in the labor force	42,083	42,735	42,661	42,657	42,580	42,576	42,613	42,680	42,597	42,603	42,892	42,912	42,906	42,885	42,961
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	16,096	16,222	16,178	16,164	16,175	16,186	16,198	16,205	16,214	16,222	16,234	16,246	16,257	16,293	16,222
Civilian labor force	7,170	7,114	6,961	7,171	7,039	6,979	7,104	7,120	7,036	7,172	7,152	7,062	7,165	7,202	7,189
Participation rate	44.5	43.9	43.0	44.4	43.5	43.1	43.9	43.9	43.4	44.2	44.1	43.5	43.9	44.2	44.1
Employed	5,919	5,907	5,836	5,962	5,864	5,825	5,897	5,896	5,853	5,907	5,934	5,887	5,908	6,014	5,927
Employment-population ratio[2]	36.8	36.4	36.1	36.9	36.3	36.0	36.4	36.4	36.1	36.4	36.6	36.2	36.3	36.9	36.4
Unemployed	1,251	1,208	1,125	1,209	1,175	1,154	1,207	1,223	1,184	1,265	1,217	1,175	1,227	1,188	1,262
Unemployment rate	17.5	17.0	16.2	16.9	16.7	16.5	17.0	17.2	16.8	17.6	17.0	16.6	17.2	16.5	17.6
Not in the labor force	8,926	9,108	9,235	8,993	9,136	9,207	9,094	9,086	9,178	9,051	9,082	9,184	9,122	9,074	9,104
White[3]															
Civilian noninstitutional population[1]	181,292	182,643	182,185	181,879	182,001	182,121	182,252	182,384	182,531	182,676	182,846	183,022	183,188	183,340	183,483
Civilian labor force	120,546	121,686	120,703	120,743	120,590	120,598	120,713	120,997	121,212	121,383	121,278	120,995	121,273	121,606	121,509
Participation rate	66.5	66.3	66.3	66.2	66.3	66.2	66.2	66.3	66.4	66.4	66.3	66.1	66.2	66.3	66.2
Employed	114,235	115,239	114,626	114,771	114,615	114,500	114,779	115,006	115,199	115,610	115,526	115,318	115,618	115,966	115,910
Employment-population ratio[2]	63.0	63.1	62.9	63.1	63.0	62.9	63.0	63.1	63.1	63.3	63.2	63.0	63.1	63.3	63.2
Unemployed	6,311	5,847	6,077	5,972	5,975	6,098	5,934	5,991	6,013	5,773	5,752	5,677	5,655	5,640	5,600
Unemployment rate	5.2	4.8	5.0	4.9	5.0	5.1	4.9	5.0	5.0	4.8	4.7	4.7	4.7	4.6	4.6
Not in the labor force	60,746	61,558	61,482	61,136	61,411	61,522	61,539	61,387	61,319	61,293	61,568	62,027	61,915	61,735	61,973
Black or African American[3]															
Civilian noninstitutional population[1]	25,686	26,065	25,894	25,827	25,900	25,932	25,967	26,002	26,040	26,078	26,120	26,163	26,204	26,239	26,273
Civilian labor force	16,526	16,638	16,362	16,603	16,427	16,603	16,505	16,480	16,521	16,775	16,721	16,711	16,820	16,728	16,713
Participation rate	64.3	63.8	63.2	64.2	63.4	64.0	63.6	63.4	63.4	64.3	64.0	63.9	62.4	63.8	63.6
Employed	14,739	14,909	14,697	14,875	14,825	14,917	14,893	14,837	14,825	14,937	14,972	14,981	15,012	14,913	14,907
Employment-population ratio[2]	57.4	57.2	56.8	57.5	57.3	57.5	57.4	57.1	56.9	57.3	57.3	57.3	57.3	56.8	56.7
Unemployed	1,787	1,729	1,665	1,728	1,598	1,685	1,612	1,642	1,696	1,838	1,749	1,730	1,808	1,814	1,806
Unemployment rate	10.8	10.4	10.2	10.4	9.7	10.2	9.8	10.0	10.3	11.0	10.5	10.4	10.7	10.8	10.8
Not in the labor force	9,161	9,428	9,559	9,264	9,473	9,330	9,462	9,523	9,520	9,303	9,399	9,452	9,384	9,512	9,559

See footnotes at end of table.

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4. Continued—Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		2003	2004										
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Hispanic or Latino ethnicity															
Civilian noninstitutional population[1]	27,551	28,109	28,116	27,619	27,705	27,791	27,879	27,968	28,059	28,150	28,243	28,338	28,431	28,520	28,608
Civilian labor force	18,813	19,272	19,051	18,849	18,702	19,036	19,081	19,297	19,302	19,432	19,463	19,444	19,524	19,552	19,544
Participation rate	68.3	68.6	68.7	68.2	67.5	68.5	68.4	69.0	68.8	69.0	68.9	68.6	68.7	68.6	68.3
Employed	17,372	17,930	17,794	17,476	17,315	17,633	17,724	17,959	18,013	18,102	18,128	18,079	18,213	18,238	18,252
Employment-population ratio[2]	63.1	63.8	63.3	63.3	62.5	63.5	63.6	64.2	64.2	64.3	64.2	63.8	64.1	63.9	63.8
Unemployed	1,441	1,342	1,257	1,373	1,387	1,403	1,358	1,338	1,289	1,330	1,335	1,366	1,311	1,313	1,292
Unemployment rate	7.7	7.0	6.6	7.3	7.4	7.4	7.1	6.9	6.7	6.8	6.9	7.0	6.7	6.7	6.6
Not in the labor force	8,738	8,837	9,065	8,770	9,003	8,755	8,797	8,671	8,756	8,717	8,780	8,894	8,907	8,968	9,064

[1] The population figures are not seasonally adjusted.

[2] Civilian employment as a percent of the civilian noninstitutional population.

[3] Beginning in 2003, persons who selected this race group only; persons who selected more than one race group are not included. Prior to 2003, persons who reported more than one race were included in the group they identified as the main race.

NOTE: Estimates for the above race groups (white and black or African American) do not sum to totals because data are not presented for all races. In addition, persons whose ethnicity is identified as Hispanic or Latino may be of any race and, therefore, are classified by ethnicity as well as by race. Beginning in January 2003, data reflect revised population controls used in the household survey.

5. Selected employment indicators, monthly data seasonally adjusted

[In thousands]

Selected categories	Annual average		2003	2004										
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Characteristic															
Employed, 16 years and over	137,736	139,252	138,409	168,481	138,334	138,408	138,645	138,846	139,158	139,639	139,658	139,527	139,827	140,293	140,156
Men	73,332	74,524	74,122	74,284	73,937	74,062	74,104	74,118	74,501	74,811	74,824	74,629	74,852	75,188	74,938
Women	64,404	64,728	64,286	64,197	64,397	64,345	64,541	64,728	64,658	64,828	64,834	64,898	64,975	65,104	65,218
Married men, spouse present	44,653	45,084	45,383	45,443	45,044	45,000	44,759	44,763	44,958	44,948	45,099	45,093	45,127	45,462	45,315
Married women, spouse present	34,695	34,600	34,897	34,546	34,481	34,283	34,375	34,536	34,487	34,607	34,494	34,704	34,808	34,961	34,878
Persons at work part time[1]															
All industries:															
Part time for economic reasons	4,701	4,567	4,782	4,703	4,445	4,708	4,557	4,634	4,504	4,488	4,509	4,476	4,762	4,533	4,474
Slack work or business conditions	3,118	2,841	3,197	2,972	2,841	2,984	2,813	2,845	2,801	2,642	2,816	2,805	3,052	2,761	2,735
Could only find part-time work	1,279	1,409	1,305	1,400	1,363	1,430	1,431	1,449	1,400	1,472	1,403	1,312	1,385	1,420	1,440
Part time for noneconomic noneconomic reasons	19,014	19,380	18,656	18,986	19,020	19,091	19,130	19,570	19,564	19,737	19,657	19,410	19,704	19,499	19,502
Nonagricultural industries:															
Part time for economic reasons	4,596	4,469	4,704	4,604	4,335	4,595	4,451	4,567	4,423	4,390	4,408	4,400	4,656	4,404	4,382
Slack work or business conditions	3,052	2,773	3,149	2,894	2,768	2,899	2,747	2,801	2,753	2,580	2,722	2,750	2,971	2,685	2,682
Could only find part-time work	1,264	1,399	1,272	1,405	1,350	1,415	1,425	1,458	1,382	1,484	1,388	1,320	1,363	1,396	1,397
Part time for noneconomic reasons	18,658	19,026	18,416	18,711	18,775	18,791	18,844	19,145	19,123	19,327	19,204	19,061	19,288	19,141	19,176

[1] Excludes persons "with a job but not at work" during the survey period for such reasons as vacation, illness, or industrial disputes.

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

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6. Selected unemployment indicators, monthly data seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Characteristic															
Total, 16 years and older	6.0	5.5	5.7	5.7	5.6	5.7	5.5	5.6	5.6	5.5	5.4	5.4	5.5	5.4	5.4
Both sexes, 16 to 19 years	17.5	17.0	16.2	16.9	16.7	16.5	17.0	17.2	16.8	17.6	17.0	16.6	17.2	16.5	17.6
Men, 20 years and older	5.6	5.0	5.3	5.1	5.1	5.2	5.0	5.2	5.0	4.9	5.0	5.0	4.9	4.9	4.9
Women, 20 years and older	5.1	4.9	5.1	5.0	4.9	5.1	4.9	4.8	5.0	4.9	4.7	4.7	4.8	4.7	4.7
White, total[1]	5.2	4.8	5.0	4.9	5.0	5.1	4.9	5.0	5.0	4.8	4.7	4.7	4.7	4.6	4.6
Both sexes, 16 to 19 years	15.2	15.0	14.7	14.1	15.3	14.8	15.7	15.6	14.8	14.9	15.4	14.7	15.1	14.4	15.7
Men, 16 to 19 years	17.1	16.3	17.0	14.0	15.6	16.3	17.8	18.5	16.2	15.5	15.8	15.9	17.4	15.5	17.9
Women, 16 to 19 years	13.3	13.6	13.3	14.2	15.1	13.3	13.3	12.7	13.3	14.2	15.0	13.5	12.6	13.2	13.4
Men, 20 years and older	5.0	4.4	4.7	4.5	4.6	4.7	4.5	4.7	4.5	4.3	4.4	4.3	4.2	4.2	4.2
Women, 20 years and older	4.4	4.2	4.3	4.4	4.2	4.4	4.2	4.1	4.4	4.2	4.0	4.0	4.0	4.1	3.9
Black or African American, total[1]	10.8	10.4	10.2	10.4	9.7	10.2	9.8	10.0	10.3	11.0	10.5	10.4	10.7	10.8	10.8
Both sexes, 16 to 19 years	33.0	31.7	27.6	33.1	25.2	30.1	28.4	32.3	32.7	37.2	29.4	28.6	34.7	32.7	30.8
Men, 16 to 19 years	36.0	35.6	28.2	42.2	29.1	37.0	30.7	30.4	34.4	37.9	34.9	35.9	37.1	38.1	37.7
Women, 16 to 19 years	30.3	28.2	27.1	25.9	22.4	23.5	26.4	33.9	31.2	36.6	24.2	21.1	32.4	27.0	24.0
Men, 20 years and older	10.3	9.9	9.3	9.5	9.3	9.2	9.3	9.4	9.5	10.3	10.4	10.2	10.2	10.5	10.7
Women, 20 years and older	9.2	8.9	9.5	9.0	8.8	9.3	8.6	8.4	9.0	9.1	8.7	8.9	8.9	9.0	9.1
Hispanic or Latino ethnicity	7.7	7.0	6.6	7.3	7.4	7.4	7.1	6.9	6.7	6.8	6.9	7.0	6.7	6.7	6.6
Married men, spouse present	3.8	3.1	3.4	3.3	3.4	3.2	3.1	3.1	3.2	3.2	3.1	3.0	3.0	3.1	3.1
Married women, spouse present	3.7	3.5	3.8	3.7	3.6	3.7	3.7	3.3	3.7	3.5	3.5	3.1	3.1	3.4	3.4
Full-time workers	6.1	5.6	5.8	5.7	5.7	5.8	5.6	5.7	5.6	5.6	5.5	5.5	5.4	5.4	5.4
Part-time workers	5.5	5.3	5.3	5.4	5.2	5.4	5.3	5.2	5.5	5.2	5.2	5.0	5.5	5.4	5.4
Educational attainment[2]															
Less than a high school diploma	8.8	8.5	8.1	8.8	8.6	8.8	8.7	8.7	8.7	8.3	8.2	8.9	8.2	8.0	8.3
High school graduates, no college[3]	5.5	5.0	5.5	4.9	5.0	5.3	5.2	5.0	5.1	5.0	4.9	4.8	4.9	4.9	4.9
Some college or associate degree	4.8	4.2	4.4	4.5	4.3	4.7	4.1	4.0	4.2	4.2	4.1	4.0	4.2	4.3	4.3
Bachelor's degree and higher[4]	3.1	2.7	3.0	2.9		2.9	2.9	2.9	2.7	2.7	2.7	2.6	2.5	2.5	2.5

[1] Beginning in 2003, persons who selected this race group only; persons who selected more than one race group are not included. Prior to 2003, persons who reported more than one race were included in the group they identified as the main race.

[2] Data refer to persons 25 years and older.

[3] Includes high school diploma or equivalent.

[4] Includes persons with bachelor's, master's, professional, and doctoral degrees.

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

7. Duration of unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Less than 5 weeks	2,785	2,696	2,595	2,623	2,449	2,623	2,772	2,731	2,715	2,803	2,605	2,796	2,753	2,611	2,865
5 to 14 weeks	2,612	2,382	2,453	2,402	2,418	2,417	2,370	2,376	2,397	2,458	2,521	2,251	2,290	2,361	2,264
15 weeks and over	3,378	3,072	3,389	3,339	3,252	3,321	2,956	3,059	3,051	2,885	2,924	2,971	3,032	3,012	2,961
15 to 26 weeks	1,442	1,293	1,496	1,447	1,382	1,330	1,165	1,277	1,294	1,198	1,243	1,227	1,261	1,294	1,325
27 weeks and over	1,936	1,779	1,893	1,892	1,870	1,991	1,791	1,783	1,757	1,686	1,681	1,744	1,771	1,718	1,636
Mean duration, in weeks	19.2	19.6	19.8	19.8	20.3	19.9	19.7	19.8	19.8	18.5	19.2	19.6	19.7	19.8	19.3
Median duration, in weeks	10.1	9.8	10.4	10.6	10.2	10.2	9.4	9.9	10.8	8.9	9.5	9.5	9.5	9.8	9.5

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

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8. Unemployed persons by reason for unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Job losers[1]	4,838	4,197	4,569	4,380	4,284	4,475	4,322	4,190	4,117	4,228	3,978	4,014	4,074	4,066	4,108
On temporary layoff	1,121	998	1,054	1,030	1,060	1,035	993	920	1,009	1,068	971	919	947	941	965
Not on temporary layoff	3,717	3,199	3,144	3,350	3,224	3,440	3,329	3,270	3,108	3,160	3,007	3,094	3,127	3,124	3,144
Job leavers	818	858	759	807	835	845	835	855	909	896	885	830	829	880	898
Reentrants	2,477	2,408	2,387	2,514	2,421	2,419	2,310	2,437	2,426	2,333	2,440	2,417	2,411	2,388	2,361
New entrants	641	686	696	677	671	629	650	723	642	686	699	697	747	723	709
Percent of unemployed															
Job losers[1]	55.1	51.5	54.3	52.3	52.2	53.5	53.2	51.1	50.9	51.9	49.7	50.4	50.5	5.1	50.9
On temporary layoff	12.8	12.2	12.5	12.3	12.9	12.4	12.2	11.2	12.5	13.1	12.1	11.6	11.8	11.7	11.9
Not on temporary layoff	42.4	39.3	41.8	40.0	39.3	41.1	41.0	39.3	38.4	38.8	37.6	38.9	38.8	38.8	38.9
Job leavers	9.3	10.5	9.0	9.6	10.2	10.1	10.3	10.4	11.2	11.0	11.1	10.4	10.3	10.9	11.1
Reentrants	28.2	29.5	28.4	30.9	28.4	28.4	28.5	29.7	30.0	28.6	30.5	30.4	29.9	29.6	29.2
New entrants	7.3	8.4	8.3	8.1	8.2	7.5	8.0	8.8	7.9	8.4	8.7	8.8	9.3	9.0	8.8
Percent of civilian labor force															
Job losers[1]	3.3	2.8	3.1	3.0	2.9	3.0	2.9	2.8	2.8	2.9	2.7	2.7	2.8	2.7	2.8
Job leavers	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
Reentrants	1.7	1.6	1.6	1.7	1.7	1.6	1.6	1.7	1.6	1.6	1.7	1.6	1.6	1.6	1.6
New entrants	.4	.5	.5	.5	.5	.4	.4	.5	.4	.5	.5	.5	.5	.5	.5

[1] Includes persons who completed temporary jobs.

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

9. Unemployment rates by sex and age, monthly data seasonally adjusted

[Civilian workers]

Sex and age	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total, 16 years and older	6.0	5.5	5.7	5.7	5.6	5.7	5.5	5.6	5.6	5.5	5.4	5.4	5.5	5.4	5.4
16 to 24 years	12.4	11.8	11.7	12.1	11.8	11.8	11.7	12.1	12.0	11.9	11.6	11.8	12.2	11.5	11.7
16 to 19 years	17.5	17.0	16.2	16.9	16.7	16.5	17.0	17.2	16.8	17.6	17.0	16.6	17.2	16.5	17.6
16 to 17 years	19.1	20.2	18.5	18.5	18.1	19.7	20.5	21.5	20.5	20.3	20.7	19.6	20.6	21.2	20.6
18 to 19 years	16.4	15.0	14.5	15.9	15.6	14.4	14.7	14.7	14.4	16.1	14.9	14.9	15.2	13.5	15.4
20 to 24 years	10.0	9.4	9.6	9.8	9.5	9.6	9.2	9.7	9.7	9.2	9.0	9.5	9.8	9.2	8.9
25 years and older	4.8	4.4	4.6	4.5	4.5	4.6	4.5	4.4	4.5	4.4	4.3	4.3	4.3	4.3	4.3
25 to 54 years	5.0	4.6	4.8	4.7	4.6	4.8	4.6	4.5	4.5	4.6	4.4	4.4	4.4	4.4	4.5
55 years and older	4.1	3.7	3.9	3.7	3.8	3.8	3.8	3.9	3.9	3.7	3.7	3.7	3.8	3.7	3.5
Men, 16 years and older	6.3	5.6	5.8	5.7	5.7	5.8	5.7	5.8	5.6	5.5	5.6	5.6	5.6	5.5	5.6
16 to 24 years	13.4	12.6	12.5	12.7	12.3	12.6	12.9	13.0	12.7	12.2	12.5	12.9	13.0	12.4	12.5
16 to 19 years	19.3	18.4	17.2	17.5	17.3	18.3	19.2	19.0	18.0	17.8	18.1	18.2	19.2	18.2	20.3
16 to 17 years	20.7	22.0	18.3	19.9	20.1	22.4	23.3	23.2	22.3	21.2	21.9	20.6	22.1	23.0	24.3
18 to 19 years	18.4	16.3	16.4	16.1	15.7	15.8	16.6	16.6	15.9	15.9	16.1	16.8	17.7	14.8	17.8
20 to 24 years	10.6	10.1	10.4	10.6	10.1	10.1	10.0	10.3	10.4	9.7	10.0	10.5	10.2	9.8	9.0
25 years and older	5.0	4.4	4.6	4.5	4.5	4.6	4.4	4.6	4.4	4.4	4.4	4.3	4.3	4.3	4.4
25 to 54 years	5.2	4.6	4.9	4.6	4.7	4.8	4.5	4.7	4.4	4.5	4.5	4.4	4.4	4.4	4.6
55 years and older	4.4	3.9	3.9	3.7	3.7	3.9	3.9	4.1	4.3	3.8	4.0	3.9	4.1	3.7	3.5
Women, 16 years and older	5.7	5.4	5.6	5.6	5.5	5.6	5.4	5.3	5.6	5.5	5.2	5.2	5.3	5.2	5.2
16 to 24 years	11.4	11.0	10.8	11.3	11.3	10.8	10.4	11.1	11.2	11.6	10.6	10.6	11.3	10.5	10.8
16 to 19 years	15.6	15.5	15.1	16.2	16.0	14.7	14.7	15.4	15.6	17.5	15.9	15.0	15.1	14.6	14.8
16 to 17 years	17.5	18.5	18.6	17.1	16.2	17.3	17.9	20.1	18.9	19.5	19.7	18.6	19.0	19.3	17.2
18 t0 19 years	14.2	13.5	12.4	15.6	15.5	12.8	12.5	12.7	12.7	16.4	13.5	12.8	12.5	12.1	12.9
20 to 24 years	9.3	8.7	8.7	8.9	8.9	8.9	8.3	9.0	9.0	8.7	7.9	8.4	9.4	8.5	8.9
25 years and older	4.6	4.4	4.6	4.6	4.5	4.6	4.5	4.2	4.5	4.4	4.3	4.3	4.2	4.3	4.2
25 to 54 years	4.8	4.6	4.9	4.8	4.6	4.9	4.7	4.4	4.7	4.7	4.4	4.4	4.4	4.4	4.4
55 years and older[1]	3.7	3.6	3.7	4.1	3.9	3.5	3.3	3.3	3.8	3.8	3.9	3.5	3.3	3.6	3.6

[1] Data are not seasonally adjusted.

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

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10. Unemployment rates by State, seasonally adjusted

State	Nov. 2003	Oct. 2004[p]	Nov. 2004[p]	State	Nov. 2003	Oct. 2004[p]	Nov. 2004[p]
Alabama	5.9	5.5	5.2	Missouri	5.4	5.6	5.8
Alaska	8.1	7.2	7.2	Montana	4.8	4.8	4.2
Arizona	5.0	4.8	4.5	Nebraska	4.0	3.5	3.5
Arkansas	6.5	5.7	5.6	Nevada	4.9	3.6	3.7
California	6.6	5.8	5.7	New Hampshire	4.2	3.4	3.1
Colorado	5.9	5.0	5.0	New Jersey	5.5	4.7	4.4
Connecticut	5.4	4.6	4.7	New Mexico	6.5	5.2	5.1
Delaware	4.4	4.0	4.0	New York	6.3	5.2	4.9
District of Columbia	7.0	8.5	8.8	North Carolina	6.3	4.8	5.0
Florida	4.9	4.6	4.3	North Dakota	3.8	3.7	3.2
Georgia	4.3	4.2	4.3	Ohio	6.1	6.4	6.5
Hawaii	4.4	3.3	3.3	Oklahoma	5.7	4.5	4.5
Idaho	5.0	5.2	5.1	Oregon	7.7	7.2	7.1
Illinois	6.7	6.1	6.0	Pennsylvania	5.2	5.5	5.4
Indiana	5.1	5.4	5.3	Rhode Island	5.1	4.5	4.4
Iowa	4.6	4.8	4.7	South Carolina	6.9	6.4	6.6
Kansas	5.3	4.8	4.6	South Dakota	3.8	3.3	3.2
Kentucky	6.0	4.8	4.5	Tennessee	6.1	5.1	5.0
Louisiana	6.2	5.6	5.7	Texas	6.6	5.6	5.7
Maine	5.1	4.6	4.5	Utah	5.3	4.7	4.6
Maryland	4.4	3.9	3.9	Vermont	4.6	3.1	3.1
Massachusetts	5.7	4.7	4.6	Virginia	3.9	3.3	3.3
Michigan	7.6	6.6	7.0	Washington	7.4	5.6	5.7
Minnesota	5.1	4.3	4.2	West Virginia	5.6	5.1	4.8
Mississippi	5.7	6.3	6.5	Wisconsin	5.4	5.0	4.8
				Wyoming	4.3	3.8	3.5

[p] = preliminary

11. Employment of workers on nonfarm payrolls by State, seasonally adjusted

State	Nov. 2003	Oct. 2004[p]	Nov. 2004[p]	State	Nov. 2003	Oct. 2004[p]	Nov. 2004[p]
Alabama	2,163,787	2,162,788	2,160,452	Missouri	3,034,372	3,039,012	3,043,033
Alaska	335,373	347,143	347,393	Montana	477,929	487,422	488,865
Arizona	2,694,191	2,794,442	2,786,387	Nebraska	980,613	992,059	991,844
Arkansas	1,262,145	1,331,533	1,329,075	Nevada	1,148,419	1,184,969	1,191,704
California	17,480,211	17,750,890	17,755,732	New Hampshire	725,220	730,638	730,215
Colorado	2,487,239	2,542,868	2,533,458	New Jersey	4,379,881	4,414,138	4,411,603
Connecticut	1,797,444	1,788,408	1,792,573	New Mexico	902,950	912,006	910,953
Delaware	418,986	428,931	425,341	New York	9,296,357	9,312,761	9,323,858
District of Columbia	301,284	306,411	306,723	North Carolina	4,255,896	4,175,865	4,185,077
Florida	8,202,592	8,457,181	8,465,515	North Dakota	347,043	354,440	352,740
Georgia	4,447,384	4,430,274	4,424,782	Ohio	5,920,696	5,888,552	5,889,638
Hawaii	626,165	632,110	635,341	Oklahoma	1,692,221	1,711,742	1,715,779
Idaho	694,359	710,594	710,111	Oregon	1,847,218	1,849,709	1,866,878
Illinois	6,346,042	6,443,178	6,424,158	Pennsylvania	6,138,893	6,299,287	6,316,600
Indiana	3,188,742	3,169,584	3,167,246	Rhode Island	573,446	565,452	564,354
Iowa	1,602,979	1,635,603	1,631,591	South Carolina	2,014,543	2,080,923	2,084,162
Kansas	1,438,851	1,478,259	1,473,344	South Dakota	426,867	425,076	425,338
Kentucky	1,963,328	1,980,574	1,979,622	Tennessee	2,909,970	2,945,699	2,942,082
Louisiana	2,048,121	2,062,831	2,066,007	Texas	10,963,282	11,008,283	11,020,478
Maine	697,929	701,233	703,012	Utah	1,192,257	1,218,682	1,221,511
Maryland	2,905,697	2,956,279	2,960,894	Vermont	350,859	351,563	352,864
Massachusetts	3,390,712	3,396,232	3,387,399	Virginia	3,784,740	3,861,265	3,848,497
Michigan	5,068,224	5,085,966	5,076,044	Washington	3,149,726	3,203,962	3,242,826
Minnesota	2,927,291	2,962,303	2,961,972	West Virginia	779,611	803,905	798,955
Mississippi	1,312,944	1,326,002	1,328,183	Wisconsin	3,084,292	3,121,422	3,128,068
				Wyoming	281,551	280,256	279,525

[p] = preliminary.

NOTE: some data in this table may differ from data published elsewhere because of the continual updating of the data base.

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12. Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[P]	Dec.[P]
TOTAL NONFARM	129,931	131,481	130,035	130,194	130,277	130,630	130,954	131,162	131,258	131,343	131,541	131,660	131,972	132,109	132,266
TOTAL PRIVATE	108,356	109,863	108,491	108,667	108,738	109,077	109,382	109,618	109,730	109,771	109,912	110,008	110,297	110,422	110,550
GOODS-PRODUCING	21,817	21,885	21,668	21,696	21,684	21,778	21,822	21,894	21,891	21,906	21,939	21,958	22,016	22,017	22,030
Natural resources and mining	571	591	570	570	572	581	585	589	587	592	591	593	592	595	598
Logging	68.5	67.9	65.9	65.1	64.2	65.9	66.7	65.6	64.5	64.5	64.6	64.9	64.2	63.6	65.1
Mining	502.3	523.2	504.3	505.1	508.1	514.9	518.5	523.2	522.7	527.5	526.6	527.7	527.5	531.0	532.8
Oil and gas extraction	122.9	123.0	124.6	126.9	128.9	130.0	131.0	132.3	132.0	132.2	132.7	132.9	132.7	133.5	133.2
Mining, except oil and gas[1]	202.7	207.0	202.0	200.0	200.6	202.8	205.2	207.8	207.9	211.2	209.2	209.4	209.0	210.7	210.6
Coal mining	70.4	71.7	69.8	69.6	70.2	70.6	71.8	72.9	73.5	75.0	74.6	74.8	74.4	75.0	75.2
Support activities for mining	176.8	193.2	177.7	178.2	178.6	182.1	182.3	183.1	182.8	184.1	184.7	185.4	185.8	186.8	189.0
Construction	6,722	6,965	6,774	6,812	6,791	6,853	6,872	6,909	6,911	6,916	6,930	6,958	7,018	7,025	7,032
Construction of buildings	1,575.9	1,632.7	1,585.1	1,593.3	1,590.9	1,607.6	1,609.8	1,622.9	1,625.9	1,629.7	1,635.5	1,648.8	1,661.6	1,665.1	1,669.3
Heavy and civil engineering	910.7	902.2	920.7	928.0	924.0	926.8	924.7	924.3	920.9	920.2	921.9	922.5	928.4	930.9	931.6
Specialty trade contractors	4,235.5	4,429.7	4,268.4	4,290.2	4,276.5	4,318.9	4,337.3	4,362.2	4,364.6	4,365.6	4,378.9	4,386.8	4,427.5	4,428.8	4,430.6
Manufacturing	14,525	14,329	14,324	14,314	14,321	14,344	14,365	14,396	14,393	14,398	14,412	14,407	14,406	14,397	14,400
Production workers	10,200	10,083	10,044	10,035	10,038	10,058	10,085	10,123	10,128	10,141	10,162	10,150	10,150	10,141	10,143
Durable goods	8,970	8,922	8,868	8,869	8,882	8,889	8,924	8,946	8,955	8,955	8,986	8,979	8,985	8,979	8,979
Production workers	6,157	6,137	6,079	6,081	6,088	6,101	6,126	6,152	6,164	6,167	6,195	6,184	6,188	6,180	6,182
Wood products	536.1	548.4	536.6	536.3	538.4	539.7	540.0	543.0	543.8	544.1	545.9	544.8	549.7	548.5	550.3
Nonmetallic mineral products	492.6	504.8	487.5	492.7	490.5	493.2	497.8	501.4	501.7	502.6	501.6	503.2	503.0	502.9	502.7
Primary metals	476.7	465.8	464.6	432.2	462.2	462.0	462.5	464.0	465.4	467.0	465.4	464.1	464.5	464.6	464.3
Fabricated metal products	1,478.4	1,141.5	1,471.2	1,471.8	1,476.6	1,478.5	1,486.7	1,494.5	1,497.6	1,501.3	1,504.7	1,505.8	1,508.5	1,507.5	1,508.0
Machinery	1,153.5	1,141.5	1,140.4	1,138.7	1,141.2	1,145.1	1,152.0	1,153.3	1,156.7	1,160.4	1,163.3	1,161.7	1,161.4	1,162.0	1,162.0
Computer and electronic products[1]	1,360.9	1,326.1	1,332.2	1,333.2	1,333.9	1,338.0	1,339.7	1,345.8	1,346.2	1,351.9	1,353.0	1,350.7	1,348.6	1,344.6	1,342.8
Computer and peripheral equipment	225.7	212.0	217.8	219.4	219.0	218.6	218.1	218.8	217.7	217.2	217.9	217.1	215.6	214.4	215.4
Communications equipment	157.0	150.5	153.0	154.8	154.8	155.0	155.1	155.9	157.1	158.2	158.5	158.1	158.0	158.6	158.7
Semiconductors and electronic components	461.8	452.8	451.3	450.2	451.4	452.1	453.4	455.8	458.0	460.7	460.2	459.4	457.2	455.2	452.2
Electronic instruments	429.3	431.8	425.3	423.7	423.3	426.8	427.5	430.1	429.8	432.4	433.0	433.1	435.4	434.1	434.5
Electrical equipment and appliances	459.9	446.8	451.2	449.8	448.6	446.8	446.5	447.3	448.6	449.2	449.6	449.1	447.3	447.8	445.5
Transportation equipment	1,775.4	1,763.3	1,762.7	1,760.6	1,766.5	1,769.1	1,768.8	1,764.4	1,765.1	1,745.9	1,774.4	1,771.7	1,774.3	1,772.3	1,774.1
Furniture and related products	573.5	572.7	569.3	571.3	571.2	573.4	576.5	577.6	575.0	576.7	574.6	573.8	573.7	574.1	574.3
Miscellaneous manufacturing	662.8	655.4	651.9	652.0	653.0	653.0	653.0	654.4	654.6	655.5	653.6	653.7	654.0	654.6	655.1
Nondurable goods	5,555	5,407	5,456	5,445	5,439	5,445	5,441	5,450	5,438	5,443	5,426	5,428	5,421	5,418	5,421
Production workers	4,043	3,946	3,965	3,954	3,950	3,957	3,959	3,971	3,964	3,974	3,967	3,966	3,962	3,961	3,961
Food manufacturing	1,518.7	1,497.5	1,506.3	1,500.7	1,502.4	1,504.5	1,502.7	1,507.0	1,502.8	1,508.0	1,499.6	1,502.5	1,504.5	1,506.5	1,512.9
Beverages and tobacco products	200.6	194.3	198.3	197.7	195.9	197.2	197.8	197.5	197.6	198.4	197.2	198.5	197.0	199.8	197.4
Textile mills	260.3	238.6	241.0	239.2	237.3	237.1	235.8	236.1	235.0	235.6	234.4	233.8	233.0	231.2	230.4
Textile product mills	179.8	177.8	174.3	176.9	176.6	179.7	180.1	181.4	179.7	179.3	179.4	179.6	180.1	180.0	180.2
Apparel	312.7	285.0	297.7	296.1	297.1	294.3	292.7	290.8	286.8	284.8	284.2	282.7	277.4	273.5	272.5
Leather and allied products	45.2	42.9	44.3	44.6	44.8	44.8	44.6	45.1	44.7	45.3	44.8	45.4	45.3	45.8	45.2
Paper and paper products	519.0	499.1	510.3	509.8	508.0	508.8	507.0	508.1	506.7	509.0	509.8	508.6	508.0	505.7	506.1
Printing and related support activities	680.0	665.1	670.1	667.6	665.0	664.4	663.6	665.9	667.0	663.8	662.2	660.3	660.6	660.3	661.7
Petroleum and coal products	114.6	112.7	112.4	114.3	112.9	113.1	112.6	113.1	113.8	113.6	114.1	114.3	114.2	114.2	113.2
Chemicals	7.9	887.1	895.9	893.7	894.7	894.9	896.4	895.0	895.2	894.2	891.9	892.7	891.3	890.3	890.4
Plastics and rubber products	815.9	806.7	805.8	804.8	803.9	806.3	807.5	810.2	808.6	811.2	808.8	809.5	809.2	811.1	811.0
SERVICE-PROVIDING	108,114	109,597	108,367	108,498	108,593	108,852	109,132	109,268	109,367	109,437	109,602	109,702	109,956	110,092	110,236
PRIVATE SERVICE-PROVIDING	86,538	87,978	86,823	86,971	87,054	87,299	87,560	87,724	87,839	87,865	87,973	88,050	88,281	88,405	88,520
Trade, transportation, and utilities	25,275	25,511	25,211	25,312	25,331	25,415	25,448	25,477	25,497	25,499	25,516	25,522	25,562	25,580	25,580
Wholesale trade	5,605.0	5,655.3	5,598.4	5,611.4	5,612.2	5,623.5	5,632.5	5,636.7	5,639.5	5,649.6	5,652.8	5,662.8	5,670.4	5,678.4	5,695.4
Durable goods	2,949.2	2,949.2	2,945.8	2,954.9	2,953.8	2,963.4	2,967.5	2,969.7	2,975.6	2,986.0	2,989.6	2,992.3	2,995.6	2,996.2	3,005.8
Nondurable goods	2,002.1	2,007.2	1,991.8	1,993.7	1,994.5	1,995.3	1,996.3	1,997.2	1,994.3	1,994.3	1,992.5	1,996.6	2,000.2	2,002.5	2,005.3
Electronic markets and agents and brokers	654.3	698.9	660.8	662.8	663.9	664.8	668.7	669.8	669.6	671.5	670.7	673.9	674.6	679.7	684.3
Retail trade	14,911.5	15,034.4	14,876.0	14,944.8	14,963.0	15,013.0	15,037.1	15,047.6	15,054.9	15,038.1	15,048.8	15,030.5	15,055.6	15,064.5	15,044.9
Motor vehicles and parts dealers[1]	1,883.5	1,900.9	1,893.7	1,895.4	1,900.9	1,906.9	1,910.9	1,911.4	1,908.5	1,908.1	1,904.9	1,904.8	1,903.4	1,907.3	1,909.1
Automobile dealers	1,255.1	1,254.2	1,259.5	1,261.3	1,262.9	1,263.9	1,264.7	1,263.6	1,262.3	1,259.2	1,256.8	1,253.7	1,251.6	1,254.7	1,254.7
Furniture and home furnishings stores	542.9	560.4	547.2	546.4	544.5	544.8	544.5	545.7	546.3	546.4	548.7	548.7	880.0	550.8	551.8
Electronics and appliance stores	511.9	514.4	511.9	509.3	508.2	511.7	514.1	512.6	511.5	510.7	511.6	512.6	517.8	519.8	515.5

See notes at end of table.

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12. Continued—Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[p]	Dec.[p]
Building material and garden supply stores	1,191.1	1,226.1	1,209.5	1,221.4	1,231.4	1,243.5	1,247.3	1,248.7	1,245.8	1,246.9	1,251.7	1,256.5	1,258.7	1,262.4	1,263.9
Food and beverage stores	2,840.9	2,826.4	2,813.9	2,826.3	2,831.3	2,838.9	2,839.9	2,845.3	2,839.7	2,834.5	2,832.9	2,832.2	2,832.3	2,827.9	2,822.6
Health and personal care stores	943.1	941.6	952.6	954.1	954.9	958.2	957.9	957.1	957.2	956.7	956.4	956.4	956.3	957.5	956.8
Gasoline stations	879.9	877.3	871.1	875..1	871.8	873.0	872.4	871.6	870.3	869.9	870.3	871.8	869.6	867.1	864.7
Clothing and clothing accessories stores	1,296.7	1,361.8	1,301.0	1,304.3	1,311.3	1,321.8	1,328.0	1,335.5	1,346.5	1,349.0	1,355.2	1,349.9	1,353.0	1,354.8	1,353.8
Sporting goods, hobby, book, and music stores	645.0	639.0	633.2	635.9	636.8	636.5	635.8	636.1	635.7	635.5	638.4	635.0	636.5	636.3	631.7
General merchandise stores[1]	2,815.2	2,843.2	2,793.4	2,822.7	2,822.5	2,824.4	2,831.0	2,830.5	2837.4	2825.3	2823.8	2810.9	2822.8	2828.2	2822.9
Department stores	1,618.8	1,612.4	1,601.3	1,603.4	1,602.7	1,604.9	16.7	1,610.9	1,614.9	1,609.9	1,607.9	1,599.4	1,609.3	1,615.3	1,614.5
Miscellaneous store retailers	934.1	918.5	924.4	929.6	924.6	926.9	927.9	925.7	928.4	926.2	927.1	924.7	927.7	924.0	923.1
Nonstore retailers	427.5	424.7	424.1	424.3	424.8	427.4	429.8	427.4	427.6	428.9	427.8	427.0	427.5	428.4	429.0
Transportation and warehousing	4,176.7	4,250.7	4,157.0	4,175.9	4,175.8	4,197.0	4,196.5	4,209.9	4220.9	4228.3	4232.5	4246.0	4254.4	4256.0	4260.5
Air transportation	527.3	515.1	512.9	510.2	511.6	512.9	513.3	514.7	513.8	512.4	511.8	510.0	511.5	510.0	509.6
Rail transportation	215.4	224.1	215.5	215.4	215.7	216.0	216.3	216.4	217.3	217.8	217.4	217.9	217.8	217.1	216.9
Water transportation	52.5	57.0	50.0	50.6	48.8	49.2	50.6	51.1	51.7	51.7	50.3	50.1	50.7	50.2	50.2
Truck transportation	1,328.0	1,350.9	1,338.7	1,343.6	1,344.1	1,346.4	1,352.2	1,353.9	1,353.9	1,361.9	1,363.7	1,363.8	1,367.4	1,366.7	1,374.7
Transit and ground passenger transportation	380.3	385.6	385.0	382.3	380.1	380.5	372.3	381.5	374.6	374.2	374.5	380.2	362.7	383.6	384.8
Pipeline transportation	40.0	38.8	38.8	38.3	38.2	38.1	38.1	38.3	38.4	38.5	38.5	38.6	38.4	38.3	38.2
Scenic and sightseeing transportation	28.0	26.8	29.4	28.7	29.7	31.4	31.1	30.6	32.6	32.6	32.7	32.7	31.6	31.8	31.3
Support activities for transportation	516.3	535.8	511.6	514.1	515.5	518.5	519.1	519.5	520.8	523.7	525.1	525.9	528.3	531.4	535.5
Couriers and messengers	566.6	560.8	559.0	566.9	567.7	572.1	570.9	572.8	578.2	579.2	580.4	581.1	580.0	581.3	576.5
Warehousing and storage	522.3	555.7	516.1	525.8	524.4	531.9	532.6	531.1	534.0	536.3	538.1	541.4	546.0	545.6	542.8
Utilities	580.8	570.1	579.3	580.2	580.0	581.2	582.1	582.3	581.7	582.6	582.0	582.4	581.5	580.8	579.6
Information	3,198	3,138	3,175	3,163	3,169	3,169	3,173	3,177	3,182	3,173	3,166	3,159	3,163	3,164	3,161
Publishing industries, except Internet	926.4	909.9	917.4	914.0	915.1	915.3	916.3	916.2	916.6	914.7	914.3	913.8	913.2	914.0	913.0
Motion picture and sound recording industries	376.1	389.3	385.2	379.7	382.7	381.2	385.7	390.8	394.9	391.0	388.7	389.4	395.0	388.7	386.4
Broadcasting, except Internet	327.0	326.5	329.5	329.7	331.8	333.0	333.3	335.4	335.5	336.4	336.6	337.3	338.4	338.9	339.5
Internet publishing and broadcasting	30.0	31.3	30.4	30.8	31.9	31.9	32.5	32.5	33.6	33.6	34.2	34.5	35.7	36.4	36.9
Telecommunications	1,082.6	1,042.3	1,061.2	1,061.3	1,058.2	1,055.0	1,051.9	1,047.3	1,044.8	1,042.3	1,037.5	1,030.0	1,026.4	1,032.3	1,032.5
ISPs, search portals, and data processing	407.5	388.2	402.6	400.1	401.1	403.7	404.0	405.1	406.5	404.9	404.3	404.7	404.9	404.6	404.1
Other information services	48.1	50.9	48.2	47.8	48.0	48.6	49.6	49.6	50.0	49.8	50.0	49.6	49.0	48.7	48.6
Financial activities	7,974	8,052	7,981	7,981	7,989	8,003	8,015	8,029	8,049	8,044	8,053	8,078	8,092	8,107	8,121
Finance and insurance	5,920.5	5,965.7	5,916.5	5,917.1	5,924.7	5,933.0	5,947.7	5,946.0	5,960.4	5,951.9	5,962.4	8,976.2	5,990.7	6,002.9	6,017.1
Monetary authorities—central bank	22.7	21.6	22.5	22.4	22.4	22.3	22.3	21.8	21.9	21.8	21.8	21.7	21.5	21.3	21.1
Credit intermediation and related activities[1]	2,785.6	2,832.3	2,783.3	2,785.3	2,787.2	2,793.8	2,802.1	2,800.8	2,809.9	2,804.1	2,807.3	2,818.3	2,824.6	2,838.0	2,847.2
Depository credit intermediation[1]	1,752.1	1,761.3	1,757.1	1,758.7	1,762.6	1,762.8	1,765.0	1,765.2	1,768.8	1,766.9	1,768.3	1,772.7	1,776.3	1,781.5	1,784.5
Commercial banking	1,281.1	1,285.4	1,278.9	1,280.4	1,283.5	1,284.1	1,285.0	1,284.2	1,285.9	1,284.0	1,283.0	1,287.5	1,290.1	1,295.0	1,297.4
Securities, commodity contracts, investments	764.4	766.8	771.9	773.8	778.2	780.8	781.0	782.8	787.2	787.8	791.6	793.6	800.6	800.2	802.7
Insurance carriers and related activities	2,266.1	2,260.3	2,258.1	2,255.8	2,257.4	2,257.1	2,259.5	2,262.7	2,263.8	2,260.2	2,263.9	2,265.1	2,266.7	2,266.6	2,269.1
Funds, trusts, and other financial vehicles	81.7	84.7	80.7	79.8	79.5	79.0	78.8	77.9	77.6	78.0	77.8	77.5	77.3	76.8	77.0
Real estate and rental and leasing	2,053.6	2,086.1	2,064.0	2,063.6	2,064.5	2,069.5	2,071.6	2,083.1	2,088.1	2,092.0	2,090.6	2,101.8	2,101.6	2,103.8	2,104.3
Real estate	1,384.4	1,416.9	1,395.7	1,397.7	1,400.2	1,405.8	1,409.2	1,418.7	1,418.8	1,422.1	1,424.1	1,431.6	1,433.4	1,437.7	1,437.3
Rental and leasing services	640.8	643.8	638.3	636.0	634.2	634.1	633.2	635.4	640.5	641.4	638.0	641.9	639.9	637.6	638.5
Lessors of nonfinancial intangible assets	28.4	25.4	30.0	29.9	30.1	29.6	29.2	29.0	28.8	28.5	28.5	28.3	28.3	28.5	28.5
Professional and business services	15,999	16,413	16,159	16,172	16,196	16,237	16,363	16,432	16,457	16,490	16,518	16,548	16,643	16,664	16,705
Professional and technical services[1]	6,623.5	6,760.7	6,669.3	6,657.9	6,658.1	6,679.8	6,701.4	6,708.1	6,732.6	6,739.9	6,762.0	6,783.3	6,817.4	6,835.7	6,864.2
Legal services	1,136.8	1,161.7	1,140.5	1,138.7	1,139.2	1,138.4	1,141.9	1,143.3	1,146.3	1,148.2	1,146.2	1,148.4	1,148.5	1,147.1	1,148.7
Accounting and bookkeeping services	815.6	814.0	826.6	815.2	813.3	812.8	818.5	806.3	811.6	811.9	815.3	815.7	826.3	830.3	835.3
Architectural and engineering services	1,228.0	1,261.0	1,235.2	1,230.9	1,240.0	1,246.4	1,254.1	1,258.3	1,261.9	1,264.4	1,269.3	1,275.1	1,284.3	1,291.3	1,298.2

See notes at end of table.

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12. Continued—Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.[p]	Dec.[p]
Computer systems design and related services	1,108.3	1,147.7	1,105.7	1,104.6	1,099.8	1,103.5	1,103.5	1,110.1	1,117.7	1,120.5	1,129.7	1,136.5	1,142.9	1,153.3	1,163.0
Management and technical consulting services	747.3	779.1	764.0	765.4	767.9	774.0	780.9	785.9	791.4	792.2	794.3	793.9	796.7	795.4	797.9
Management of companies and enterprises	1,675.5	1,718.0	1,670.2	1,675.1	1,675.6	1,676.6	1,679.7	1,683.3	1,684.5	1,685.9	1,682.5	1,679.1	1,678.2	1,679.3	1,678.6
Administrative and waste services	7,698.3	7,934.0	7,819.2	7,838.5	7,862.4	7,880.1	7,982.3	8,040.1	8,040.0	8,064.3	8,073.0	8,085.4	8,147.2	8,148.7	8,162.5
Administrative and support services[1]	73,764.0	7,608.9	7,496.3	7,517.5	7,539.6	7,556.8	7,657.0	7,715.6	7,713.0	7,738.1	7,746.6	7,759.5	7,821.5	7,822.1	7,837.0
Employment services[1]	3,336.2	3,470.2	3,461.3	3,473.8	3,493.8	3,492.3	3,553.7	3,591.5	3,573.4	3,606.8	3,607.8	3,633.6	3,692.9	3,696.5	3,719.9
Temporary help services	2,243.2	2,393.6	2,355.3	2,344.3	2,370.4	2,380.3	2,423.8	2,451.7	2,449.4	2,460.2	2,474.7	2,501.4	2,554.2	2,551.7	2,561.1
Business support services	747.4	754.3	745.1	739.0	739.8	746.0	748.6	751.2	754.0	749.9	751.5	744.3	747.8	748.8	749.2
Services to buildings and dwellings	1,631.7	1,694.5	1,635.9	1,637.1	1,639.5	1,646.2	1,674.5	1,686.0	1,694.1	1,691.5	1,691.6	1,691.7	1,688.3	1,686.2	1,677.3
Waste management and remediation services	321.9	325.2	322.9	321	322.8	323.3	325.3	324.5	327	326.2	326.4	325.9	325.7	326.6	325.5
Educational and health services	16,577	16,955	16,731	16,746	16,764	16,813	16,854	16,871	16,897	16,901	16,965	16,980	17,049	17,086	17,133
Educational services	2,688.5	2,766.4	2,728.0	2,729.3	2,727.4	2,736.0	2,740.8	2,731.1	2,727.4	2,731.2	2,746.4	2,749.6	2,773.0	2,775.9	2,787.5
Health care and social assistance	13,888.0	14,188.3	14,003.2	14,017.1	14,036.8	14,077.1	14,113.1	14,140.1	14,169.8	14,169.3	14,218.3	14,230.0	14275.6	14309.8	14345.3
Ambulatory health care services[1]	4,776.0	4,946.9	4,831.0	4,840.3	4,855.3	4,868.0	4,883.6	4,896.8	4,909.6	4,920.8	4,935.1	4,938.4	4,964.6	4,978.1	4,995.2
Offices of physicians	2,003.8	2,054.0	2,030.0	2,032.3	2,034.4	2,043.5	2,046.1	2,049.6	2,053.9	2,057.5	2,062.1	2,068.1	2,078.6	2,083.6	2,088.9
Outpatient care centers	423.1	446.1	425.0	427.8	431.1	430.3	432.2	435.1	436.0	437.6	438.0	436.9	437.7	438.3	438.8
Home health care services	727.1	773.4	739.9	740.2	741.5	743.8	748.4	751.7	754.2	756.8	760.1	761.5	766.2	773.5	778.2
Hospitals	4,252.5	4,293.6	4,283.9	4,287.8	4,284.1	4,298.0	4,305.1	4,315.4	4,318.3	4,322.0	4,330.5	4,332.1	4,337.5	4,346.7	4,351.6
Nursing and residential care facilities[1]	2,784.3	2,814.9	2,793.0	2,792.1	2,791.1	2,798.4	2,802.8	2,806.3	2,809.0	2,812.0	2,814.0	2,820.3	2,820.5	2,826.3	2,826.9
Nursing care facilities	1,582.8	1,575.5	1,581.7	1,580.3	1,578.7	1,582.1	1,584.0	1,585.3	1,586.5	1,586.7	1,586.3	1,587.1	1,587.1	1,591.4	1,590.6
Social assistance[1]	2,075.2	2,132.8	2,095.3	2,096.9	2,106.3	2,112.7	2,121.6	2,121.6	2,132.9	2,114.5	2,138.7	2,139.2	2,153.0	2,158.7	2,171.6
Child day care services	760.5	767.2	770	766.3	772.2	773.7	777.6	777.1	786	752.1	792.7	783.3	789.9	792.4	798.2
Leisure and hospitality	12,128	12,479	12,192	12,218	12,229	12,271	12,303	12,331	12,339	12,344	12,341	12,353	12,362	12,387	12,399
Arts, entertainment, and recreation	1,801.0	1,833.1	1,795.2	1,801.4	1,796.7	1,798.7	1,791.1	1,793.1	1,792.0	1,791.9	1,785.6	1,793.8	1,787.6	1,783.4	1,772.3
Performing arts and spectator sports	370.2	364.7	368.8	369.4	366.5	364.6	361.4	358.8	359.3	357.1	356.0	360.3	361.0	359.8	357.3
Museums, historical sites, zoos, and parks	114.1	117.2	113.1	113.4	113.7	114.2	114.6	115.6	116.1	116.6	116.7	116.2	115.7	115.6	114.8
Amusements, gambling, and recreation	1,316.6	1,351.1	1,313.3	1,318.6	1,316.5	1,319.9	1,315.1	1,318.7	1,316.6	1,318.2	1,312.9	1,317.3	1,310.9	1,308.0	1,300.2
Accommodations and food services	10,324.4	10,645.6	10,396.3	10,416.5	10,432.3	10,742.0	10,511.8	105,837.9	10,546.7	10,551.7	10,555.6	10,559.3	10,574.0	10,603.9	10,626.4
Accommodations	1,765.2	1,795.6	1,763.0	1,752.1	1,754.4	1,753.4	1,758.5	1,758.5	1,764.7	1,764.4	1,767.9	1,771.4	1,769.2	1,786.7	1,790.6
Food services and drinking places	8,559.2	8,849.9	8,633.3	8,664.4	8,677.9	8,718.6	8,753.3	8,779.4	8,782.0	8,787.7	8,787.7	8,787.9	8,804.8	8,817.2	8,835.8
Other services	5,393	5,431	5,374	5,379	5,376	5,391	5,404	5,407	5,418	5,414	5,414	5,410	5,410	5,417	5,421
Repair and maintenance	1,236.2	1,227.5	1,228.5	1,233.5	1,230.5	1,239.4	1,238.2	1,237.7	1,235.1	1,236.3	1,235.2	1,235.2	1,226.6	1,236.4	1,237.1
Personal and laundry services	1,258.2	1,273.9	1,250.2	1,251.2	1,247.6	1,255.9	1,260.5	1,265.5	1,268.4	1,262.1	1,259.9	1,255.7	1,252.9	1,255.6	1,259.1
Membership associations and organizations	2,898.0	2,929.3	2,895.7	2,894.5	2,898.3	2,895.2	2,904.8	2,903.7	2,914.9	2,915.9	2,919.1	2,918.8	2,920.3	2,924.5	2,924.8
Government	21,575	21,619	21,544	21,527	21,539	21,553	21,572	21,544	21,528	21,572	21,629	21,652	21,675	21,687	21,716
Federal	2,756	2,728	2,720	2,715	2,716	2,710	2,727	2,712	2,716	2,710	2,712	2,713	2,706	2,713	2,706
Federal, except U.S. Postal Service	1,947.0	1,943.3	1,928.9	1,921.5	1,923.8	1,921.1	1,939.5	1,925.7	1,930.5	1,922.5	1,926.3	1,927.6	1,923.6	1,930.4	1,931.5
U.S. Postal Service	809.1	784.1	791.4	793.1	791.7	789.1	787.3	786.5	785.4	787.2	785.3	784.9	781.9	782.3	774.6
State	5,017	4,986	5,027	5,007	5,018	5,023	5,019	5,004	5,004	5,019	5,035	5,047	5,058	5,066	5,076
Education	2,266.4	2,249.1	2,285.7	2,268.0	2,279.6	2,283.2	2,278.3	2,261.4	2,257.8	2,271.1	2,285.2	2,299.7	2,307.0	2,311.4	2,317.3
Other State government	2,750.7	2,736.6	2,740.9	2,738.9	2,738.4	2,739.7	2,740.6	2,742.8	2,746.1	2,747.8	2,749.4	2,747.5	2,751.1	2,754.5	2,758.7
Local	13,802	13,906	13,797	13,805	13,805	13,820	13,826	13,828	13,808	13,843	13,882	13,892	13,911	13,908	13,934
Education	7,699.1	7,763.0	7,687.1	7,692.2	7,694.3	7,704.7	7,710.9	7,710.2	7,695.1	7,715.7	7,758.4	7,760.4	7,774.9	7,779.9	7,793.5
Other local government	6,104.0	6,142.9	6,109.7	6,112.7	6,110.8	6,114.8	6,115.4	6,117.9	6,113.3	6,116.8	6,123.2	6,131.6	6,136.3	6,128.1	6,140.8

[1] Includes other industries not shown separately.

p = preliminary.

NOTE: Data reflect the conversion to the 2002 version of the North American industry Classification System (NAICS), replacing the Standard Industrial Classification (SIC) system. NAICS-based data by industry are not comparable with SIC-based data. See "Notes on the data" for a description of the most recent benchmark revision.

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13. Average weekly hours of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry, monthly data seasonally adjusted

Industry	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[p]	Dec.[p]
TOTAL PRIVATE	33.7	33.7	33.6	33.8	33.8	33.8	33.7	33.8	33.6	33.8	33.7	33.8	33.8	33.7	33.8
GOODS-PRODUCING	39.8	40.0	39.9	40.2	40.3	40.2	40.0	40.3	40.0	40.1	40.1	40.1	40.0	39.9	39.9
Natural resources and mining	43.6	44.5	43.6	44.5	44.1	44.2	44.3	44.2	43.9	44.1	44.4	44.6	44.8	44.9	44.9
Construction	38.4	38.3	38.1	38.5	38.5	38.6	38.2	38.3	38.1	38.4	38.1	38.4	38.3	38.4	38.4
Manufacturing	40.4	40.8	40.6	41.0	41.0	40.9	40.7	41.1	40.8	40.9	40.9	40.8	40.6	40.5	40.5
Overtime hours	4.2	4.6	4.5	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	4.5	4.5	4.5
Durable goods	40.8	41.3	41.2	41.5	41.5	41.4	41.2	41.6	41.2	41.3	41.3	41.2	41.1	41.0	41.1
Overtime hours	4.3	4.7	4.7	4.7	4.8	4.8	4.7	4.8	4.7	4.7	4.7	4.7	4.7	4.6	4.6
Wood products	40.4	40.6	41.0	40.9	41.1	41.0	41.0	41.4	40.5	40.7	40.9	40.3	40.2	40.0	40.0
Nonmetallic mineral products	42.2	42.4	42.3	42.5	42.5	42.9	42.3	42.0	41.8	42.1	42.3	42.4	42.4	42.4	42.5
Primary metals	42.3	43.1	42.7	43.1	43.0	43.2	43.1	43.4	43.5	43.3	43.3	43.1	43.1	43.1	43.1
Fabricated metal products	40.7	41.1	40.8	41.2	41.2	41.1	41.0	41.3	41.0	41.2	41.2	41.2	41.0	40.8	40.9
Machinery	40.8	41.9	41.1	41.8	41.8	41.7	41.6	42.3	42.0	42.0	42.1	42.3	42.2	42.2	42.1
Computer and electronic products	40.4	40.4	40.4	40.8	41.2	40.7	40.5	40.8	40.5	40.9	40.5	40.3	40.2	39.9	40.2
Electrical equipment and appliances	40.6	40.7	40.7	41.1	40.7	40.8	40.8	41.6	40.8	40.8	41.0	40.5	40.4	40.1	39.6
Transportation equipment	41.9	42.5	42.7	42.8	42.9	42.8	42.4	42.8	42.3	42.4	42.5	42.4	42.4	42.2	42.4
Furniture and related products	38.9	39.5	39.7	39.7	39.4	39.6	39.5	40.0	39.7	39.4	39.5	39.3	39.1	39.4	39.7
Miscellaneous manufacturing	38.4	38.5	38.5	39.0	38.7	38.7	38.3	38.9	38.4	38.5	38.5	38.3	38.3	38.2	38.5
Nondurable goods	39.8	40.0	39.9	40.2	40.3	40.1	40.0	40.3	40.1	40.1	40.2	40.1	39.8	39.7	39.6
Overtime hours	4.1	4.4	4.2	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.3	4.3	4.3
Food manufacturing	39.3	39.3	39.1	39.5	39.4	39.3	39.1	39.6	39.4	39.3	39.3	39.4	38.9	38.9	38.7
Beverage and tobacco products	39.1	39.3	39.1	39.6	40.3	39.4	39.6	39.2	38.7	39.2	39.5	39.1	38.5	38.5	38.4
Textile mills	39.1	40.2	39.7	40.0	40.0	40.2	39.5	40.3	40.3	40.5	40.5	40.1	40.1	40.0	40.1
Textile product mills	39.6	38.9	39.8	39.4	39.9	38.8	38.3	38.8	38.9	38.5	38.7	39.0	39.0	38.8	38.4
Apparel	35.6	36.0	35.8	35.7	36.2	36.3	35.9	36.1	35.9	36.1	36.1	36.2	36.0	35.9	36.3
Leather and allied products	39.3	38.4	40.3	39.8	39.5	39.4	39.1	38.4	38.0	37.2	37.8	38.1	38.3	38.1	36.8
Paper and paper products	42.1	42.1	41.8	41.9	42.0	41.8	41.9	42.6	42.0	42.4	42.5	42.1	42.2	42.0	42.0
Printing and related support activities	38.2	38.4	38.2	38.6	38.6	38.4	38.4	38.6	38.5	38.6	38.5	38.3	38.2	38.3	38.2
Petroleum and coal products	44.5	45.0	44.2	43.8	44.1	43.7	43.9	45.0	45.0	45.0	46.3	45.8	44.9	45.4	45.0
Chemicals	42.4	42.7	42.5	42.9	43.2	43.0	43.0	42.9	42.6	42.8	42.8	42.8	42.6	42.3	42.2
Plastics and rubber products	40.4	40.4	40.4	40.8	40.9	40.9	40.7	40.9	40.8	40.5	40.5	40.2	40.0	39.6	39.7
PRIVATE SERVICE-PROVIDING	32.4	32.3	32.2	32.4	32.4	32.4	32.3	32.4	32.3	32.4	32.4	32.5	32.5	32.4	32.5
Trade, transportation, and utilities	33.5	33.5	33.5	33.6	33.7	33.6	33.5	33.5	33.3	33.4	33.5	33.6	33.6	33.5	33.5
Wholesale trade	37.8	37.8	37.8	37.9	38.0	38.0	38.0	37.8	37.6	37.8	37.6	37.8	37.7	37.6	37.6
Retail trade	30.9	30.7	30.8	31.0	30.9	30.8	30.7	30.7	30.5	30.6	30.7	30.8	30.8	30.7	30.8
Transportation and warehousing	36.9	37.2	36.7	36.9	37.2	36.9	36.9	37.3	36.9	37.1	37.2	37.4	37.4	37.3	37.2
Utilities	41.1	41.0	40.8	40.8	41.0	41.2	41.2	41.3	41.1	41.0	40.9	41.4	40.7	40.5	40.6
Information	36.2	36.3	36.2	36.2	36.3	36.3	36.3	36.4	36.5	36.4	36.4	36.4	36.4	36.4	36.4
Financial activities	35.5	35.6	35.3	35.7	35.5	35.5	35.6	35.8	35.5	35.6	35.5	35.5	35.7	35.6	35.8
Professional and business services	34.1	34.2	33.8	34.1	34.2	34.1	34.1	34.2	33.9	34.2	34.2	34.5	34.3	34.2	34.2
Education and health services	32.3	32.4	32.4	32.4	32.4	32.4	32.4	32.5	32.5	32.6	32.5	32.6	32.6	32.5	32.6
Leisure and hospitality	25.6	25.7	25.6	25.7	25.8	25.7	25.7	25.7	25.7	25.6	25.6	25.6	25.7	25.7	25.8
Other services	31.4	31.0	31.0	31.1	31.1	31.2	31.1	31.2	31.0	31.1	31.1	31.1	31.0	31.0	31.0

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

p = preliminary.

NOTE: Data reflect the conversion to the 2002 version of the North American Industry Classification System (NAICS), replacing the Standard industrial Classification (SIC) system. NAICS-based data by industry are not comparable with SIC-based data. See "Notes on the data" for a description of the most recent benchmark revision.

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14. Average hourly earnings of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry, monthly data seasonally adjusted

Industry	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[p]	Dec.[p]
TOTAL PRIVATE															
Current dollars	$15.35	$15.67	$15.45	$15.49	$15.52	$15.55	$15.59	$15.63	$15.66	$15.71	$15.76	$15.78	$15.82	$15.84	$15.86
Constant (1982) dollars	8.27	8.23	8.30	8.27	8.27	8.24	8.25	8.21	8.20	8.23	8.26	8.25	8.22	8.22	8.22
GOODS-PRODUCING	16.80	17.19	16.97	17.00	17.06	17.08	17.13	17.13	17.16	17.19	17.24	17.30	17.33	17.35	17.38
Natural resources and mining	17.58	18.06	17.91	17.95	18.01	18.10	18.08	18.10	18.24	18.15	18.12	18.11	18.19	18.32	18.34
Construction	18.95	19.23	19.04	19.11	19.18	19.17	19.20	19.20	19.19	19.22	19.25	19.27	19.33	19.34	19.34
Manufacturing	15.74	16.14	15.93	15.94	15.99	16.01	16.08	16.08	16.13	16.16	16.23	16.29	16.29	16.30	16.36
Excluding overtime	14.96	15.29	15.09	15.11	15.14	15.16	15.24	15.23	15.27	15.30	15.37	15.42	15.43	15.44	15.50
Durable goods	16.46	16.82	16.64	16.63	16.68	16.69	16.75	16.75	16.78	16.81	16.90	16.98	16.99	17.00	17.07
Nondurable goods	14.63	15.05	14.81	14.85	14.89	14.93	15.00	15.02	15.08	15.12	15.15	15.19	15.16	15.18	15.20
PRIVATE SERVICE-PROVIDING	14.96	15.26	15.05	15.08	15.10	15.13	15.17	15.23	15.26	15.31	15.36	15.38	15.41	15.43	15.46
Trade,transportation, and utilities	14.34	14.59	14.41	14.45	14.49	14.50	14.57	14.61	14.65	14.70	14.73	14.74	14.77	14.79	14.82
Wholesale trade	17.36	17.66	17.46	17.53	17.54	17.54	17.60	17.63	17.67	17.71	17.70	17.74	17.80	17.81	17.84
Retail trade	11.90	12.08	11.95	11.95	11.98	11.99	12.01	12.06	12.10	12.12	12.16	12.17	12.17	12.22	12.23
Transportation and warehousing	16.25	16.53	16.33	16.46	16.52	16.53	16.71	16.75	16.82	16.89	16.99	16.91	16.97	16.97	17.04
Utilities	24.76	25.62	25.13	25.32	25.35	25.38	25.67	25.46	25.44	25.57	25.54	25.73	25.95	25.85	25.95
Information	21.01	21.42	20.99	21.15	21.24	21.25	21.29	21.42	21.30	21.45	21.53	21.61	21.60	21.58	21.78
Financial activities	17.13	17.53	17.30	17.35	17.32	17.41	17.46	17.49	17.50	17.55	17.58	17.61	17.68	17.65	17.70
Professional and business services	17.20	17.46	17.25	17.24	17.25	17.27	17.29	17.36	17.42	17.44	17.56	17.52	17.59	17.62	17.65
Education and health services	15.64	16.15	15.81	15.87	15.90	15.96	15.99	16.06	16.12	16.18	16.19	16.23	16.24	16.27	16.26
Leisure and hospitality	8.76	8.91	8.84	8.85	8.86	8.87	8.86	8.86	8.85	8.87	8.91	8.95	8.99	9.02	9.03
Other services	13.84	13.98	13.80	13.84	13.84	13.87	13.84	13.85	13.88	13.90	13.92	13.95	13.99	14.02	14.03

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

p = preliminary.

NOTE: Data reflect the conversion to the 2002 version of the North American industry Classification System (NAICS), replacing the Standard Industrial Classification (SIC) system. NAICS based data by industry are not comparable with SIC-based data. See "Notes on the data" for a description of the most recent benchmark revision.

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15. Average hourly earnings of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry

Industry	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[P]	Dec.[P]
TOTAL PRIVATE	$15.35	$15.68	$15.48	$15.56	$15.60	$15.55	$15.59	$15.63	$15.57	$15.59	$15.67	$15.80	$15.83	$15.86	$15.89
Seasonally adjusted	15.47	–	15.45	15.49	15.52	15.55	15.59	15.63	15.66	15.71	15.76	15.78	15.82	15.84	15.84
GOODS-PRODUCING	16.8	17.19	17.03	16.94	16.95	17.00	17.09	17.10	17.14	17.18	17.28	17.41	17.39	17.38	17.43
Natural resources and mining	17.58	18.13	17.97	18.00	18.05	18.17	18.14	18.06	18.18	18.07	18.01	18.04	18.14	18.32	18.41
Construction	18.95	19.24	19.19	19.01	19.07	19.07	19.15	19.15	19.12	19.25	19.33	19.42	19.47	19.37	19.35
Manufacturing	15.74	16.15	16.05	15.98	15.99	16.01	16.07	16.05	16.09	16.04	16.17	16.36	16.27	16.33	16.47
Durable goods	16.46	16.84	16.78	16.66	16.68	16.69	16.72	16.71	16.75	16.61	16.85	17.08	16.99	17.05	17.22
Wood products	12.71	13.01	12.93	12.90	12.91	12.93	13.00	13.03	12.98	13.03	13.01	13.13	13.02	13.09	13.13
Nonmetallic mineral products	15.77	16.27	15.98	16.03	16.00	16.02	16.19	16.18	16.24	16.38	16.29	16.52	16.38	16.50	16.48
Primary metals	18.13	18.57	18.39	18.39	18.36	18.33	18.52	18.48	18.51	18.66	18.58	18.89	18.74	18.69	18.73
Fabricated metal products	15.01	15.30	15.23	15.20	15.18	15.25	15.21	15.20	15.23	15.26	15.27	15.42	15.37	15.44	15.54
Machinery	16.30	16.66	16.62	16.53	16.50	16.49	16.53	16.53	16.56	16.68	16.72	16.85	16.83	16.80	16.89
Computer and electronic products	16.68	17.26	16.85	16.81	16.92	16.93	17.01	17.11	17.21	17.29	17.37	17.47	17.51	17.60	17.86
Electrical equipment and appliances	14.35	14.85	14.68	14.50	14.58	14.68	14.80	14.83	14.88	14.88	14.98	15.03	15.00	15.02	15.08
Transportation equipment	21.25	21.54	21.74	21.38	21.37	21.34	21.36	21.29	21.36	20.77	21.54	21.96	21.84	21.95	22.27
Furniture and related products	12.98	13.16	13.08	12.95	12.92	12.96	13.09	13.04	13.10	13.11	13.27	13.39	13.26	13.29	13.16
Miscellaneous manufacturing	13.30	13.84	13.60	13.68	13.75	13.78	13.70	13.76	13.81	13.89	13.87	13.96	13.91	13.97	13.96
Nondurable goods	14.63	15.06	14.88	14.89	14.88	14.90	15.01	14.98	15.03	15.14	15.09	15.24	15.12	15.17	15.24
Food manufacturing	12.80	12.97	12.95	12.91	12.87	12.89	12.96	12.94	13.00	13.05	12.99	13.08	12.93	12.97	13.01
Beverages and tobacco products	17.96	19.14	18.58	18.88	18.76	19.13	19.60	19.55	19.39	19.29	19.10	19.20	19.20	18.84	18.72
Textile mills	12.00	12.14	12.21	12.11	12.13	12.09	12.23	12.08	12.15	12.07	12.08	12.26	12.12	12.12	12.19
Textile product mills	11.24	11.43	11.44	11.45	11.40	11.37	11.33	11.30	11.29	11.48	11.46	11.51	11.44	11.44	11.68
Apparel	9.56	9.76	9.80	9.74	9.58	9.60	9.71	9.55	9.60	9.74	9.73	9.93	9.97	10.02	10.02
Leather and allied products	11.67	11.65	11.90	11.94	11.76	11.64	11.65	11.49	11.59	11.68	11.68	11.56	11.57	11.53	11.74
Paper and paper products	17.32	17.85	17.60	17.63	17.55	17.59	17.84	17.88	17.86	17.91	17.84	18.16	17.87	18.10	17.99
Printing and related support activities	15.37	15.71	15.56	15.53	15.57	15.61	15.54	15.51	15.54	15.71	15.86	15.94	15.94	15.90	15.86
Petroleum and coal products	23.64	24.41	24.06	24.13	24.32	24.82	24.48	24.41	24.24	24.35	24.07	24.47	24.35	24.78	24.56
Chemicals	18.52	19.22	18.79	18.83	18.85	18.87	19.02	19.05	19.20	19.36	19.29	19.49	19.47	19.47	19.76
Plastics and rubber products	14.18	14.59	14.47	14.43	14.45	14.45	14.58	14.55	14.59	14.69	14.66	14.75	14.55	14.60	14.73
PRIVATE SERVICE-PROVIDING	14.96	15.28	15.07	15.19	15.24	15.16	15.20	15.24	15.14	15.17	15.24	15.37	15.41	15.46	15.48
Trade, transportation, and utilities	14.34	14.65	14.31	14.50	14.58	14.53	14.64	14.64	14.61	14.62	14.66	14.78	14.78	14.77	14.72
Wholesale trade	17.36	17.66	17.46	17.56	17.60	17.47	17.60	17.67	17.58	17.66	17.69	17.72	17.77	17.81	17.83
Retail trade	11.90	12.10	11.87	11.98	12.04	12.03	12.08	12.08	12.09	12.07	12.09	12.23	12.18	12.18	12.14
Transportation and warehousing	16.25	16.81	16.33	16.46	16.58	16.51	16.73	16.72	16.80	16.86	16.98	16.91	16.98	17.00	17.08
Utilities	24.76	25.60	25.26	25.38	25.29	25.36	25.69	25.53	25.33	25.43	25.33	25.87	26.00	25.99	26.05
	21.01	21.44	21.10	21.21	21.28	21.17	21.24	21.41	21.18	21.30	21.44	21.73	21.69	21.71	21.86
Financial activities	17.13	17.52	17.26	17.35	17.47	17.37	17.45	17.62	17.38	17.44	17.58	17.60	17.67	17.62	17.65
Professional and business services	17.20	17.43	17.29	17.38	17.47	17.28	17.26	17.45	17.28	17.31	17.46	17.43	17.50	17.59	17.70
Education and health services	15.64	16.11	15.86	15.94	15.95	15.94	15.99	16.00	16.06	16.18	16.16	16.25	16.25	16.28	16.29
Leisure and hospitality	8.76	8.91	8.94	8.89	8.92	8.89	8.84	8.85	8.78	8.78	8.80	8.94	9.01	9.06	9.17
Other services	13.84	13.91	13.88	13.89	13.90	13.85	13.87	13.90	13.82	13.78	13.84	13.97	13.97	14.04	14.11

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

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16. Average weekly earnings of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry

Industry	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[p]	Dec.[p]
TOTAL PRIVATE	$517.36	$528.97	$520.13	$518.15	$527.28	$520.93	$522.27	$531.42	$524.71	$528.50	$535.91	$530.88	$535.05	$534.48	$537.08
Seasonally adjusted	–	–	519.12	523.56	524.58	525.59	525.38	528.29	526.18	531.00	531.11	533.36	534.72	533.81	536.07
GOODS-PRODUCING	669.23	688.85	682.90	674.21	674.61	681.70	678.47	690.84	689.03	687.20	698.11	691.18	699.08	696.94	702.43
Natural resources and mining	766.83	804.90	781.70	784.80	786.98	797.66	794.53	798.25	809.01	802.31	806.85	797.37	821.74	831.73	822.93
Construction	727.11	736.78	714.34	712.88	711.31	732.29	721.96	741.11	738.03	754.60	755.80	730.19	755.44	739.93	739.17
Manufacturing	636.07	658.94	662.87	650.39	652.39	653.21	652.44	659.66	659.69	646.41	661.35	664.22	662.19	666.26	678.56
Durable goods	671.53	694.90	703.08	688.06	688.88	690.97	687.19	695.14	695.13	674.37	695.91	698.57	699.99	702.46	721.52
Wood products	513.92	528.73	531.42	517.29	521.56	524.96	530.40	544.65	533.48	531.62	538.61	521.26	526.01	526.22	527.83
Nonmetallic mineral products	665.11	690.13	669.56	663.64	664.00	680.85	684.84	684.41	690.20	694.51	700.47	710.36	701.06	702.90	698.75
Primary metals	767.63	801.78	799.97	796.29	787.64	790.02	800.06	803.88	808.89	791.18	798.94	808.49	803.95	809.28	822.25
Fabricated metal products	610.33	628.65	635.09	626.24	623.90	625.25	620.27	627.76	627.48	621.08	627.60	627.59	633.24	634.58	648.02
Machinery	664.79	699.19	696.38	689.30	691.35	690.93	987.65	700.87	698.83	692.22	697.22	699.28	706.86	710.64	724.58
Computer and electronic products	674.68	699.17	695.91	680.81	695.41	690.74	683.80	694.67	698.73	696.79	700.01	700.55	705.65	709.28	732.26
Electrical equipment and appliances	582.68	604.21	616.56	594.50	591.95	596.01	599.40	613.96	611.57	599.66	611.18	601.20	612.00	609.81	609.23
Transportation equipment	890.32	916.24	950.04	915.06	916.77	917.62	905.66	915.47	912.07	841.19	911.14	928.91	928.20	930.68	968.75
Furniture and related products	505.23	519.66	528.43	510.23	505.17	510.62	517.06	517.69	521.38	515.22	529.47	519.53	515.81	524.96	548.51
Miscellaneous manufacturing	510.69	533.28	533.12	532.15	533.50	534.66	524.71	535.26	530.30	527.82	534.00	529.08	534.14	536.45	547.23
Nondurable goods	582.65	602.85	602.64	594.11	595.20	596.00	595.90	602.20	604.21	602.57	606.62	611.12	604.80	608.32	612.65
Food manufacturing	502.61	508.97	514.12	504.78	499.36	498.84	497.66	511.13	512.20	512.87	514.40	521.89	508.15	513.61	511.29
Beverages and tobacco products	702.75	749.38	722.76	728.77	737.27	744.16	780.08	774.18	760.09	760.03	762.09	764.16	735.36	727.22	718.85
Textile mills	469.47	487.43	490.84	485.61	486.41	490.85	484.31	486.82	490.86	481.59	489.24	489.17	482.38	486.01	496.13
Textile product mills	445.08	444.04	464.46	447.70	450.30	441.16	435.07	436.18	444.83	435.09	443.50	445.44	448.45	446.16	455.52
Apparel	340.22	352.04	352.80	343.82	345.84	350.40	347.76	346.67	348.48	348.69	353.20	352.52	357.92	361.72	369.74
Leather and allied products	458.26	445.95	485.52	471.63	464.52	464.44	460.18	441.22	442.74	422.82	441.50	430.03	445.45	440.45	428.51
Paper and paper products	719.21	752.38	751.52	738.70	731.84	731.74	745.71	756.32	748.33	750.43	754.63	771.80	755.90	767.44	775.37
Printing and related support activities	587.42	603.66	602.17	593.25	597.89	600.99	593.63	594.03	593.63	600.12	610.61	612.10	613.69	616.92	616.95
Petroleum and coal products	1,052.97	1,096.71	1,061.05	1,068.96	1,074.94	1,079.67	1,062.43	1,091.13	1,095.65	1,120.10	1,097.59	1,120.73	1,098.19	1,132.45	1,110.11
Chemicals	784.56	820.73	806.09	804.04	816.21	811.41	814.06	815.34	819.84	816.99	823.68	832.22	827.48	829.42	837.82
Plastics and rubber products	572.23	589.73	596.16	585.86	588.12	589.56	594.86	595.10	599.65	583.19	589.33	590.00	583.46	582.54	595.09
PRIVATE SERVICE-PROVIDING	484.00	494.46	485.25	484.56	496.82	486.64	487.92	496.82	489.02	493.03	501.40	496.45	499.28	499.36	501.55
Trade, transportation, and utilities	481.10	490.69	480.82	477.05	488.43	482.40	486.05	493..37	489.44	494.46	498.44	496.61	495.13	491.84	494.59
Wholesale trade	657.12	666.52	659.99	656.74	670.56	658.62	665.28	674.99	661.01	665.78	672.22	666.27	668.15	669.66	668.63
Retail trade	367.28	371.80	367.97	361.80	368.42	365.71	367.23	372.06	372.37	376.58	378.42	377.91	373.93	370.27	376.34
Transportation and warehousing	597.79	624.01	602.58	597.50	613.46	604.27	610.65	627.00	621.60	627.19	641.84	630.74	635.05	637.50	638.79
Utilities	1,016.94	1,048.44	1,028.08	1,032.97	1,039.42	1,039.76	1,053.29	1,054.39	1,046.13	1,032.46	1,030.93	1,073.61	1,066.00	1,060.39	1,052.42
Information	761.13	778.77	761.71	763.56	776.72	760.00	764.64	777.18	775.19	773.19	788.99	788.80	789.52	792.42	793.52
Financial activities	608.87	623.02	607.55	612.10	630.67	611.42	615.99	637.84	613.51	617.38	634.64	619.52	627.29	625.51	630.11
Professional and business services	586.68	595.32	582.67	583.97	602.72	587.52	588.57	603.77	587.52	590.27	604.12	592.62	598.50	599.82	603.57
Education and health services	505.76	523.26	512.28	514.86	519.97	513.27	516.48	521.60	520.34	527.47	530.05	528.13	528.13	529.10	529.43
Leisure and hospitality	224.35	228.74	225.29	221.36	230.14	225.80	224.81	229.22	227.40	230.91	234.08	226.18	230.66	230.12	233.84
Other services	434.49	432.02	430.28	429.20	433.68	428.73	428.58	435.07	428.42	429.94	434.58	431.67	433.07	433.84	437.41

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

NOTE: Data reflect the conversion to the 2002 version of the North American Industry Classification System (NAICS), replacing the Standard Industrial Classification (SIC) system. NAICS-based data by industry are not comparable with SIC-based data. See "Notes on the data" for a description of the most recent benchmark revision.

Dash indicates data not available. p = preliminary.

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17. Diffusion indexes of employment change, seasonally adjusted

[In percent]

Timespan and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Private nonfarm payrolls, 278 industries											
Over 1-month span:												
2000	61.9	62.9	63.3	59.5	46.9	61.7	63.1	52.5	51.5	53.4	56.8	53.8
2001	52.2	47.8	50.4	34.4	41.4	39.2	37.1	38.8	38.3	32.4	36.7	34.9
2002	40.1	35.1	41.0	41.5	41.7	47.8	44.1	44.1	42.8	39.0	38.7	34.5
2003	41.2	35.1	38.1	41.4	42.8	40.1	40.5	39.7	49.3	46.0	51.1	49.1
2004	52.3	56.1	68.7	67.6	63.8	60.6	55.2	56.3	56.8	58.3	57.4	57.6
Over 3-month span:												
2000	69.2	66.2	67.8	68.3	60.1	58.1	56.3	61.5	56.5	53.2	52.9	56.8
2001	52.7	50.4	50.4	43.5	38.8	34.9	36.2	37.9	34.7	35.3	30.8	32.0
2002	34.0	37.4	35.1	36.2	36.7	39.4	39.9	40.8	38.7	37.1	34.4	34.7
2003	36.5	32.6	36.3	35.1	40.5	42.6	37.4	35.4	40.1	45.5	50.5	51.1
2004	54.0	55.2	62.8	70.0	74.5	68.7	64.6	57.2	60.6	57.7	58.6	58.1
Over 6-month span:												
2000	67.3	69.1	75.2	72.5	67.4	67.8	66.7	60.8	59.0	55.0	59.7	54.0
2001	51.8	50.0	51.8	47.3	43.5	41.5	38.1	35.4	32.2	33.1	31.5	31.1
2002	29.5	30.0	31.1	31.1	31.7	37.1	37.2	39.0	34.7	36.5	35.3	33.3
2003	33.6	31.1	31.7	31.7	33.5	37.8	36.2	36.5	40.5	39.4	42.6	41.7
2004	48.9	54.1	59.6	64.7	67.8	71.2	68.3	71.6	67.1	65.1	61.0	56.3
Over 12-month span:												
2000	70.9	69.2	73.2	71.0	69.8	71.0	70.0	70.3	70.3	65.6	63.8	62.1
2001	59.5	59.5	53.4	49.3	48.6	45.0	43.3	43.9	39.9	37.8	37.1	34.9
2002	33.6	31.7	30.2	30.4	30.2	29.1	32.0	31.3	30.0	29.5	32.9	34.7
2003	34.5	31.5	32.9	33.5	36.2	34.4	34.7	33.1	37.6	37.4	33.1	35.4
2004	37.8	43.2	47.3	50.7	54.9	60.3	64.0	63.8	65.3	66.5	68.7	66.5
	Manufacturing payrolls, 84 industries											
Over 1-month span:												
2000	48.2	58.3	50.0	50.0	41.1	57.1	60.7	28.6	25.0	35.1	39.9	41.1
2001	22.6	22.0	21.4	16.1	15.5	23.2	13.7	14.3	19.0	17.9	14.9	10.1
2002	21.4	18.5	23.8	35.1	29.8	32.7	40.5	28.0	31.0	11.9	15.5	17.9
2003	26.2	15.5	22.6	13.7	26.2	25.0	28.0	26.2	27.4	28.6	51.2	45.8
2004	42.9	55.4	60.1	66.1	64.9	54.2	57.1	48.2	44.0	47.6	47.6	51.2
Over 3-month span:												
2000	53.6	53.6	56.0	54.8	44.0	44.0	51.2	47.6	32.7	25.0	23.2	38.7
2001	35.7	21.4	16.1	14.3	13.1	13.7	11.9	8.9	8.3	13.1	8.9	10.1
2002	9.5	10.1	11.3	17.9	17.3	19.0	28.0	22.0	23.8	15.5	6.5	4.8
2003	13.7	13.1	16.7	10.1	13.1	14.9	16.1	16.1	16.1	24.4	27.4	41.7
2004	48.8	51.8	59.5	66.1	71.4	65.5	65.5	51.8	53.0	43.5	44.6	42.3
Over 6-month span:												
2000	44.0	52.4	55.4	57.7	47.6	51.8	56.0	45.2	39.3	34.5	32.1	27.4
2001	22.0	23.8	22.0	20.8	14.3	13.7	14.3	10.1	10.7	5.4	7.1	4.8
2002	6.5	8.9	7.7	8.3	7.7	14.3	14.9	10.7	12.5	10.1	8.9	8.9
2003	11.3	9.5	6.0	7.1	8.9	13.1	8.9	13.1	13.1	16.7	19.0	19.6
2004	28.6	36.9	46.4	56.5	61.3	64.9	66.7	66.1	58.3	54.8	45.2	46.4
Over 12-month span:												
2000	41.7	39.3	47.0	50.0	46.4	52.4	51.8	49.4	46.4	40.5	35.1	33.3
2001	29.8	32.1	20.8	19.0	13.1	12.5	10.7	11.9	11.9	10.1	8.3	6.0
2002	7.1	6.0	6.0	6.5	7.1	3.6	4.8	6.0	4.8	7.1	4.8	8.3
2003	10.7	6.0	6.5	5.4	8.3	9.5	9.5	9.5	10.7	11.9	9.5	11.3
2004	9.5	19.0	16.7	26.2	29.8	40.5	50.0	50.6	52.4	55.4	52.4	48.2

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing employment.

See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

Data for the two most recent months are preliminary.

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18. Job openings levels and rates by industry and region, seasonally adjusted

Industry and region	Levels[1] (in thousands)							Rates						
	2004							2004						
	June	July	Aug.	Sept.	Oct.	Nov.[P]	Dec.[P]	June	July	Aug.	Sept.	Oct.	Nov.[P]	Dec.[P]
Total[2]	3,022	3,237	3,195	3,294	3,420	3,204	3,204	2.3	2.4	2.4	2.4	2.5	2.4	2.4
Industry														
Total private[2]	2,640	2,894	2,859	2,934	3,042	2,867	2,867	2.3	2.6	2.5	2.6	2.7	2.5	2.5
Construction	94	88	121	113	114	108	108	1.3	1.3	1.7	1.6	1.6	1.5	1.5
Manufacturing	247	240	234	251	263	236	236	1.7	1.6	1.6	1.7	1.8	1.6	1.6
Trade, transportation, and utilities	503	567	551	591	630	551	551	1.9	2.2	2.1	2.3	2.4	2.1	2.1
Professional and business services	494	583	594	564	614	595	595	2.9	3.4	3.5	3.3	3.6	3.4	3.4
Education and health services	496	537	536	543	550	540	540	2.9	3.1	3.1	3.1	3.1	3.1	3.1
Leisure and hospitality	421	435	410	425	405	385	385	3.3	3.4	3.2	3.3	3.2	3.0	3.0
Government	380	343	337	350	403	335	335	1..7	1.6	1.5	1.6	1.8	1.5	1.5
Region[3]														
Northeast	546	545	540	562	606	523	523	2.1	2.1	2.1	2.2	2.3	2.0	2.0
South	1,164	1,280	1,259	1,245	1,385	1,214	1,214	2.4	2.7	2.6	2.6	2.9	2.5	2.5
Midwest	631	635	613	699	711	713	713	2.0	2.0	1.9	2.2	2.2	2.2	2.2
West	677	738	771	790	756	750	750	2.3	2.5	2.6	2.7	2.6	2.5	2.5

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast:** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest**: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The job openings level is the number of job openings on the last business day of the month; the job openings rate is the number of job openings on the last business day of the month as a percent of total employment plus job openings.

[P] = preliminary.

19. Hires levels and rates by industry and region, seasonally adjusted

Industry and region	Levels[1] (in thousands)							Rates						
	2004							2004						
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[P]	June	July	Aug	Sept.	Oct.	Nov	Dec.[P]
Total[2]	4,433	4,229	4,375	4,253	4,469	4,780	4,488	3.4	3.2	3.3	3.3	3.4	3.6	3.4
Industry														
Total private[2]	4,110	3,930	4,058	3,906	4,149	4,467	4,198	3.7	3.6	3.7	3.6	3.8	4.0	3.8
Construction	436	368	401	388	361	388	385	6.3	5.3	5.8	5.5	5.1	5.5	5.5
Manufacturing	370	352	356	379	333	376	327	2.6	2.4	2.5	2.6	2.3	2.6	2.3
Trade, transportation, and utilities	945	957	984	864	976	1,081	1,022	3.7	3.8	3.9	3.4	3.8	4.2	4.0
Professional and business services	692	621	690	689	783	801	718	4.2	3.8	4.2	4.2	4.7	4.8	4.3
Education and health services	428	418	470	401	411	447	439	2.6	2.5	2.8	2.4	2.4	2.6	2.6
Leisure and hospitality	749	760	760	782	769	802	803	6.1	6.2	6.1	6.3	6.2	6.5	6.5
Government	328	310	322	337	321	325	287	1.5	1.4	1.5	1.6	1.5	1.5	1.3
Region[3]														
Northeast	703	720	763	745	755	793	796	2.8	2.9	3.0	2.9	3.0	3.1	3.1
South	1,709	1,640	1,643	1,635	1,694	1,799	1,704	3.7	3.5	3.5	3.5	3.6	3.9	3.6
Midwest	1,009	935	945	942	1,054	1,114	998	3.2	3.0	3.0	3.0	3.4	3.6	3.2
West	1,023	685	1,018	942	928	1,022	951	3.6	3.0	3.5	3.3	3.2	3.5	3.3

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast**: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest:** Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The hires level is the number of hires during the entire month; the hires rate is the number of hires during the entire month as a percent of total employment.

[P] = preliminary.

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20. Total separations levels and rates by industry and region, seasonally adjusted

Industry and region	Levels[1] (in thousands)							Rates						
	2004							2004						
	June	July	Aug.	Sept.	Oct	Nov.	Dec.[P]	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[P]
Total[2]	4,069	4,074	4,134	4,158	4,129	4,131	4,278	3.1	3.1	3.1	3.2	3.1	3.1	3.2
Industry														
Total private[2]	3,789	3,793	3,894	3,856	3,877	3,832	3,994	3.5	3.5	3.5	3.5	3.5	3.5	3.6
Construction	382	364	391	350	423	360	343	5.5	5.3	5.6	5.0	6.0	5.1	4.9
Manufacturing	343	367	379	381	338	334	372	2.4	2.5	2.6	2.6	2.3	2.3	2.6
Trade, transportation, and utilities	927	972	951	909	922	934	1,073	3.6	3.8	3.7	3.6	3.6	3.7	4.2
Professional and business services	607	613	575	590	580	694	649	3.7	3.7	3.5	3.6	3.5	4.2	3.9
Education and health services	362	363	380	384	373	422	380	2.1	2.1	2.2	2.3	2.2	2.5	2.2
Leisure and hospitality	734	694	760	756	747	692	750	5.9	5.6	6.2	6.1	6.0	5.6	6.1
Government	270	273	246	306	260	307	277	1.3	1.3	1.1	1.4	1.2	1.4	1.3
Region[3]														
Northeast	704	674	717	730	670	738	782	2.8	2.7	2.8	2.9	2.6	2.9	3.1
South	1,533	1,545	1,527	1,506	1,568	1,572	1,599	3.3	3.3	3.3	3.2	3.4	3.4	3.4
Midwest	853	935	831	931	948	986	949	2.7	3.0	2.7	3.0	3.0	3.1	3.0
West	979	945	1,087	978	914	817	938	3.4	3.3	3.8	3.5	3.2	2.8	3.3

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast:** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest:** Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The total separations level is the number of total separations during the entire month; the total separations rate is the number of total separations during the entire month as a percent of total employment.

[P] = preliminary.

21. Quits levels and rates by industry and region, seasonally adjusted

Industry and region	Levels[1] (in thousands)							Rates						
	2004							2004						
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[P]	June	July	Aug.	Sept.	Oct	Nov.	Dec.[P]
Total[2]	2,284	2,265	2,252	2,248	2,283	2,325	2,408	1.7	1.7	1.7	1.7	1.8	1.8	1.8
Industry														
Total private[2]	2,162	2,141	2,140	2,118	2,147	2,206	2,283	2.0	2.0	1.9	1.9	2.1	2.0	2.1
Construction	156	101	147	138	161	155	162	2.3	1.5	2.1	2.3	2.2	2.2	2.3
Manufacturing	171	174	165	183	172	182	191	1.2	1.2	1.1	1.2	1.2	1.3	1.3
Trade, transportation, and utilities	536	559	552	536	515	551	553	2.1	2.2	2.2	2.0	2.2	2.2	2.2
Professional and business services	322	322	308	325	296	357	356	2.0	2.0	1.9	2.0	1.8	2.1	2.1
Education and health services	225	271	239	240	242	258	234	1.3	1.6	1.4	1.4	1.4	1.5	1.4
Leisure and hospitality	480	442	476	439	476	453	498	3.9	3.6	3.9	3.9	3.9	3.7	4.0
Government	123	126	116	130	122	119	127	.6	.6	.5	.6	.5	.5	.6
Region[3]														
Northeast	334	338	339	325	316	355	350	1.3	1.3	1.3	1.2	1.4	1.4	1.4
South	910	901	897	903	910	971	995	2.0	1.9	1.9	2.0	2.0	2.1	2.1
Midwest	485	505	447	472	510	508	512	1.6	1.6	1.4	1.6	1.8	1.6	1.6
West	573	519	566	546	539	468	519	2.0	1.8	2.0	1.9	1.7	1.6	1.8

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast:** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest**: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The quits level is the number of quits during the entire month; the quits rate is the number of quits during the entire month as a percent of total employment.

[P] = preliminary.

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22. Quarterly Census of Employment and Wages: 10 largest counties, fourth quarter 2003.

County by NAICS supersector	Establishments, fourth quarter 2003 (thousands)	Employment		Average weekly wage[1]	
		December 2003 (thousands)	Percent change, December 2002-03[2]	Fourth quarter 2003	Percent change, fourth quarter 2002-03[2]
United States[3]	8,314.1	129,341.5	0.0	$767	3.6
Private industry	8,048.7	108,215.1	.0	769	3.9
Natural resources and mining	123.7	1,557.8	.1	703	4.9
Construction	804.9	6,689.5	1.2	837	2.3
Manufacturing	376.8	14,307.8	-4.2	943	6.7
Trade, transportation, and utilities	1,853.6	25,957.3	-.3	665	3.4
Information	145.2	3,165.9	-4.0	1,139	3.9
Financial activities	767.0	7,874.7	1.2	1,138	5.9
Professional and business services	1,329.4	16,113.2	.6	945	3.8
Education and health services	732.2	15,974.0	2.1	731	3.8
Leisure and hospitality	669.9	12,042.8	1.7	335	3.4
Other services	1,080.6	4,274.1	-.1	494	3.1
Government	265.3	21,126.3	-.2	757	2.4
Los Angeles, CA	356.0	4,075.3	-.5	903	4.2
Private industry	352.2	3,486.3	-.2	898	4.2
Natural resources and mining	.6	11.0	.7	955	16.9
Construction	12.9	133.9	-1.1	883	1.7
Manufacturing	17.8	485.2	-7.1	900	6.5
Trade, transportation, and utilities	53.9	794.6	-1.2	735	2.7
Information	9.2	194.9	-2.0	1,627	5.2
Financial activities	23.0	237.9	.9	1,258	7.0
Professional and business services	40.1	575.0	1.6	1,043	3.7
Education and health services	26.6	456.5	1.9	820	3.9
Leisure and hospitality	25.6	375.9	5.6	766	6.5
Other services	142.1	220.7	3.5	422	5.0
Government	3.8	589.0	-2.3	930	3.3
Cook, IL	126.7	2,539.8	-1.2	922	3.0
Private industry	125.5	2,221.9	-.9	929	3.2
Natural resources and mining	.1	1.3	-3.6	1,037	3.2
Construction	10.5	96.7	.0	1,169	-.8
Manufacturing	7.9	265.7	-5.1	975	6.3
Trade, transportation, and utilities	26.7	499.4	-.8	753	.4
Information	2.5	66.1	-4.1	1,164	.1
Financial activities	13.8	219.4	-.8	1,471	8.1
Professional and business services	26.1	405.5	-1.3	1,206	4.1
Education and health services	12.3	350.8	1.0	791	3.7
Leisure and hospitality	10.5	217.7	2.8	375	-.3
Other services	12.6	95.1	-2.0	655	3.0
Government	1.2	317.9	-3.1	871	.9
New York, NY	111.9	2,253.6	-1.0	1,480	7.2
Private industry	111.7	1,800.4	-.6	1,623	8.1
Natural resources and mining	.0	.1	.0	1,197	-6.5
Construction	2.2	30.0	-4.5	1,567	3.4
Manufacturing	3.5	46.6	-4.9	1,290	6.4
Trade, transportation, and utilities	22.1	247.6	-1.2	1,164	5.5
Information	4.3	130.6	-5.1	1,751	7.9
Financial activities	16.7	352.0	-2.0	3,034	16.1
Professional and business services	22.6	439.7	.5	1,702	2.6
Education and health services	7.8	273.8	2.4	918	7.6
Leisure and hospitality	10.1	188.2	.4	787	6.1
Other services	16.0	82.9	-1.1	871	6.1
Government	.2	453.2	-2.2	912	.1
Harris, TX	89.4	1,841.5	-.9	906	2.1
Private industry	89.0	1,595.2	-1.2	929	2.1
Natural resources and mining	1.2	62.5	8.7	2,185	-.9
Construction	6.3	135.5	-5.0	919	2.6
Manufacturing	4.7	164.0	-4.9	1,106	2.3
Trade, transportation, and utilities	21.1	403.2	-2.1	821	1.0
Information	1.4	33.8	-3.9	1,098	.4
Financial activities	9.7	113.1	1.7	1,181	4.9
Professional and business services	17.0	279.0	-1.7	1,073	3.2
Education and health services	8.8	188.3	1.5	812	1.8
Leisure and hospitality	6.5	155.2	.7	335	-.9
Other services	10.3	56.3	-3.1	539	.4
Government	.4	246.3	1.1	759	3.1
Maricopa, AZ	80.9	1,621.2	([4])	757	4.0
Private industry	80.5	1,401.8	2.2	755	3.9
Natural resources and mining	.5	9.8	-2.6	545	4.4
Construction	8.4	131.7	5.9	779	2.1
Manufacturing	3.3	128.0	-2.5	1,050	8.2
Trade, transportation, and utilities	18.6	336.4	1.5	712	3.2
Information	1.6	36.6	-4.1	872	.5
Financial activities	9.5	133.3	1.5	933	3.7
Professional and business services	18.1	261.5	4.2	776	3.5
Education and health services	7.6	160.5	5.6	842	5.0
Leisure and hospitality	5.6	155.8	.8	364	2.8
Other services	5.7	44.7	-2.6	500	2.2
Government	.5	219.4	1.6	766	3.7

See footnotes at end of table.

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22. Continued—Quarterly Census of Employment and Wages: 10 largest counties, fourth quarter 2003.

County by NAICS supersector	Establishments, fourth quarter 2003 (thousands)	Employment		Average weekly wage[1]	
		December 2003 (thousands)	Percent change, December 2002-03[2]	Fourth quarter 2003	Percent change, fourth quarter 2002-03[2]
Dallas, TX	68.6	1,450.8	-1.4	$952	4.3
Private industry	68.2	1,294.6	-1.4	970	4.8
Natural resources and mining	.5	6.8	-20.5	2,680	22.7
Construction	4.5	73.0	-2.2	909	5.5
Manufacturing	3.5	144.9	-3.1	1,075	6.8
Trade, transportation, and utilities	15.8	326.1	-3.3	898	5.2
Information	1.9	64.0	-5.1	1,272	8.7
Financial activities	8.6	140.0	1.2	1,215	2.9
Professional and business services	14.0	237.7	.0	1,152	4.2
Education and health services	6.3	131.4	2.4	887	2.7
Leisure and hospitality	5.2	127.5	.0	432	4.3
Other services	6.7	40.5	-3.4	587	2.8
Government	.4	156.2	-1.8	800	-.1
Orange, CA	88.8	1,436.6	1.3	874	5.3
Private industry	87.4	1,305.5	2.1	875	5.2
Natural resources and mining	.3	6.1	8.3	579	.2
Construction	6.4	85.5	4.4	969	5.9
Manufacturing	6.1	179.9	-3.0	1,036	11.4
Trade, transportation, and utilities	17.3	278.8	.6	802	2.7
Information	1.5	33.8	-4.4	1,152	5.3
Financial activities	9.7	127.8	9.9	1,354	6.2
Professional and business services	17.4	261.0	1.0	942	2.8
Education and health services	9.1	126.6	6.1	849	3.7
Leisure and hospitality	6.6	159.9	2.5	358	3.8
Other services	12.9	46.0	6.3	518	3.0
Government	1.4	131.1	-5.7	859	6.0
San Diego, CA	85.3	1,278.2	1.3	815	2.6
Private industry	83.9	1,060.2	1.5	809	2.5
Natural resources and mining	.9	11.0	-5.4	491	1.0
Construction	6.4	81.1	4.7	869	.7
Manufacturing	3.6	105.4	-4.2	1,129	11.5
Trade, transportation, and utilities	14.2	220.4	2.2	655	.9
Information	1.4	36.7	-4.5	1,582	-2.0
Financial activities	8.8	81.6	4.8	1,058	.4
Professional and business services	14.9	208.1	1.5	989	2.8
Education and health services	7.6	122.6	1.6	778	5.7
Leisure and hospitality	6.5	141.5	3.5	346	2.4
Other services	19.5	51.6	1.8	449	2.7
Government	1.3	218.0	.1	843	2.9
King, WA	81.6	1,100.6	.2	935	.2
Private industry	81.0	945.5	.1	944	-.3
Natural resources and mining	.4	2.8	-11.3	1,109	.8
Construction	6.2	53.4	-.4	921	1.4
Manufacturing	2.7	101.9	-8.2	1,176	-2.1
Trade, transportation, and utilities	14.8	225.5	1.1	804	2.6
Information	1.5	69.2	.8	1,829	-15.7
Financial activities	6.1	77.5	2.4	1,114	3.5
Professional and business services	11.7	158.3	.7	1,160	8.4
Education and health services	5.9	108.3	1.5	746	4.8
Leisure and hospitality	5.4	100.5	2.9	390	3.7
Other services	26.4	48.1	1.2	463	.4
Government	.6	155.1	1.0	882	3.6
Miami-Dade, FL	80.2	980.8	-.5	765	3.5
Private industry	79.9	827.5	-.7	742	3.6
Natural resources and mining	.5	9.9	-1.8	421	4.0
Construction	4.9	40.7	.3	788	2.7
Manufacturing	2.8	49.4	-9.8	695	5.8
Trade, transportation, and utilities	23.2	247.2	-1.7	689	4.2
Information	1.7	28.5	-3.2	990	1.7
Financial activities	8.2	65.5	.7	1,062	-1.1
Professional and business services	15.9	132.0	-.2	948	5.2
Education and health services	7.8	123.4	1.4	748	2.3
Leisure and hospitality	5.3	92.8	2.1	432	9.9
Other services	7.5	34.5	-1.8	450	3.0
Government	.3	153.3	.5	886	2.8

[1] Average weekly wages were calculated using unrounded data.

[2] Percent changes were computed from quarterly employment and pay data adjusted for noneconomic county reclassifications. See Notes on Current Labor Statistics.

[3] Totals for the United States do not include data for Puerto Rico or the Virgin Islands.

[4] Data do not meet BLS or State agency disclosure standards.

NOTE: Includes workers covered by Unemployment Insurance (UI) and Unemployment Compensation for Federal Employees (UCFE) programs. Data are preliminary.

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23. Quarterly Census of Employment and Wages: by State, fourth quarter 2003.

State	Establishments, fourth quarter 2003 (thousands)	Employment		Average weekly wage[1]	
		December 2003 (thousands)	Percent change, December 2002-03	Fourth quarter 2003	Percent change, fourth quarter 2002-03
United States[2]	8,314.1	129,341.5	0.0	$767	3.6
Alabama	111.8	1,838.1	-.1	657	4.0
Alaska	20.0	282.7	1.1	746	1.1
Arizona	126.9	2,352.1	2.2	710	3.8
Arkansas	75.2	1,133.6	.5	587	4.1
California	1,190.8	14,922.3	.0	869	3.8
Colorado	160.0	2,134.6	-1.1	784	2.0
Connecticut	109.1	1,648.9	-.7	992	3.8
Delaware	27.1	408.4	.5	825	5.0
District of Columbia	30.0	654.8	-.4	1,238	3.9
Florida	504.1	7,424.5	.8	685	3.8
Georgia	245.6	3,845.6	.2	734	2.8
Hawaii	37.4	583.0	1.3	678	3.7
Idaho	48.5	577.5	.6	579	1.8
Illinois	325.7	5,738.7	-1.2	827	3.2
Indiana	152.1	2,852.2	-.3	675	3.5
Iowa	90.6	1,418.5	.0	626	4.7
Kansas	82.2	1,298.3	-.9	631	2.8
Kentucky	105.7	1,740.6	.3	645	3.5
Louisiana	114.0	1,870.9	.5	628	2.4
Maine	47.4	595.8	.7	631	4.6
Maryland	150.4	2,466.4	.7	831	3.6
Massachusetts	206.6	3,154.6	-1.9	954	5.2
Michigan	251.3	4,365.8	-1.1	806	3.9
Minnesota	159.0	2,591.9	-.5	777	3.2
Mississippi	65.6	1,108.1	.4	559	3.7
Missouri	165.4	2,633.6	-.7	676	2.4
Montana	42.0	396.6	1.1	549	4.0
Nebraska	55.3	884.4	.6	613	3.2
Nevada	60.3	1,111.2	4.4	721	5.1
New Hampshire	47.0	614.9	.6	788	4.0
New Jersey	268.1	3,912.8	.1	945	3.4
New Mexico	50.4	757.1	1.4	612	4.1
New York	550.3	8,379.2	-.4	959	5.2
North Carolina	227.8	3,759.6	-.1	679	4.5
North Dakota	24.0	317.6	.9	563	4.3
Ohio	294.2	5,322.4	-.7	713	3.8
Oklahoma	91.6	1,423.4	-1.3	597	4.2
Oregon	118.8	1,579.8	.2	694	3.3
Pennsylvania	326.9	5,524.5	-.2	750	4.7
Rhode Island	34.7	480.5	1.2	738	5.1
South Carolina	108.4	1,781.0	.3	623	3.1
South Dakota	28.1	365.4	.3	559	4.1
Tennessee	128.4	2,648.0	.4	689	4.2
Texas	505.3	9,300.1	-.3	754	3.1
Utah	73.9	1,066.2	1.2	630	2.3
Vermont	24.1	300.7	.3	661	5.1
Virginia	202.6	3,477.5	1.2	786	5.2
Washington	222.7	2,654.7	1.0	759	1.3
West Virginia	47.2	685.2	.1	587	2.1
Wisconsin	157.6	2,715.4	.0	683	4.1
Wyoming	22.0	241.6	1.7	616	4.1
Puerto Rico	50.2	1,074.1	3.5	450	4.7
Virgin Islands	3.2	42.5	-.2	629	2.4

[1] Average weekly wages were calculated using unrounded data.

[2] Totals for the United States do not include data for Puerto Rico or the Virgin Islands.

NOTE: Includes workers covered by Unemployment Insurance (UI) and Unemployment Compensation for Federal Employees (UCFE) programs. Data are preliminary.

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24. Annual data: Quarterly Census of Employment and Wages, by ownership

Year	Average establishments	Average annual employment	Total annual wages (in thousands)	Average annual wage per employee	Average weekly wage
	Total covered (UI and UCFE)				
1993	6,679,934	109,422,571	$2,884,472,282	$26,361	$507
1994	6,826,677	112,611,287	3,033,676,678	26,939	518
1995	7,040,677	115,487,841	3,215,921,236	27,846	536
1996	7,189,168	117,963,132	3,414,514,808	28,946	557
1997	7,369,473	121,044,432	3,674,031,718	30,353	584
1998	7,634,018	124,183,549	3,967,072,423	31,945	614
1999	7,820,860	127,042,282	4,235,579,204	33,340	641
2000	7,879,116	129,877,063	4,587,708,584	35,323	679
2001	7,984,529	129,635,800	4,695,225,123	36,219	697
2002	8,101,872	128,233,919	4,714,374,741	36,764	707
	UI covered				
1993	6,632,221	106,351,431	$2,771,023,411	$26,055	$501
1994	6,778,300	109,588,189	2,918,684,128	26,633	512
1995	6,990,594	112,539,795	3,102,353,355	27,567	530
1996	7,137,644	115,081,246	3,298,045,286	28,658	551
1997	7,317,363	118,233,942	3,553,933,885	30,058	578
1998	7,586,767	121,400,660	3,845,494,089	31,676	609
1999	7,771,198	124,255,714	4,112,169,533	33,094	636
2000	7,828,861	127,005,574	4,454,966,824	35,077	675
2001	7,933,536	126,883,182	4,560,511,280	35,943	691
2002	8,051,117	125,475,293	4,570,787,218	36,428	701
	Private industry covered				
1993	6,454,381	91,202,971	$2,365,301,493	$25,934	$499
1994	6,596,158	94,146,344	2,494,458,555	26,496	510
1995	6,803,454	96,894,844	2,658,927,216	27,441	528
1996	6,946,858	99,268,446	2,837,334,217	28,582	550
1997	7,121,182	102,175,161	3,071,807,287	30,064	578
1998	7,381,518	105,082,368	3,337,621,699	31,762	611
1999	7,560,567	107,619,457	3,577,738,557	33,244	639
2000	7,622,274	110,015,333	3,887,626,769	35,337	680
2001	7,724,965	109,304,802	3,952,152,155	36,157	695
2002	7,839,903	107,577,281	3,930,767,025	36,539	703
	State government covered				
1993	59,185	4,088,075	$117,095,062	$28,643	$551
1994	60,686	4,162,944	122,879,977	29,518	568
1995	60,763	4,201,836	128,143,491	30,497	586
1996	62,146	4,191,726	131,605,800	31,397	604
1997	65,352	4,214,451	137,057,432	32,521	625
1998	67,347	4,240,779	142,512,445	33,605	646
1999	70,538	4,296,673	149,011,194	34,681	667
2000	65,096	4,370,160	158,618,365	36,296	698
2001	64,583	4,452,237	168,358,331	37,814	727
2002	64,447	4,485,071	175,866,492	39,212	754
	Local government covered				
1993	118,626	11,059,500	$288,594,697	$26,095	$502
1994	121,425	11,278,080	301,315,857	26,717	514
1995	126,342	11,442,238	315,252,346	27,552	530
1996	128,640	11,621,074	329,105,269	28,320	545
1997	130,829	11,844,330	345,069,166	29,134	560
1998	137,902	12,077,513	365,359,945	30,251	582
1999	140,093	12,339,584	385,419,781	31,234	601
2000	141,491	12,620,081	408,721,690	32,387	623
2001	143,989	13,126,143	440,000,795	33,521	645
2002	146,767	13,412,941	464,153,701	34,605	665
	Federal Government covered (UCFE)				
1993	47,714	3,071,140	$113,448,871	$36,940	$710
1994	48,377	3,023,098	114,992,550	38,038	731
1995	50,083	2,948,046	113,567,881	38,523	741
1996	51,524	2,881,887	116,469,523	40,414	777
1997	52,110	2,810,489	120,097,833	42,732	822
1998	47,252	2,782,888	121,578,334	43,688	840
1999	49,661	2,786,567	123,409,672	44,287	852
2000	50,256	2,871,489	132,741,760	46,228	889
2001	50,993	2,752,619	134,713,843	48,940	941
2002	50,755	2,758,627	143,587,523	52,050	1,001

NOTE: Detail may not add to totals due to rounding. Data reflect the movement of Indian Tribal Council establishments from private industry to the public sector. See Notes on Current Labor Statistics.

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25. Annual data: Quarterly Census of Employment and Wages, establishment size and employment, private ownership, by supersector, first quarter 2003

Industry, establishments, and employment	Total	Size of establishments								
		Fewer than 5 workers[1]	5 to 9 workers	10 to 19 workers	20 to 49 workers	50 to 99 workers	100 to 249 workers	250 to 499 workers	500 to 999 workers	1,000 or more workers
Total all industries[2]										
Establishments, first quarter	7,933,974	4,768,812	1,331,834	872,241	597,662	203,030	115,598	28,856	10,454	5,487
Employment, March	105,583,548	7,095,128	8,810,097	11,763,253	18,025,655	13,970,194	17,299,058	9,864,934	7,090,739	11,664,490
Natural resources and mining										
Establishments, first quarter	124,527	72,088	23,248	14,773	9,226	2,893	1,593	501	161	44
Employment, March	1,526,176	110,155	153,629	198,895	275,811	198,122	241,559	171,063	108,563	68,379
Construction										
Establishments, first quarter	795,029	523,747	129,201	76,215	46,096	12,837	5,604	1,006	262	61
Employment, March	6,285,841	746,296	846,521	1,021,722	1,371,071	872,274	823,846	338,107	172,944	93,060
Manufacturing										
Establishments, first quarter	381,159	148,469	65,027	57,354	54,261	25,927	19,813	6,506	2,565	1,237
Employment, March	14,606,928	252,443	436,028	788,581	1,685,563	1,815,385	3,043,444	2,245,183	1,732,368	2,607,933
Trade, transportation, and utilities										
Establishments, first quarter	1,851,662	992,180	378,157	239,637	149,960	51,507	31,351	6,681	1,619	570
Employment, March	24,683,356	1,646,304	2,514,548	3,204,840	4,527,709	3,564,316	4,661,898	2,277,121	1,070,141	1,216,479
Information										
Establishments, first quarter	147,062	84,906	20,744	16,130	13,539	5,920	3,773	1,223	575	252
Employment, March	3,208,667	112,409	138,076	220,618	416,670	410,513	576,674	418,113	399,366	516,228
Financial activities										
Establishments, first quarter	753,064	480,485	135,759	76,733	39,003	11,743	6,195	1,794	883	469
Employment, March	7,753,717	788,607	892,451	1,017,662	1,162,498	801,140	934,618	620,183	601,549	935,009
Professional and business services										
Establishments, first quarter	1,307,697	887,875	180,458	111,532	73,599	28,471	17,856	5,153	1,919	834
Employment, March	15,648,435	1,230,208	1,184,745	1,501,470	2,232,506	1,969,466	2,707,203	1,762,251	1,307,870	1,752,716
Education and health services										
Establishments, first quarter	720,207	338,139	164,622	103,683	65,173	24,086	17,122	3,929	1,761	1,692
Employment, March	15,680,834	629,968	1,092,329	1,392,099	1,955,861	1,679,708	2,558,300	1,337,188	1,220,921	3,814,460
Leisure and hospitality										
Establishments, first quarter	657,359	260,149	110,499	118,140	122,168	34,166	9,718	1,609	599	311
Employment, March	11,731,379	411,192	744,144	1,653,470	3,683,448	2,285,550	1,372,780	545,304	404,831	630,660
Other services										
Establishments, first quarter	1,057,236	851,231	116,940	56,238	24,235	5,451	2,561	454	109	17
Employment, March	4,243,633	1,037,360	761,518	740,752	703,957	371,774	376,832	150,421	71,453	29,566

[1] Includes establishments that reported no workers in March 2003.

[2] Includes data for unclassified establishments, not shown separately.

NOTE: Details may not add to totals due to rounding. Data are only produced for first quarter. Data are preliminary.

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26. Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Metropolitan areas[3]	$37,908	$38,423	1.4
Abilene, TX	25,141	25,517	1.5
Akron, OH	32,930	34,037	3.4
Albany, GA	28,877	29,913	3.6
Albany-Schenectady-Troy, NY	35,355	35,994	1.8
Albuquerque, NM	31,667	32,475	2.6
Alexandria, LA	26,296	27,300	3.8
Allentown-Bethlehem-Easton, PA	33,569	34,789	3.6
Altoona, PA	26,869	27,360	1.8
Amarillo, TX	27,422	28,274	3.1
Anchorage, AK	37,998	39,112	2.9
Ann Arbor, MI	37,582	39,220	4.4
Anniston, AL	26,486	27,547	4.0
Appleton-Oshkosh-Neenah, WI	32,652	33,020	1.1
Asheville, NC	28,511	28,771	.9
Athens, GA	28,966	29,942	3.4
Atlanta, GA	40,559	41,123	1.4
Atlantic-Cape May, NJ	31,268	32,201	3.0
Auburn-Opelika, AL	25,753	26,405	2.5
Augusta-Aiken, GA-SC	30,626	31,743	3.6
Austin-San Marcos, TX	40,831	39,540	-3.2
Bakersfield, CA	30,106	31,192	3.6
Baltimore, MD	37,495	38,718	3.3
Bangor, ME	27,850	28,446	2.1
Barnstable-Yarmouth, MA	31,025	32,028	3.2
Baton Rouge, LA	30,321	31,366	3.4
Beaumont-Port Arthur, TX	31,798	32,577	2.4
Bellingham, WA	27,724	28,284	2.0
Benton Harbor, MI	31,140	32,627	4.8
Bergen-Passaic, NJ	44,701	45,185	1.1
Billings, MT	27,889	28,553	2.4
Biloxi-Gulfport-Pascagoula, MS	28,351	28,515	.6
Binghamton, NY	31,187	31,832	2.1
Birmingham, AL	34,519	35,940	4.1
Bismarck, ND	27,116	27,993	3.2
Bloomington, IN	28,013	28,855	3.0
Bloomington-Normal, IL	35,111	36,133	2.9
Boise City, ID	31,624	31,955	1.0
Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH	45,766	45,685	-.2
Boulder-Longmont, CO	44,310	44,037	-.6
Brazoria, TX	35,655	36,253	1.7
Bremerton, WA	31,525	33,775	7.1
Brownsville-Harlingen-San Benito, TX	22,142	22,892	3.4
Bryan-College Station, TX	25,755	26,051	1.1
Buffalo-Niagara Falls, NY	32,054	32,777	2.3
Burlington, VT	34,363	35,169	2.3
Canton-Massillon, OH	29,020	29,689	2.3
Casper, WY	28,264	28,886	2.2
Cedar Rapids, IA	34,649	34,730	.2
Champaign-Urbana, IL	30,488	31,995	4.9
Charleston-North Charleston, SC	28,887	29,993	3.8
Charleston, WV	31,530	32,136	1.9
Charlotte-Gastonia-Rock Hill, NC-SC	37,267	38,413	3.1
Charlottesville, VA	32,427	33,328	2.8
Chattanooga, TN-GA	29,981	30,631	2.2
Cheyenne, WY	27,579	28,827	4.5
Chicago, IL	42,685	43,239	1.3
Chico-Paradise, CA	26,499	27,190	2.6
Cincinnati, OH-KY-IN	36,050	37,168	3.1
Clarksville-Hopkinsville, TN-KY	25,567	26,940	5.4
Cleveland-Lorain-Elyria, OH	35,514	36,102	1.7
Colorado Springs, CO	34,391	34,681	.8
Columbia, MO	28,490	29,135	2.3
Columbia, SC	29,904	30,721	2.7
Columbus, GA-AL	28,412	29,207	2.8
Columbus, OH	35,028	36,144	3.2
Corpus Christi, TX	29,361	30,168	2.7
Corvallis, OR	35,525	36,766	3.5
Cumberland, MD-WV	25,504	26,704	4.7
Dallas, TX	42,706	43,000	.7
Danville, VA	25,465	26,116	2.6

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Davenport-Moline-Rock Island, IA-IL	$31,275	$32,118	2.7
Dayton-Springfield, OH	33,619	34,327	2.1
Daytona Beach, FL	25,953	26,898	3.6
Decatur, AL	30,891	30,370	-1.7
Decatur, IL	33,354	33,215	-.4
Denver, CO	42,351	42,133	-.5
Des Moines, IA	34,303	35,641	3.9
Detroit, MI	42,704	43,224	1.2
Dothan, AL	28,026	29,270	4.4
Dover, DE	27,754	29,818	7.4
Dubuque, IA	28,402	29,208	2.8
Duluth-Superior, MN-WI	29,415	30,581	4.0
Dutchess County, NY	38,748	38,221	-1.4
Eau Claire, WI	27,680	28,760	3.9
El Paso, TX	25,847	26,604	2.9
Elkhart-Goshen, IN	30,797	32,427	5.3
Elmira, NY	28,669	29,151	1.7
Enid, OK	24,836	25,507	2.7
Erie, PA	29,293	29,780	1.7
Eugene-Springfield, OR	28,983	29,427	1.5
Evansville-Henderson, IN-KY	31,042	31,977	3.0
Fargo-Moorhead, ND-MN	27,899	29,053	4.1
Fayetteville, NC	26,981	28,298	4.9
Fayetteville-Springdale-Rogers, AR	29,940	31,090	3.8
Flagstaff, AZ-UT	25,890	26,846	3.7
Flint, MI	35,995	36,507	1.4
Florence, AL	25,639	26,591	3.7
Florence, SC	28,800	29,563	2.6
Fort Collins-Loveland, CO	33,248	34,215	2.9
Fort Lauderdale, FL	33,966	34,475	1.5
Fort Myers-Cape Coral, FL	29,432	30,324	3.0
Fort Pierce-Port St. Lucie, FL	27,742	29,152	5.1
Fort Smith, AR-OK	26,755	27,075	1.2
Fort Walton Beach, FL	26,151	27,242	4.2
Fort Wayne, IN	31,400	32,053	2.1
Fort Worth-Arlington, TX	36,379	37,195	2.2
Fresno, CA	27,647	28,814	4.2
Gadsden, AL	25,760	26,214	1.8
Gainesville, FL	26,917	27,648	2.7
Galveston-Texas City, TX	31,067	31,920	2.7
Gary, IN	31,948	32,432	1.5
Glens Falls, NY	27,885	28,931	3.8
Goldsboro, NC	25,398	25,821	1.7
Grand Forks, ND-MN	24,959	25,710	3.0
Grand Junction, CO	27,426	28,331	3.3
Grand Rapids-Muskegon-Holland, MI	33,431	34,214	2.3
Great Falls, MT	24,211	25,035	3.4
Greeley, CO	30,066	31,104	3.5
Green Bay, WI	32,631	33,698	3.3
Greensboro–Winston-Salem–High Point, NC	31,730	32,369	2.0
Greenville, NC	28,289	29,055	2.7
Greenville-Spartanburg-Anderson, SC	30,940	31,726	2.5
Hagerstown, MD	29,020	30,034	3.5
Hamilton-Middletown, OH	32,325	32,985	2.0
Harrisburg-Lebanon-Carlisle, PA	33,408	34,497	3.3
Hartford, CT	43,880	44,387	1.2
Hattiesburg, MS	25,145	26,051	3.6
Hickory-Morganton-Lenoir, NC	27,305	27,996	2.5
Honolulu, HI	32,531	33,978	4.4
Houma, LA	30,343	30,758	1.4
Houston, TX	42,784	42,712	-.2
Huntington-Ashland, WV-KY-OH	27,478	28,321	3.1
Huntsville, AL	36,727	38,571	5.0
Indianapolis, IN	35,989	36,608	1.7
Iowa City, IA	31,663	32,567	2.9
Jackson, MI	32,454	33,251	2.5
Jackson, MS	29,813	30,537	2.4
Jackson, TN	29,414	30,443	3.5
Jacksonville, FL	32,367	33,722	4.2
Jacksonville, NC	21,395	22,269	4.1

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Jamestown, NY	$25,913	$26,430	2.0
Janesville-Beloit, WI	31,482	32,837	4.3
Jersey City, NJ	47,638	49,562	4.0
Johnson City-Kingsport-Bristol, TN-VA	28,543	29,076	1.9
Johnstown, PA	25,569	26,161	2.3
Jonesboro, AR	25,337	26,165	3.3
Joplin, MO	26,011	26,594	2.2
Kalamazoo-Battle Creek, MI	32,905	34,237	4.0
Kankakee, IL	29,104	30,015	3.1
Kansas City, MO-KS	35,794	36,731	2.6
Kenosha, WI	31,562	32,473	2.9
Killeen-Temple, TX	26,193	27,299	4.2
Knoxville, TN	30,422	31,338	3.0
Kokomo, IN	39,599	40,778	3.0
La Crosse, WI-MN	27,774	28,719	3.4
Lafayette, LA	29,693	30,104	1.4
Lafayette, IN	31,484	31,700	.7
Lake Charles, LA	29,782	30,346	1.9
Lakeland-Winter Haven, FL	28,890	29,505	2.1
Lancaster, PA	31,493	32,197	2.2
Lansing-East Lansing, MI	34,724	35,785	3.1
Laredo, TX	24,128	24,739	2.5
Las Cruces, NM	24,310	25,256	3.9
Las Vegas, NV-AZ	32,239	33,280	3.2
Lawrence, KS	25,923	26,621	2.7
Lawton, OK	24,812	25,392	2.3
Lewiston-Auburn, ME	27,092	28,435	5.0
Lexington, KY	31,593	32,776	3.7
Lima, OH	29,644	30,379	2.5
Lincoln, NE	29,352	30,614	4.3
Little Rock-North Little Rock, AR	30,858	31,634	2.5
Longview-Marshall, TX	28,029	28,172	.5
Los Angeles-Long Beach, CA	40,891	41,709	2.0
Louisville, KY-IN	33,058	33,901	2.6
Lubbock, TX	26,577	27,625	3.9
Lynchburg, VA	28,859	29,444	2.0
Macon, GA	30,595	31,884	4.2
Madison, WI	34,097	35,410	3.9
Mansfield, OH	28,808	30,104	4.5
McAllen-Edinburg-Mission, TX	22,313	23,179	3.9
Medford-Ashland, OR	27,224	28,098	3.2
Melbourne-Titusville-Palm Bay, FL	32,798	33,913	3.4
Memphis, TN-AR-MS	34,603	35,922	3.8
Merced, CA	25,479	26,771	5.1
Miami, FL	34,524	35,694	3.4
Middlesex-Somerset-Hunterdon, NJ	49,950	50,457	1.0
Milwaukee-Waukesha, WI	35,617	36,523	2.5
Minneapolis-St. Paul, MN-WI	40,868	41,722	2.1
Missoula, MT	26,181	27,249	4.1
Mobile, AL	28,129	28,742	2.2
Modesto, CA	29,591	30,769	4.0
Monmouth-Ocean, NJ	37,056	37,710	1.8
Monroe, LA	26,578	27,614	3.9
Montgomery, AL	29,150	30,525	4.7
Muncie, IN	28,374	29,017	2.3
Myrtle Beach, SC	24,029	24,672	2.7
Naples, FL	30,839	31,507	2.2
Nashville, TN	33,989	35,036	3.1
Nassau-Suffolk, NY	39,662	40,396	1.9
New Haven-Bridgeport-Stamford-Waterbury-Danbury, CT	52,198	51,170	-2.0
New London-Norwich, CT	38,505	38,650	.4
New Orleans, LA	31,089	32,407	4.2
New York, NY	59,097	57,708	-2.4
Newark, NJ	47,715	48,781	2.2
Newburgh, NY-PA	29,827	30,920	3.7
Norfolk-Virginia Beach-Newport News, VA-NC	29,875	30,823	3.2
Oakland, CA	45,920	46,877	2.1
Ocala, FL	26,012	26,628	2.4
Odessa-Midland, TX	31,278	31,295	.1
Oklahoma City, OK	28,915	29,850	3.2

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Olympia, WA	$32,772	$33,765	3.0
Omaha, NE-IA	31,856	33,107	3.9
Orange County, CA	40,252	41,219	2.4
Orlando, FL	31,276	32,461	3.8
Owensboro, KY	27,306	28,196	3.3
Panama City, FL	26,433	27,448	3.8
Parkersburg-Marietta, WV-OH	27,920	29,529	5.8
Pensacola, FL	28,059	28,189	.5
Peoria-Pekin, IL	33,293	34,261	2.9
Philadelphia, PA-NJ	40,231	41,121	2.2
Phoenix-Mesa, AZ	35,514	36,045	1.5
Pine Bluff, AR	27,561	28,698	4.1
Pittsburgh, PA	35,024	35,625	1.7
Pittsfield, MA	31,561	32,707	3.6
Pocatello, ID	24,621	25,219	2.4
Portland, ME	32,327	33,309	3.0
Portland-Vancouver, OR-WA	37,285	37,650	1.0
Providence-Warwick-Pawtucket, RI	33,403	34,610	3.6
Provo-Orem, UT	28,266	28,416	.5
Pueblo, CO	27,097	27,763	2.5
Punta Gorda, FL	25,404	26,119	2.8
Racine, WI	33,319	34,368	3.1
Raleigh-Durham-Chapel Hill, NC	38,691	39,056	.9
Rapid City, SD	25,508	26,434	3.6
Reading, PA	32,807	33,912	3.4
Redding, CA	28,129	28,961	3.0
Reno, NV	34,231	34,744	1.5
Richland-Kennewick-Pasco, WA	33,370	35,174	5.4
Richmond-Petersburg, VA	35,879	36,751	2.4
Riverside-San Bernardino, CA	30,510	31,591	3.5
Roanoke, VA	30,330	31,775	4.8
Rochester, MN	37,753	39,036	3.4
Rochester, NY	34,327	34,827	1.5
Rockford, IL	32,104	32,827	2.3
Rocky Mount, NC	28,770	28,893	.4
Sacramento, CA	38,016	39,354	3.5
Saginaw-Bay City-Midland, MI	35,429	35,444	.0
St. Cloud, MN	28,263	29,535	4.5
St. Joseph, MO	27,734	28,507	2.8
St. Louis, MO-IL	35,928	36,712	2.2
Salem, OR	28,336	29,210	3.1
Salinas, CA	31,735	32,463	2.3
Salt Lake City-Ogden, UT	31,965	32,600	2.0
San Angelo, TX	26,147	26,321	.7
San Antonio, TX	30,650	31,336	2.2
San Diego, CA	38,418	39,305	2.3
San Francisco, CA	59,654	56,602	-5.1
San Jose, CA	65,931	63,056	-4.4
San Luis Obispo-Atascadero-Paso Robles, CA	29,092	29,981	3.1
Santa Barbara-Santa Maria-Lompoc, CA	33,626	34,382	2.2
Santa Cruz-Watsonville, CA	35,022	35,721	2.0
Santa Fe, NM	30,671	32,269	5.2
Santa Rosa, CA	36,145	36,494	1.0
Sarasota-Bradenton, FL	27,958	28,950	3.5
Savannah, GA	30,176	30,796	2.1
Scranton--Wilkes-Barre--Hazleton, PA	28,642	29,336	2.4
Seattle-Bellevue-Everett, WA	45,299	46,093	1.8
Sharon, PA	26,707	27,872	4.4
Sheboygan, WI	30,840	32,148	4.2
Sherman-Denison, TX	30,397	30,085	-1.0
Shreveport-Bossier City, LA	27,856	28,769	3.3
Sioux City, IA-NE	26,755	27,543	2.9
Sioux Falls, SD	28,962	29,975	3.5
South Bend, IN	30,769	31,821	3.4
Spokane, WA	29,310	30,037	2.5
Springfield, IL	36,061	37,336	3.5
Springfield, MO	27,338	27,987	2.4
Springfield, MA	32,801	33,972	3.6
State College, PA	29,939	30,910	3.2
Steubenville-Weirton, OH-WV	28,483	29,129	2.3

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Stockton-Lodi, CA	$30,818	$31,958	3.7
Sumter, SC	24,450	24,982	2.2
Syracuse, NY	32,254	33,752	4.6
Tacoma, WA	31,261	32,507	4.0
Tallahassee, FL	29,708	30,895	4.0
Tampa-St. Petersburg-Clearwater, FL	31,678	32,458	2.5
Terre Haute, IN	27,334	28,415	4.0
Texarkana, TX-Texarkana, AR	26,492	27,717	4.6
Toledo, OH	32,299	33,513	3.8
Topeka, KS	30,513	31,707	3.9
Trenton, NJ	46,831	47,969	2.4
Tucson, AZ	30,690	31,673	3.2
Tulsa, OK	31,904	32,241	1.1
Tuscaloosa, AL	29,972	30,745	2.6
Tyler, TX	30,551	31,050	1.6
Utica-Rome, NY	27,777	28,500	2.6
Vallejo-Fairfield-Napa, CA	33,903	34,543	1.9
Ventura, CA	37,783	38,195	1.1
Victoria, TX	29,068	29,168	.3
Vineland-Millville-Bridgeton, NJ	32,571	33,625	3.2
Visalia-Tulare-Porterville, CA	24,732	25,650	3.7
Waco, TX	28,245	28,885	2.3
Washington, DC-MD-VA-WV	47,589	48,430	1.8
Waterloo-Cedar Falls, IA	29,119	29,916	2.7
Wausau, WI	29,402	30,292	3.0
West Palm Beach-Boca Raton, FL	35,957	36,550	1.6
Wheeling, WV-OH	26,282	26,693	1.6
Wichita, KS	32,983	33,429	1.4
Wichita Falls, TX	25,557	26,387	3.2
Williamsport, PA	27,801	27,988	.7
Wilmington-Newark, DE-MD	42,177	43,401	2.9
Wilmington, NC	29,287	29,157	-.4
Yakima, WA	24,204	24,934	3.0
Yolo, CA	35,352	35,591	.7
York, PA	31,936	32,609	2.1
Youngstown-Warren, OH	28,789	29,799	3.5
Yuba City, CA	27,781	28,967	4.3
Yuma, AZ	22,415	23,429	4.5
Aguadilla, PR	18,061	19,283	6.8
Arecibo, PR	16,600	18,063	8.8
Caguas, PR	18,655	19,706	5.6
Mayaguez, PR	17,101	17,500	2.3
Ponce, PR	17,397	18,187	4.5
San Juan-Bayamon, PR	20,948	21,930	4.7

[1] Includes data for Metropolitan Statistical Areas (MSA) and Primary Metropolitan Statistical Areas (PMSA) as defined by OMB Bulletin No. 99-04. In the New England areas, the New England County Metropolitan Area (NECMA) definitions were used.

[2] Each year's total is based on the MSA definition for the specific year. Annual changes include differences resulting from changes in MSA definitions.

[3] Totals do not include the six MSAs within Puerto Rico.

NOTE: Includes workers covered by Unemployment Insurance (UI) and Unemployment Compensation for Federal Employees (UCFE) programs.

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27. Annual data: Employment status of the population

[Numbers in thousands]

Employment status	1994[1]	1995	1996	1997[1]	1998[1]	1999[1]	2000[1]	2001	2002	2003	2004
Civilian noninstitutional population	196,814	198,584	200,591	203,133	205,220	207,753	212,577	215,092	217,570	221,168	223,357
Civilian labor force	131,056	132,304	133,943	136,297	137,673	139,368	142,583	143,734	144,863	146,510	147,401
Labor force participation rate	66.6	66.6	66.8	67.1	67.1	67.1	67.1	66.8	66.6	66.2	66.0
Employed	123,060	124,900	126,708	129,558	131,463	133,488	136,891	136,933	136,485	137,736	139,252
Employment-population ratio	62.5	62.9	63.2	63.8	64.1	64.3	64.4	63.7	62.7	62.3	62.3
Unemployed	7,996	7,404	7,236	6,739	6,210	5,880	5,692	6,801	8,378	8,774	8,149
Unemployment rate	6.1	5.6	5.4	4.9	4.5	4.2	4.0	4.7	5.8	6.0	5.5
Not in the labor force	65,758	66,280	66,647	66,836	67,547	68,385	69,994	71,359	72,707	74,658	75,956

[1] Not strictly comparable with prior years.

28. Annual data: Employment levels by industry

[In thousands]

Industry	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total private employment	95,016	97,866	100,169	103,113	106,021	108,686	110,996	110,707	108,828	108,356	109,863
Total nonfarm employment	114,291	117,298	119,708	122,770	125,930	128,993	131,785	131,826	130,341	129,931	131,481
Goods-producing	22,774	23,156	23,410	23,886	24,354	24,465	24,649	23,873	22,557	21,817	21,885
Natural resources and mining	659	641	637	654	645	598	599	606	583	571	591
Construction	5,095	5,274	5,536	5,813	6,149	6,545	6,787	6,826	6,716	6,722	6,965
Manufacturing	17,021	17,241	17,237	17,419	17,560	17,322	17,263	16,441	15,259	14,525	14,329
Private service-providing	72,242	74,710	76,759	79,227	81,667	84,221	86,346	86,834	86,271	86,538	87,978
Trade, transportation, and utilities	23,128	23,834	24,239	24,700	25,186	25,771	26,225	25,983	25,497	25,275	25,511
Wholesale trade	5,247.3	5,433.1	5,522.0	5,663.9	5,795.2	5,892.5	5,933.2	5,772.7	5,652.3	5,605.6	5,655.3
Retail trade	13,490.8	13,896.7	14,142.5	14,388.9	14,609.3	14,970.1	15,279.8	15,238.6	15,025.1	14,911.5	15,034.4
Transportation and warehousing	3,701.0	3,837.8	3,935.3	4,026.5	4,168.0	4,300.3	4,410.3	4,372.0	4,223.6	4,176.7	4,250.7
Utilities	689.3	666.2	639.6	620.9	613.4	608.5	601.3	599.4	596.2	580.8	570.1
Information	2,738	2,843	2,940	3,084	3,218	3,419	3,631	3,629	3,395	3,198	3,138
Financial activities	6,867	6,827	6,969	7,178	7,462	7,648	7,687	7,807	7,847	7,974	8,052
Professional and business services	12,174	12,844	13,462	14,335	15,147	15,957	16,666	16,476	15,976	15,997	16,413
Education and health services	12,807	13,289	13,683	14,087	14,446	14,798	15,109	15,645	16,199	16,577	16,955
Leisure and hospitality	10,100	10,501	10,777	11,018	11,232	11,543	11,862	12,036	11,986	12,125	12,479
Other services	4,428	4,572	4,690	4,825	4,976	5,087	5,168	5,258	5,372	5,393	5,431
Government	19,275	19,432	19,539	19,664	19,909	20,307	20,790	21,118	21,513	21,575	21,619

NOTE: Data reflect the conversion to the 2002 version of the North American Industry Classification System (NAICS), replacing the Standard Industrrial Classification (SIC) system. NAICS-based data by industry are not comparable with SIC-based data. See "Notes on the data" for a description of the most recent benchmark revision.

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29. Annual data: Average hours and earnings of production or nonsupervisory workers on nonfarm payrolls, by industry

Industry	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Private sector:											
Average weekly hours	34.5	34.3	34.3	34.5	34.5	34.3	34.3	34.0	33.9	33.7	33.7
Average hourly earnings (in dollars)	11.32	11.64	12.03	12.49	13.00	13.47	14.00	14.53	14.95	15.35	15.67
Average weekly earnings (in dollars)	390.73	399.53	412.74	431.25	448.04	462.49	480.41	493.20	506.07	517.36	528.56
Goods-producing:											
Average weekly hours	41.1	40.8	40.8	41.1	40.8	40.8	40.7	39.9	39.9	39.8	40.0
Average hourly earnings (in dollars)	12.63	12.96	13.38	13.82	14.23	14.71	15.27	15.78	16.33	16.80	17.19
Average weekly earnings (in dollars)	519.58	528.62	546.48	568.43	580.99	599.99	621.86	630.04	651.61	669.23	687.99
Natural resources and mining											
Average weekly hours	45.3	45.3	46.0	46.2	44.9	44.2	44.4	44.6	43.2	43.6	44.5
Average hourly earnings (in dollars)	14.41	14.78	15.10	15.57	16.20	16.33	16.55	17.00	17.19	17.58	18.06
Average weekly earnings (in dollars)	653.14	670.32	695.07	720.11	727.28	721.74	734.92	757.92	741.97	766.83	802.95
Construction:											
Average weekly hours	38.8	38.8	38.9	38.9	38.8	39.0	39.2	38.7	38.4	38.4	38.3
Average hourly earnings (in dollars)	14.38	14.73	15.11	15.67	16.23	16.80	17.48	18.00	18.52	18.95	19.23
Average weekly earnings (in dollars)	558.53	571.57	588.48	609.48	629.75	655.11	685.78	695.89	711.82	727.11	735.70
Manufacturing:											
Average weekly hours	41.7	41.3	41.3	41.7	41.4	41.4	41.3	40.3	40.5	40.4	40.8
Average hourly earnings (in dollars)	12.04	12.34	12.75	13.14	13.45	13.85	14.32	14.76	15.29	15.74	16.14
Average weekly earnings (in dollars)	502.12	509.26	526.55	548.22	557.12	573.17	590.65	595.19	618.75	636.07	658.49
Private service-providing:											
Average weekly hours	32.7	32.6	32.6	32.8	32.8	32.7	32.7	32.5	32.5	32.4	32.3
Average hourly earnings (in dollars)	10.87	11.19	11.57	12.05	12.59	13.07	13.60	14.16	14.56	14.96	15.26
Average weekly earnings (in dollars)	354.97	364.14	376.72	394.77	412.78	427.30	445.00	460.32	472.88	484.00	493.70
Trade, transportation, and utilities:											
Average weekly hours	34.3	34.1	34.1	34.3	34.2	33.9	33.8	33.5	33.6	33.6	33.5
Average hourly earnings (in dollars)	10.80	11.10	11.46	11.90	12.39	12.82	13.31	13.70	14.02	14.34	14.59
Average weekly earnings (in dollars)	370.38	378.79	390.64	407.57	423.30	434.31	449.88	459.53	471.27	481.10	488.61
Wholesale trade:											
Average weekly hours	38.8	38.6	38.6	38.8	38.6	38.6	38.8	38.4	38.0	37.8	37.8
Average hourly earnings (in dollars)	12.93	13.34	13.80	14.41	15.07	15.62	16.28	16.77	16.98	17.36	17.66
Average weekly earnings (in dollars)	501.17	515.14	533.29	559.39	582.21	602.77	631.40	643.45	644.38	657.12	666.92
Retail trade:											
Average weekly hours	30.9	30.8	30.7	30.9	30.9	30.8	30.7	30.7	30.9	30.9	30.7
Average hourly earnings (in dollars)	8.61	8.85	9.21	9.59	10.05	10.45	10.86	11.29	11.67	11.90	12.08
Average weekly earnings (in dollars)	501.17	515.14	533.29	559.39	582.21	602.77	631.40	643.45	644.38	657.12	666.92
Transportation and warehousing:											
Average weekly hours	39.5	38.9	39.1	39.4	38.7	37.6	37.4	36.7	36.8	36.8	37.2
Average hourly earnings (in dollars)	12.84	13.18	13.45	13.78	14.12	14.55	15.05	15.33	15.76	16.25	16.53
Average weekly earnings (in dollars)	507.27	513.37	525.60	542.55	546.86	547.97	562.31	562.70	579.75	597.79	614.86
Utilities:											
Average weekly hours	42.3	42.3	42.0	42.0	42.0	42.0	42.0	41.4	40.9	41.1	41.0
Average hourly earnings (in dollars)	18.66	19.19	19.78	20.59	21.48	22.03	22.75	23.58	23.96	24.76	25.62
Average weekly earnings (in dollars)	789.98	811.52	830.74	865.26	902.94	924.59	955.66	977.18	979.09	1,016.94	1,049.10
Information:											
Average weekly hours	36.0	36.0	36.4	36.3	36.6	36.7	36.8	36.9	36.5	36.2	36.3
Average hourly earnings (in dollars)	15.32	15.68	16.30	17.14	17.67	18.40	19.07	19.80	20.20	21.01	21.42
Average weekly earnings (in dollars)	551.28	564.98	592.68	622.40	646.52	675.32	700.89	731.11	738.17	761.13	777.13
Financial activities:											
Average weekly hours	35.5	35.5	35.5	35.7	36.0	35.8	35.9	35.8	35.6	35.5	35.6
Average hourly earnings (in dollars)	11.82	12.28	12.71	13.22	13.93	14.47	14.98	15.59	16.17	17.13	17.53
Average weekly earnings (in dollars)	419.20	436.12	451.49	472.37	500.95	517.57	537.37	558.02	575.51	608.87	623.14
Professional and business services:											
Average weekly hours	34.1	34.0	34.1	34.3	34.3	34.4	34.5	34.2	34.2	34.1	34.2
Average hourly earnings (in dollars)	12.15	12.53	13.00	13.57	14.27	14.85	15.52	16.33	16.81	17.20	17.46
Average weekly earnings (in dollars)	414.16	426.44	442.81	465.51	490.00	510.99	535.07	557.84	574.66	586.68	596.96
Education and health services:											
Average weekly hours	32.0	32.0	31.9	32.2	32.2	32.1	32.2	32.3	32.4	32.3	32.4
Average hourly earnings (in dollars)	11.50	11.80	12.17	12.56	13.00	13.44	13.95	14.64	15.21	15.64	16.15
Average weekly earnings (in dollars)	368.14	377.73	388.27	404.65	418.82	431.35	449.29	473.39	492.74	505.76	523.95
Leisure and hospitality:											
Average weekly hours	26.0	25.9	25.9	26.0	26.2	26.1	26.1	25.8	25.8	25.6	25.7
Average hourly earnings (in dollars)	6.46	6.62	6.82	7.13	7.48	7.76	8.11	8.35	8.58	8.76	8.91
Average weekly earnings (in dollars)	168.00	171.43	176.48	185.81	195.82	202.87	211.79	215.19	221.26	224.25	228.79
Other services:											
Average weekly hours	32.7	32.6	32.5	32.7	32.6	32.5	32.5	32.3	32.0	31.4	31.0
Average hourly earnings (in dollars)	10.18	10.51	10.85	11.29	11.79	12.26	12.73	13.27	13.72	13.84	13.98
Average weekly earnings (in dollars)	332.44	342.36	352.62	368.63	384.25	398.77	413.41	428.64	439.76	434.49	433.04

NOTE: Data reflect the conversion to the 2002 version of the North American Industry Classification System (NAICS), replacing the Standard Industrial Classification (SIC) system. NAICS-based data by industry are not comparable with SIC-based data.

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30. Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	2002	2003				2004				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 2004	
Civilian workers[2]	162.2	164.5	165.8	167.6	168.4	170.7	172.2	173.9	174.7	0.5	3.7
Workers, by occupational group:											
White-collar workers	164.3	166.7	167.9	169.9	170.7	172.7	174.0	175.8	176.6	.5	3.5
Professional specialty and technical	162.4	164.1	165.0	167.0	168.0	170.2	171.2	173.6	174.7	.6	4.0
Executive, administrative, and managerial	166.7	171.1	172.0	174.0	174.9	175.8	177.1	178.2	179.4	.7	2.6
Administrative support, including clerical	166.1	168.3	170.0	171.7	172.5	175.3	177.2	178.7	180.0	.7	4.3
Blue-collar workers	157.5	159.8	161.4	162.9	163.7	166.9	168.8	170.1	170.9	.5	4.4
Service occupations	162.2	164.1	165.0	166.8	167.9	169.7	170.9	172.7	173.6	.5	3.4
Workers, by industry division:											
Goods-producing	169.2	163.1	164.6	165.8	166.8	170.4	171.9	173.4	174.4	.6	4.7
Manufacturing	160.5	164.0	165.4	166.5	167.1	171.7	173.2	174.9	175.4	.3	5.0
Service-producing	162.8	165.0	166.2	168.2	169.1	170.8	172.3	174.0	174.7	.4	3.3
Services	163.9	165.3	166.3	168.5	169.5	171.2	172.3	174.5	175.5	.6	3.5
Health services	164.5	166.4	167.6	169.3	170.7	173.0	174.4	176.7	177.7	.6	4.1
Hospitals	167.6	169.9	170.8	173.1	174.8	176.8	178.2	180.5	181.8	.7	4.0
Educational services	162.8	163.6	164.2	166.9	167.6	168.5	168.9	171.8	172.9	.6	3.2
Public administration[3]	161.7	163.4	164.3	167.3	168.1	170.1	171.4	174.1	175.4	.7	4.3
Nonmanufacturing	162.4	164.5	165.8	167.8	168.6	170.4	171.8	173.5	174.4	.5	3.4
Private industry workers	162.3	165.0	166.4	168.1	168.8	171.4	173.0	174.4	175.2	.5	3.8
Excluding sales occupations	162.4	165.1	166.6	168.1	169.0	171.6	173.2	174.6	175.6	.6	3.9
Workers, by occupational group:											
White-collar workers	165.2	168.1	169.4	171.2	172.0	174.2	175.7	177.3	178.1	.5	3.5
Excluding sales occupations	165.9	169.1	170.4	172.1	173.0	175.3	176.7	178.3	179.5	.7	3.8
Professional specialty and technical occupations	164.4	166.5	167.7	169.4	170.5	173.4	174.7	176.8	178.1	.7	4.5
Executive, administrative, and managerial occupations	167.2	172.1	173.1	175.0	175.9	176.8	178.1	179.2	180.2	.6	2.4
Sales occupations	161.9	163.5	165.1	167.2	167.1	169.2	171.2	173.1	171.4	−1.0	2.6
Administrative support occupations, including clerical	166.7	169.0	170.9	172.3	173.2	176.1	178.1	179.4	180.7	.7	4.4
Blue-collar workers	157.3	159.7	161.4	162.8	163.6	166.9	168.8	170.1	170.8	.4	4.4
Precision production, craft, and repair occupations	157.8	160.0	162.0	163.1	164.2	167.1	169.1	170.2	171.2	.6	4.3
Machine operators, assemblers, and inspectors	156.7	159.9	161.1	162.6	163.2	168.7	170.5	172.2	172.5	.2	5.7
Transportation and material moving occupations	151.8	153.2	155.1	156.7	156.9	158.5	160.6	161.8	162.3	.3	3.4
Handlers, equipment cleaners, helpers, and laborers	162.9	164.9	166.8	168.6	169.5	171.7	173.2	174.3	175.3	.6	3.4
Service occupations	159.8	161.7	162.6	163.8	164.3	166.9	168.2	168.9	169.7	.5	2.9
Production and nonsupervisory occupations[4]	160.5	162.6	164.1	165.7	166.6	169.3	171.0	172.4	173.0	.3	3.8
Workers, by industry division:											
Goods-producing	160.1	163.0	164.5	165.7	166.5	170.3	171.8	173.3	174.3	.6	4.7
Excluding sales occupations	159.2	162.4	163.8	165.0	165.9	169.8	171.2	172.5	173.7	.7	4.7
White-collar occupations	164.3	167.8	169.2	170.1	170.5	173.5	174.7	176.4	177.8	.8	4.3
Excluding sales occupations	162.3	166.3	167.5	168.5	169.2	172.2	173.3	174.5	176.4	1.1	4.3
Blue-collar occupations	157.3	159.9	161.5	162.9	163.9	168.1	169.8	171.3	172.0	.4	4.9
Construction	157.9	159.1	161.1	162.3	163.3	164.6	165.9	167.0	167.3	.2	2.4
Manufacturing	160.5	164.0	165.4	166.5	167.1	171.7	173.2	174.9	175.4	.3	5.0
White-collar occupations	163.3	167.1	168.7	169.5	169.6	173.2	174.6	176.4	176.7	.2	4.2
Excluding sales occupations	160.7	165.1	166.4	167.4	167.8	171.3	172.6	174.1	174.7	.3	4.1
Blue-collar occupations	158.3	161.6	162.8	164.1	165.1	170.4	172.0	173.7	174.3	.3	5.6
Durables	160.6	164.4	165.5	166.6	167.3	172.4	174.0	175.8	176.3	.3	5.4
Nondurables	160.3	163.1	164.9	166.0	166.6	170.4	171.7	173.1	173.6	.3	4.2
Service-producing	163.1	165.6	167.0	168.8	169.7	171.6	173.3	174.7	175.3	.3	3.3
Excluding sales occupations	164.0	166.6	168.0	169.7	170.6	172.5	174.2	175.6	176.5	.5	3.5
White-collar occupations	165.1	167.9	169.2	171.2	172.0	174.1	175.7	177.3	177.8	.3	3.4
Excluding sales occupations	167.0	169.9	171.3	173.1	174.2	176.2	177.8	179.4	180.4	.6	3.6
Blue-collar occupations	156.9	158.7	160.8	162.2	162.6	164.1	166.4	167.4	168.1	.4	3.4
Service occupations	159.3	161.1	162.0	163.2	164.3	166.1	167.4	168.1	168.9	.5	2.8
Transportation and public utilities	161.7	163.2	165.4	166.5	167.0	169.8	172.5	173.6	173.5	−.1	3.9
Transportation	156.1	157.8	158.9	159.4	159.6	162.0	164.7	166.2	166.2	.0	4.1
Public utilities	169.2	170.5	174.2	176.4	177.0	180.4	183.1	183.6	183.4	−.1	3.6
Communications	170.1	171.3	175.5	178.4	179.0	182.2	183.6	183.6	183.5	−.2	2.5
Electric, gas, and sanitary services	168.1	169.5	172.6	173.8	174.6	178.2	182.4	183.3	183.3	.0	5.0
Wholesale and retail trade	159.7	161.3	162.5	164.3	165.0	166.3	168.1	169.1	169.1	.0	2.5
Excluding sales occupations	160.4	161.8	162.7	165.0	165.9	167.4	168.6	169.6	170.4	.5	2.7
Wholesale trade	166.7	169.5	171.3	172.0	172.0	173.8	175.9	177.8	176.6	−.7	2.7
Excluding sales occupations	167.2	168.4	169.9	171.2	171.3	173.7	174.0	175.3	176.3	.6	2.9
Retail trade	155.8	156.6	157.4	159.9	161.0	162.1	163.7	164.2	164.7	.3	2.3
General merchandise stores	155.1	156.4	159.2	161.2	165.6	165.8	166.2	168.8	169.5	.4	2.4
Food stores	156.3	157.5	158.6	159.3	160.3	162.1	163.5	163.5	164.0	.3	2.3

See footnotes at end of table.

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30. Continued—Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	2002	2003				2004				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 2004	
Finance, insurance, and real estate	168.5	176.7	178.3	180.2	180.9	182.5	183.6	184.8	186.0	0.6	2.8
Excluding sales occupations	173.1	182.0	184.0	1,853.0	186.1	186.6	188.7	190.9	191.2	.6	2.7
Banking, savings and loan, and other credit agencies	185.3	204.3	206.3	207.6	209.0	207.2	208.9	210.5	212.3	.9	1.6
Insurance	167.9	172.1	173.9	175.1	176.2	177.8	180.5	182.1	183.6	.8	4.2
Services	165.4	167.1	168.4	170.4	171.4	173.5	175.1	176.9	177.9	.6	3.8
Business services	167.5	168.5	169.2	171.9	172.6	174.8	176.9	178.5	179.1	.3	3.8
Health services	164.4	166.5	167.9	169.4	170.8	173.3	174.8	177.0	178.0	.6	4.2
Hospitals	168.1	170.8	171.9	173.9	175.9	178.1	179.7	181.8	183.2	.8	4.2
Educational services	175.2	176.3	177.1	180.2	181.3	183.1	184.2	187.0	188.5	.8	4.0
Colleges and universities	173.7	174.5	175.4	178.4	179.4	181.2	182.5	185.2	186.2	.5	3.8
Nonmanufacturing	162.5	164.9	166.4	168.1	169.0	170.9	172.5	173.9	174.7	.5	3.4
White-collar workers	165.3	168.0	169.3	171.2	172.1	174.1	175.7	177.2	178.0	.5	3.4
Excluding sales occupations	167.1	170.0	171.4	173.2	174.2	176.2	177.7	179.3	180.6	.7	3.7
Blue-collar occupations	155.9	157.5	159.7	161.1	161.7	163.4	165.5	166.4	167.3	.5	3.5
Service occupations	159.2	161.1	162.0	163.2	162.4	166.0	167.3	168.0	168.9	.5	2.9
State and local government workers	161.5	162.6	163.2	165.9	166.8	168.0	168.7	171.5	172.6	.6	3.5
Workers, by occupational group:											
White-collar workers	160.7	161.7	162.2	164.9	165.7	166.8	167.5	170.0	171.2	.7	3.3
Professional specialty and technical	159.4	160.2	160.8	163.4	164.1	165.1	165.6	168.4	169.4	.6	3.2
Executive, administrative, and managerial	163.8	165.3	165.7	168.0	169.1	170.1	171.0	172.1	174.3	1.3	3.1
Administrative support, including clerical	162.4	163.8	164.4	167.9	168.5	170.4	171.8	174.3	175.5	.7	4.2
Blue-collar workers	159.8	161.3	161.7	163.6	165.2	166.7	167.5	169.9	171.0	.6	3.5
Workers, by industry division:											
Services	160.9	161.8	162.3	164.9	165.7	166.5	166.8	169.7	170.8	.6	3.1
Services excluding schools[5]	162.8	164.0	164.2	166.8	168.2	169.4	170.1	173.0	173.8	.5	3.3
Health services	165.5	166.4	166.7	169.5	171.0	172.2	172.9	175.7	176.8	.6	3.4
Hospitals	166.2	167.0	167.3	170.3	171.4	172.4	173.2	176.3	177.4	.6	3.5
Educational services	160.3	161.1	161.7	164.3	165.0	165.7	165.9	168.8	169.9	.7	3.0
Schools	160.7	161.4	162.0	164.7	165.3	166.0	166.3	169.2	170.3	.7	3.0
Elementary and secondary	158.8	159.4	160.0	163.0	163.7	164.4	164.6	168.0	169.2	.7	3.4
Colleges and universities	165.8	167.0	167.5	169.2	170.0	170.7	171.0	172.4	173.2	.5	1.9
Public administration[3]	161.7	163.4	164.3	167.3	168.1	170.1	171.4	174.1	175.4	.7	4.3

[1] Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

[2] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[3] Consists of legislative, judicial, administrative, and regulatory activities.

[4] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[5] Includes, for example, library, social, and health services.

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31. Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	2002	2003				2004				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 2004	
Civilian workers[1]	157.8	159.3	160.3	161.8	162.3	163.3	164.3	165.7	166.2	0.3	2.4
Workers, by occupational group:											
White-collar workers	160.1	161.9	162.9	164.5	165.1	166.1	167.1	168.7	169.1	.2	2.4
Professional specialty and technical	158.6	159.3	160.1	161.8	162.5	163.8	164.4	166.5	167.0	.3	2.8
Executive, administrative, and managerial	163.8	167.9	169.0	170.5	171.2	171.4	172.4	173.4	174.4	.6	1.9
Administrative support, including clerical	160.6	161.8	163.1	164.3	164.9	166.3	167.5	168.8	169.7	.5	2.9
Blue-collar workers	152.6	153.8	154.8	155.8	156.3	157.3	158.4	159.7	160.0	.2	2.4
Service occupations	156.9	158.0	158.7	159.8	160.6	161.2	161.9	162.8	163.6	.5	1.9
Workers, by industry division:											
Goods-producing	155.1	156.3	157.5	158.3	160.6	159.9	161.0	162.3	162.4	.1	2.3
Manufacturing	156.5	158.0	159.0	159.7	160.1	161.3	162.4	163.8	164.0	.1	2.4
Service-producing	158.8	160.5	161.4	163.0	163.6	164.6	165.5	167.0	167.5	.3	2.4
Services	161.1	161.9	162.8	164.7	165.4	166.5	167.4	167.3	170.1	.5	2.8
Health services	160.9	162.0	163.2	164.7	165.9	167.7	168.6	170.8	171.7	.5	3.5
Hospitals	162.2	163.5	164.4	166.3	167.7	169.0	169.9	171.8	173.2	.8	3.3
Educational services	160.1	160.4	160.7	162.7	163.2	163.6	163.8	166.0	166.8	.5	2.2
Public administration[2]	155.8	157.2	158.0	159.4	160.0	161.1	161.4	162.6	163.5	.6	2.2
Nonmanufacturing	158.0	159.6	160.5	162.1	162.7	163.7	164.6	166.0	166.5	.3	2.3
Private industry workers	157.5	159.3	160.4	161.7	162.3	163.4	164.5	165.9	166.2	.2	2.4
Excluding sales occupations	157.9	159.4	160.5	161.7	162.4	163.5	164.5	165.8	166.5	.4	2.5
Workers, by occupational group:											
White-collar workers	160.4	162.6	163.8	165.3	165.9	167.1	168.2	169.7	170.0	.2	2.5
Excluding sales occupations	160.8	163.6	164.8	166.2	167.0	168.1	169.2	170.6	171.4	.5	2.6
Professional specialty and technical occupations	158.5	159.5	160.5	162.1	163.0	164.7	165.5	167.6	168.0	.2	3.1
Executive, administrative, and managerial occupations	164.5	169.1	170.3	171.8	172.5	172.7	173.9	174.9	175.7	.5	1.9
Sales occupations	156.8	158.1	159.3	161.6	161.1	162.6	163.9	165.9	164.0	−1.1	1.8
Administrative support occupations, including clerical	161.3	162.6	164.0	165.1	165.7	167.2	168.6	169.7	170.8	.6	3.1
Blue-collar workers	152.4	153.6	154.6	155.6	156.1	157.2	158.3	159.5	159.9	.3	2.4
Precision production, craft, and repair occupations	152.3	153.4	154.7	155.5	156.2	157.1	158.3	159.3	159.7	.3	2.2
Machine operators, assemblers, and inspectors	153.2	154.7	155.3	156.8	156.9	158.6	159.8	161.6	161.6	.0	3.0
Transportation and material moving occupations	146.9	147.8	149.0	149.8	149.8	150.4	151.8	152.9	153.3	.3	2.3
Handlers, equipment cleaners, helpers, and laborers	157.2	158.4	159.0	159.9	160.6	161.8	162.7	163.6	164.5	.6	2.4
Service occupations	154.4	155.5	156.1	157.1	157.8	158.4	159.3	159.8	160.6	.5	1.8
Production and nonsupervisory occupations[3]	155.2	156.4	157.4	158.8	159.4	160.7	161.7	163.1	163.4	.2	2.5
Workers, by industry division:											
Goods-producing	155.0	156.3	157.4	158.3	158.7	159.9	160.9	162.3	162.4	.1	2.3
Excluding sales occupations	154.0	155.4	156.5	157.4	158.0	159.2	160.2	161.2	161.6	.2	2.3
White-collar occupations	158.6	160.0	161.4	161.9	162.1	163.2	164.5	166.0	165.9	−.1	2.3
Excluding sales occupations	156.3	158.0	159.2	159.9	160.4	161.5	162.7	163.6	164.1	.3	2.3
Blue-collar occupations	152.6	153.8	154.8	155.9	156.4	157.7	158.6	159.8	160.1	.2	2.4
Construction	150.2	150.6	152.4	153.6	154.0	155.1	155.9	157.1	157.0	−.1	1.9
Manufacturing	156.5	158.0	159.0	159.7	160.1	161.3	162.4	163.8	164.0	.1	2.4
White-collar occupations	158.6	160.1	161.6	162.0	162.1	163.3	164.7	166.1	166.1	.0	2.5
Excluding sales occupations	155.9	157.7	158.9	159.5	160.0	161.2	162.5	163.5	163.9	.2	2.4
Blue-collar occupations	154.7	156.3	156.9	157.9	158.5	159.8	160.6	162.1	162.4	.2	2.5
Durables	157.3	158.8	159.7	160.6	160.9	161.9	162.9	164.5	164.7	.1	2.4
Nondurables	155.2	156.6	157.8	158.3	158.7	160.4	161.6	162.8	162.9	.1	2.6
Service-producing	158.6	160.6	161.7	163.3	163.9	165.0	166.1	167.5	167.9	.2	2.4
Excluding sales occupations	159.6	161.7	162.8	164.2	165.0	166.0	167.1	168.5	169.3	.5	2.6
White-collar occupations	160.7	163.0	164.1	166.0	166.6	167.8	168.9	170.4	170.8	.2	2.5
Excluding sales occupations	162.8	165.3	166.5	168.2	169.0	170.2	171.2	172.8	173.6	.5	2.7
Blue-collar occupations	152.0	153.2	154.3	155.1	155.4	156.2	157.8	158.9	159.4	.3	2.6
Service occupations	154.1	155.1	155.6	156.6	157.4	158.0	158.8	159.4	160.2	.5	1.8
Transportation and public utilities	154.1	154.8	155.6	156.0	156.5	157.6	159.1	160.4	160.5	.1	2.6
Transportation	150.1	150.5	150.6	150.4	150.8	151.7	153.4	155.0	155.1	.1	2.9
Public utilities	159.3	160.4	162.1	163.4	164.1	165.3	166.4	167.5	167.5	.0	2.1
Communications	160.7	161.9	163.4	165.4	165.9	167.0	167.5	168.8	168.3	−.3	1.4
Electric, gas, and sanitary services	157.4	158.6	160.4	161.0	161.8	163.3	165.1	165.9	166.6	.4	3.0
Wholesale and retail trade	155.5	156.7	157.5	159.2	159.5	160.3	161.6	162.5	162.1	−.2	1.6
Wholesale trade	161.0	163.4	164.7	164.8	165.3	166.2	167.8	169.7	167.5	−1.3	1.3
Excluding sales occupations	163.7	163.9	165.2	165.7	166.3	167.8	167.6	168.6	168.9	.2	1.6
Retail trade	152.7	153.1	153.8	156.3	156.5	157.3	158.4	158.7	159.3	.4	1.8
General merchandise stores	149.2	149.8	152.0	153.1	153.6	154.1	154.9	157.5	158.1	.4	2.9
Food stores	150.3	151.0	151.6	152.2	152.8	153.8	154.3	154.5	155.0	.3	1.4

See footnotes at end of table.

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31. Continued—Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	2002	2003				2004				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 2004	
Finance, insurance, and real estate	162.6	171.1	172.4	174.1	174.5	175.2	175.3	176.5	177.7	0.7	1.8
Excluding sales occupations	167.3	176.7	178.5	179.2	210.2	179.2	180.5	181.8	182.9	.6	1.7
Banking, savings and loan, and other credit agencies	183.9	206.4	208.7	209.1	164.5	206.7	207.6	209.5	211.3	.9	.5
Insurance	159.1	161.6	163.0	163.9	164.5	165.1	167.2	168.9	170.4	.9	3.6
Services	161.7	162.8	164.0	165.9	166.7	168.1	169.3	171.1	172.0	.5	3.2
Business services	164.8	165.6	166.4	169.1	169.8	171.0	172.7	174.3	175.0	.4	3.1
Health services	160.7	161.9	163.2	164.6	135.8	167.8	168.8	170.9	171.9	.6	3.7
Hospitals	162.1	163.6	164.6	166.5	167.9	169.4	170.5	172.4	173.8	.8	3.5
Educational services	166.5	167.1	167.5	170.3	171.0	171.9	172.6	175.5	176.8	.7	3.4
Colleges and universities	164.3	164.4	165.1	167.6	168.4	169.5	170.0	172.9	173.6	.4	3.1
Nonmanufacturing	157.5	159.4	160.5	162.1	162.6	163.7	164.8	166.2	166.6	.2	2.5
White-collar workers	160.5	162.8	163.9	165.7	166.3	167.5	168.6	170.1	170.5	.2	2.5
Excluding sales occupations	162.5	164.9	166.1	167.7	168.5	169.7	170.7	172.3	173.1	.5	2.7
Blue-collar occupations	150.2	151.1	152.4	153.4	153.8	154.7	156.1	157.1	157.5	.3	2.4
Service occupations	154.0	155.0	155.5	156.5	157.3	157.9	158.7	159.2	160.1	.6	1.8
State and local government workers	161.5	162.6	163.2	165.9	166.8	168.0	168.7	171.5	172.6	.5	2.1
Workers, by occupational group:											
White-collar workers	158.4	158.9	159.2	161.0	161.5	162.1	162.4	164.1	164.9	.5	2.1
Professional specialty and technical	158.4	158.8	159.1	161.0	161.4	162.1	162.3	164.4	165.0	.4	2.2
Executive, administrative, and managerial	160.1	160.9	161.0	162.5	163.3	163.5	163.8	164.3	166.1	1.1	1.7
Administrative support, including clerical	156.0	156.9	157.2	159.1	159.5	160.4	160.8	162.6	163.0	.2	2.2
Blue-collar workers	155.1	156.2	156.5	157.6	158.3	158.9	159.2	160.7	161.4	.4	2.0
Workers, by industry division:											
Services	159.2	159.5	159.8	161.6	162.1	162.6	162.7	164.8	165.5	.4	2.1
Services excluding schools[4]	160.3	161.4	161.8	163.2	164.5	165.1	165.6	167.5	168.3	.5	2.3
Health services	162.2	162.9	163.5	165.1	166.7	167.4	167.8	169.6	170.7	.6	2.4
Hospitals	162.5	163.1	163.8	165.5	166.7	167.4	167.9	169.9	171.0	.6	2.6
Educational services	158.9	159.1	159.3	161.2	161.6	162.0	162.1	164.2	164.9	.4	2.0
Schools	159.0	159.2	159.5	161.4	161.8	162.1	162.3	164.3	165.0	.4	2.0
Elementary and secondary	158.1	158.2	158.5	160.6	160.9	161.3	161.5	163.8	164.5	.4	2.2
Colleges and universities	161.6	162.1	162.1	163.5	164.0	164.3	164.4	165.4	166.3	.5	1.4
Public administration[2]	155.8	157.2	158.0	159.4	160.0	161.1	161.4	162.6	163.5	.6	2.2

[1] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[2] Consists of legislative, judicial, administrative, and regulatory activities.

[3] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[4] Includes, for example, library, social, and health services.

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32. Employment Cost Index, benefits, private industry workers by occupation and industry group

[June 1989 = 100]

Series	2002	2003				2004				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec .2004	
Private industry workers	174.6	179.6	182.0	184.3	185.8	192.2	195.3	196.9	198.7	0.9	6.9
Workers, by occupational group:											
White-collar workers	178.5	183.6	185.5	187.7	189.2	194.4	197.4	199.1	201.1	1.0	6.3
Blue-collar workers	167.8	172.7	176.1	178.4	179.9	188.3	191.8	193.3	194.9	.8	8.3
Workers, by industry division:											
Goods-producing	171.0	178.0	180.2	182.3	183.8	193.7	196.2	198.1	201.2	1.6	9.5
Service-producing	175.9	179.9	182.3	184.7	186.2	190.6	194.1	195.5	196.5	.5	5.5
Manufacturing	168.9	176.9	179.0	181.1	182.3	194.4	196.9	199.2	200.4	.6	9.9
Nonmanufacturing	176.3	180.3	182.8	185.1	186.7	190.9	194.3	195.7	197.6	1.0	5.8

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33. Employment Cost Index, private nonfarm workers by bargaining status, region, and area size

[June 1989 = 100]

Series	2002	2003				2004				Percent change	
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	3 months ended	12 months ended
										Dec. 2004	
COMPENSATION											
Workers, by bargaining status[1]											
Union	159.5	162.1	164.1	165.7	166.8	171.4	173.9	175.3	176.2	0.5	5.6
Goods-producing	157.8	161.4	163.4	164.7	165.9	172.3	174.6	176.0	176.7	.4	6.5
Service-producing	161.1	162.6	164.6	166.5	167.5	170.2	172.9	174.4	175.4	.6	4.7
Manufacturing	157.9	162.3	163.8	165.0	166.3	175.0	177.0	178.4	178.9	.3	7.6
Nonmanufacturing	159.9	161.4	163.7	165.5	166.5	168.8	171.6	173.0	174.1	.6	4.6
Nonunion	162.8	165.4	166.8	168.4	169.1	171.3	172.7	174.2	174.9	.4	3.4
Goods-producing	160.8	163.6	164.9	166.1	166.7	169.7	170.9	172.4	173.5	.6	4.1
Service-producing	163.3	165.9	167.2	169.0	169.8	171.6	173.2	174.6	175.1	.3	3.1
Manufacturing	161.3	164.5	165.8	166.9	167.3	170.6	172.0	173.8	174.3	.3	4.2
Nonmanufacturing	162.9	165.4	166.7	168.5	139.3	171.1	172.6	174.0	174.7	.4	3.2
Workers, by region[1]											
Northeast	161.3	163.8	165.2	166.9	167.9	170.2	172.3	173.7	174.2	.3	3.8
South	159.0	160.6	161.6	163.2	163.9	166.4	167.9	169.5	170.6	.6	4.1
Midwest (formerly North Central)	164.6	169.0	170.4	171.7	172.5	174.7	176.2	177.6	177.9	.2	3.1
West	165.0	167.3	169.5	171.4	172.2	175.3	176.8	178.1	179.0	.5	3.9
Workers, by area size[1]											
Metropolitan areas	162.5	165.2	166.6	168.3	169.1	171.5	173.1	174.6	175.3	.4	3.7
Other areas	169.8	163.5	165.0	166.1	166.9	170.2	172.1	173.3	174.3	.6	4.4
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	152.5	153.3	154.3	155.3	156.2	157.2	158.7	160.0	160.6	.4	2.8
Goods-producing	151.2	152.4	153.9	154.8	155.4	156.3	157.5	158.7	158.9	.1	2.3
Service-producing	154.1	154.6	155.1	156.3	157.3	158.5	160.3	161.7	162.6	.6	3.4
Manufacturing	153.1	154.6	155.9	156.7	157.1	158.1	159.2	160.5	160.7	.1	2.3
Nonmanufacturing	152.1	152.5	153.5	154.6	155.6	156.6	158.4	159.6	160.4	.5	3.1
Nonunion	158.5	160.4	161.5	163.0	163.4	164.6	165.6	167.0	167.3	.2	2.4
Goods-producing	156.6	157.8	158.9	159.7	160.1	161.4	162.4	163.8	163.9	.1	2.4
Service-producing	159.0	161.2	162.3	164.0	164.5	165.6	166.6	168.0	168.4	.2	2.4
Manufacturing	157.8	159.3	160.2	160.9	161.3	162.6	163.7	165.2	165.3	.1	2.5
Nonmanufacturing	158.3	160.4	161.5	163.1	163.7	164.7	165.7	167.1	167.5	.2	2.3
Workers, by region[1]											
Northeast	155.7	157.3	158.4	160.0	160.9	162.0	163.6	164.9	165.0	.1	2.5
South	154.6	155.3	156.1	157.4	157.9	159.1	160.1	161.6	162.3	.4	2.8
Midwest (formerly North Central)	160.2	164.1	165.0	166.1	166.5	166.9	167.7	169.2	169.2	.0	1.6
West	160.1	161.3	163.1	164.7	165.2	166.8	167.9	169.1	169.5	.2	2.6
Workers, by area size[1]											
Metropolitan areas	157.9	159.6	160.7	162.2	162.7	163.8	164.9	163.3	166.6	.2	2.4
Other areas	154.8	156.8	158.0	158.9	159.5	160.8	162.1	162.1	163.8	.3	2.7

[1] The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the *Monthly Labor Review* Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

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34. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, medium and large private establishments, selected years, 1980–97

Item	1980	1982	1984	1986	1988	1989	1991	1993	1995	1997
Scope of survey (in 000's)	21,352	21,043	21,013	21,303	31,059	32,428	31,163	28,728	33,374	38,409
Number of employees (in 000's):										
With medical care	20,711	20,412	20,383	20,238	27,953	29,834	25,865	23,519	25,546	29,340
With life insurance	20,498	20,201	20,172	20,451	28,574	30,482	29,293	26,175	29,078	33,495
With defined benefit plan	17,936	17,676	17,231	16,190	19,567	20,430	18,386	16,015	17,417	19,202
Time-off plans										
Participants with:										
Paid lunch time	10	9	9	10	11	10	8	9	–	–
Average minutes per day	–	25	26	27	29	26	30	29	–	–
Paid rest time	75	76	73	72	72	71	67	68	–	–
Average minutes per day	–	25	26	26	26	26	28	26	–	–
Paid funeral leave	–	–	–	88	85	84	80	83	80	81
Average days per occurrence	–	–	–	3.2	3.2	3.3	3.3	3.0	3.3	3.7
Paid holidays	99	99	99	99	96	97	92	91	89	89
Average days per year	10.1	10.0	9.8	10.0	9.4	9.2	10.2	9.4	9.1	9.3
Paid personal leave	20	24	23	25	24	22	21	21	22	20
Average days per year	–	3.8	3.6	3.7	3.3	3.1	3.3	3.1	3.3	3.5
Paid vacations	100	99	99	100	98	97	96	97	96	95
Paid sick leave [1]	62	67	67	70	69	68	67	65	58	56
Unpaid maternity leave	–	–	–	–	33	37	37	60	–	–
Unpaid paternity leave	–	–	–	–	16	18	26	53	–	–
Unpaid family leave	–	–	–	–	–	–	–	–	84	93
Insurance plans										
Participants in medical care plans	97	97	97	95	90	92	83	82	77	76
Percent of participants with coverage for:										
Home health care	–	–	46	66	76	75	81	86	78	85
Extended care facilities	58	62	62	70	79	80	80	82	73	78
Physical exam	–	–	8	18	28	28	30	42	56	63
Percent of participants with employee contribution required for:										
Self coverage	26	27	36	43	44	47	51	61	67	69
Average monthly contribution	–	–	$11.93	$12.80	$19.29	$25.31	$26.60	$31.55	$33.92	$39.14
Family coverage	46	51	58	63	64	66	69	76	78	80
Average monthly contribution	–	–	$35.93	$41.40	$60.07	$72.10	$96.97	$107.42	$118.33	$130.07
Participants in life insurance plans	96	96	96	96	92	94	94	91	87	87
Percent of participants with:										
Accidental death and dismemberment insurance	69	72	74	72	78	71	71	76	77	74
Survivor income benefits	–	–	–	10	8	7	6	5	7	6
Retiree protection available	–	64	64	59	49	42	44	41	37	33
Participants in long-term disability insurance plans	40	43	47	48	42	45	40	41	42	43
Participants in sickness and accident insurance plans	54	51	51	49	46	43	45	44	–	–
Participants in short-term disability plans [1]	–	–	–	–	–	–	–	–	53	55
Retirement plans										
Participants in defined benefit pension plans	84	84	82	76	63	63	59	56	52	50
Percent of participants with:										
Normal retirement prior to age 65	55	58	63	64	59	62	55	52	52	52
Early retirement available	98	97	97	98	98	97	98	95	96	95
Ad hoc pension increase in last 5 years	–	–	47	35	26	22	7	6	4	10
Terminal earnings formula	53	52	54	57	55	64	56	61	58	56
Benefit coordinated with Social Security	45	45	56	62	62	63	54	48	51	49
Participants in defined contribution plans	–	–	–	60	45	48	48	49	55	57
Participants in plans with tax-deferred savings arrangements	–	–	–	33	36	41	44	43	54	55
Other benefits										
Employees eligible for:										
Flexible benefits plans	–	–	–	2	5	9	10	12	12	13
Reimbursement accounts [2]	–	–	–	5	12	23	36	52	38	32
Premium conversion plans	–	–	–	–	–	–	–	–	5	7

[1] The definitions for paid sick leave and short-term disability (previously sickness and accident insurance) were changed for the 1995 survey. Paid sick leave now includes only plans that specify either a maximum number of days per year or unlimited days. Short-terms disability now includes all insured, self-insured, and State-mandated plans available on a per-disability basis, as well as the unfunded per-disability plans previously reported as sick leave. Sickness and accident insurance, reported in years prior to this survey, included only insured, self-insured, and State-mandated plans providing per-disability benefits at less than full pay.

[2] Prior to 1995, reimbursement accounts included premium conversion plans, which specifically allow medical plan participants to pay required plan premiums with pretax dollars. Also, reimbursement accounts that were part of flexible benefit plans were tabulated separately.

NOTE: Dash indicates data not available.

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35. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, small private establishments and State and local governments, 1987, 1990, 1992, 1994, and 1996

Item	Small private establishments				State and local governments			
	1990	1992	1994	1996	1987	1990	1992	1994
Scope of survey (in 000's)	32,466	34,360	35,910	39,816	10,321	12,972	12,466	12,907
Number of employees (in 000's):								
With medical care	22,402	24,396	23,536	25,599	9,599	12,064	11,219	11,192
With life insurance	20,778	21,990	21,955	24,635	8,773	11,415	11,095	11,194
With defined benefit plan	6,493	7,559	5,480	5,883	9,599	11,675	10,845	11,708
Time-off plans								
Participants with:								
Paid lunch time	8	9	–	–	17	11	10	–
Average minutes per day	37	37	–	–	34	36	34	–
Paid rest time	48	49	–	–	58	56	53	–
Average minutes per day	27	26	–	–	29	29	29	–
Paid funeral leave	47	50	50	51	56	63	65	62
Average days per occurrence	2.9	3.0	3.1	3.0	3.7	3.7	3.7	3.7
Paid holidays	84	82	82	80	81	74	75	73
Average days per year[1]	9.5	9.2	7.5	7.6	10.9	13.6	14.2	11.5
Paid personal leave	11	12	13	14	38	39	38	38
Average days per year	2.8	2.6	2.6	3.0	2.7	2.9	2.9	3.0
Paid vacations	88	88	88	86	72	67	67	66
Paid sick leave [2]	47	53	50	50	97	95	95	94
Unpaid leave	17	18	–	–	57	51	59	–
Unpaid paternity leave	8	7	–	–	30	33	44	–
Unpaid family leave	–	–	47	48	–	–	–	93
Insurance plans								
Participants in medical care plans	69	71	66	64	93	93	90	87
Percent of participants with coverage for:								
Home health care	79	80	–	–	76	82	87	84
Extended care facilities	83	84	–	–	78	79	84	81
Physical exam	26	28	–	–	36	36	47	55
Percent of participants with employee contribution required for:								
Self coverage	42	47	52	52	35	38	43	47
Average monthly contribution	$25.13	$36.51	$40.97	$42.63	$15.74	$25.53	$28.97	$30.20
Family coverage	67	73	76	75	71	65	72	71
Average monthly contribution	$109.34	$150.54	$159.63	$181.53	$71.89	$117.59	$139.23	$149.70
Participants in life insurance plans	64	64	61	62	85	88	89	87
Percent of participants with:								
Accidental death and dismemberment insurance	78	76	79	77	67	67	74	64
Survivor income benefits	1	1	2	1	1	1	1	2
Retiree protection available	19	25	20	13	55	45	46	46
Participants in long-term disability insurance plans	19	23	20	22	31	27	28	30
Participants in sickness and accident insurance plans	6	26	26	–	14	21	22	21
Participants in short-term disability plans [2]	–	–	–	29	–	–	–	–
Retirement plans								
Participants in defined benefit pension plans	20	22	15	15	93	90	87	91
Percent of participants with:								
Normal retirement prior to age 65	54	50	–	47	92	89	92	92
Early retirement available	95	95	–	92	90	88	89	87
Ad hoc pension increase in last 5 years	7	4	–	–	33	16	10	13
Terminal earnings formula	58	54	–	53	100	100	100	99
Benefit coordinated with Social Security	49	46	–	44	18	8	10	49
Participants in defined contribution plans	31	33	34	38	9	9	9	9
Participants in plans with tax-deferred savings arrangements	17	24	23	28	28	45	45	24
Other benefits								
Employees eligible for:								
Flexible benefits plans	1	2	3	4	5	5	5	5
Reimbursement accounts [3]	8	14	19	12	5	31	50	64
Premium conversion plans	–	–	–	7	–	–	–	–

[1] Methods used to calculate the average number of paid holidays were revised in 1994 to count partial days more precisely. Average holidays for 1994 are not comparable with those reported in 1990 and 1992.

[2] The definitions for paid sick leave and short-term disability (previously sickness and accident insurance) were changed for the 1996 survey. Paid sick leave now includes only plans that specify either a maximum number of days per year or unlimited days. Short-term disability now includes all insured, self-insured, and State-mandated plans available on a per-disability basis, as well as the unfunded per-disability plans previously reported as sick leave. Sickness and accident insurance, reported in years prior to this survey, included only insured, self-insured, and State-mandated plans providing per-disability benefits at less than full pay.

[3] Prior to 1996, reimbursement accounts included premium conversion plans, which specifically allow medical plan participants to pay required plan premiums with pretax dollars. Also, reimbursement accounts that were part of flexible benefit plans were tabulated separately.

NOTE: Dash indicates data not available.

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36. Work stoppages involving 1,000 workers or more

Measure	Annual totals		2003	2004[P]										
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number of stoppages:															
Beginning in period	14	15	0	0	1	1	0	2	3	0	2	2	–	1	2
In effect during period	15	16	2	1	2	1	1	2	4	1	2	3	–	3	2
Workers involved:															
Beginning in period (in thousands)	129.2	168.2	.0	.0	6.5	2.2	.0	103.0	27.6	.0	3.7	4.5	10.0	2.0	8.5
In effect during period (in thousands)	130.5	316.5	70.5	61.3	66.5	2.2	2.2	103.0	28.6	1.6	3.7	6.5	16.1	16.1	8.5
Days idle:															
Number (in thousands)	4,091.2	3,290.9	1,473.4	1,203.9	1,146.5	44.0	26.4	204.0	94.0	3.2	52.5	57.0	300.0	107.7	51.5
Percent of estimated working time[1]	.01	.01	.05	.05	.05	([2])	([2])	.01	([2])	([2])	.00	([2])	.01	([2])	([2])

[1] Agricultural and government employees are included in the total employed and total working time; private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in "Total economy measures of strike idleness," *Monthly Labor Review*, October 1968, pp.54–56.

[2] Less than 0.005.

NOTE: Dash indicates data not available. P = preliminary.

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37. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		2003	2004											
	2003	2004	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS															
All items	184.0	188.9	184.3	185.2	186.2	187.4	188.0	189.1	189.7	189.4	189.5	189.9	190.9	191.0	190.3
All items (1967 = 100)	551.1	565.8	552.1	554.9	557.9	561.5	563.2	566.4	568.2	567.5	567.6	568.7	571.9	572.2	570.1
Food and beverages	180.5	186.6	184.7	184.3	184.5	184.9	185.0	186.5	186.8	187.2	187.3	187.2	188.4	188.6	188.9
Food	180.0	186.2	180.0	183.8	184.1	184.4	184.5	186.1	186.3	186.8	186.8	186.7	187.9	188.2	188.5
Food at home	179.4	186.2	184.1	184.0	184.0	184.3	184.1	186.6	186.8	187.1	186.7	186.1	187.9	188.1	188.5
Cereals and bakery products	202.8	206.0	202.9	203.9	204.4	204.8	205.5	206.1	206.8	207.2	207.2	206.4	207.0	206.8	206.4
Meats, poultry, fish, and eggs	169.3	181.7	181.1	179.9	179.7	179.5	179.2	181.1	182.3	183.7	183.7	183.4	182.9	182.4	183.1
Dairy and related products[1]	167.9	180.2	173.0	172.4	172.1	171.9	174.0	185.9	188.8	187.7	184.9	181.6	182.1	180.9	180.1
Fruits and vegetables	225.9	232.7	232.4	232.4	229.7	230.1	228.3	231.7	226.7	224.5	224.0	226.0	240.0	248.3	250.8
Nonalcoholic beverages and beverage materials	139.8	140.4	139.3	140.7	141.4	140.8	139.7	169.9	139.8	140.5	140.3	140.3	140.6	139.6	140.4
Other foods at home	162.6	164.9	163.0	162.8	163.7	165.1	165.0	165.4	165.8	166.0	166.2	165.2	165.4	164.4	163.6
Sugar and sweets	162.0	163.2	161.0	163.0	163.9	163.3	162.6	163.5	162.8	163.8	164.4	163.5	162.6	163.1	161.3
Fats and oils	157.4	167.8	157.7	160.7	162.3	166.2	166.2	169.4	171.3	171.9	169.7	170.4	170.2	167.8	167.4
Other foods	178.8	179.7	179.6	178.0	178.9	180.4	180.4	180.1	180.5	180.3	180.9	179.4	180.1	178.9	178.3
Other miscellaneous foods[1,2]	110.3	110.4	109.8	109.1	109.5	111.7	110.5	110.8	110.9	109.4	111.5	110.5	109.9	110.5	110.8
Food away from home[1]	182.1	187.5	184.3	184.9	185.5	185.8	186.2	186.7	187.0	187.8	188.4	188.9	189.4	189.6	189.9
Other food away from home[1,2]	121.3	125.3	122.9	123.9	124.0	124.1	124.7	124.8	124.8	125.1	125.4	125.9	126.8	126.7	127.0
Alcoholic beverages	187.2	192.1	188.7	189.4	189.9	190.8	191.8	191.7	192.4	192.2	192.5	193.4	193.6	194.0	193.9
Housing	184.8	189.5	185.1	186.3	187.0	187.9	188.4	188.9	190.3	190.9	191.2	191.0	191.0	190.8	190.7
Shelter	213.1	218.8	213.1	215.2	216.0	217.8	218.4	218.7	219.2	220.0	220.3	220.2	220.6	219.9	219.8
Rent of primary residence	205.5	211.0	205.5	208.3	208.8	209.2	209.7	210.2	210.7	211.2	211.9	212.4	212.8	213.2	213.9
Lodging away from home	119.3	125.9	119.3	117.2	120.0	128.1	129.1	128.2	129.1	132.2	130.6	127.2	128.0	121.9	118.7
Owners' equivalent rent of primary residence[3]	219.9	224.9	219.9	222.6	222.9	223.3	223.9	224.3	224.7	225.1	225.7	226.1	226.5	226.8	227.2
Tenants' and household insurance[1,2]	114.8	116.2	114.8	114.8	115.0	115.1	115.7	116.1	116.2	116.1	116.3	116.6	116.3	117.7	118.7
Fuels and utilities	154.5	161.9	154.5	156.3	156.9	155.2	155.6	158.1	165.5	166.6	167.7	166.7	162.8	165.6	165.7
Fuels	138.2	144.4	138.7	139.2	139.5	137.6	138.0	140.4	148.5	149.5	150.5	149.3	144.9	147.8	148.0
Fuel oil and other fuels	139.5	160.5	139.1	149.9	155.1	152.5	149.6	150.4	150.7	151.1	157.4	161.6	177.3	186.6	183.7
Gas (piped) and electricity	145.0	150.6	145.0	145.5	145.5	143.5	144.2	146.8	155.8	156.9	157.6	156.0	150.0	152.7	153.0
Household furnishings and operations	126.1	125.5	124.7	125.3	125.7	125.7	125.6	125.4	125.6	125.2	124.8	125.0	126.1	125.8	125.5
Apparel	120.9	120.4	119.0	115.8	118.6	123.5	124.3	123.4	120.1	115.9	116.5	121.2	124.1	123.0	118.8
Men's and boys' apparel	118.0	117.5	118.0	115.5	117.1	119.8	120.3	120.3	117.7	115.2	113.8	116.2	118.3	118.9	116.3
Women's and girls' apparel	113.1	113.0	110.9	105.7	110.3	117.6	118.7	116.9	112.3	106.1	107.5	114.4	119.2	116.8	110.0
Infants' and toddlers' apparel[1]	122.1	118.5	119.2	117.7	119.3	121.9	120.5	118.1	116.2	114.5	115.0	119.5	120.6	120.3	118.6
Footwear	119.6	119.3	118.5	115.9	117.0	120.1	121.0	120.3	118.4	115.1	117.3	121.7	122.1	121.8	120.3
Transportation	157.6	163.1	154.7	157.0	158.8	160.5	161.8	165.2	165.7	164.0	162.9	162.9	166.4	167.2	164.8
Private transportation	153.6	159.4	150.8	153.2	154.9	156.6	157.9	161.5	161.9	160.0	159.1	159.4	162.9	163.6	161.3
New and used motor vehicles[2]	96.5	94.2	94.4	94.3	94.4	94.2	94.1	94.0	93.6	93.5	93.4	93.9	94.3	95.2	95.4
New vehicles	137.9	137.1	138.0	138.0	138.3	137.9	137.6	137.4	137.2	135.9	134.9	134.9	135.9	137.9	138.8
Used cars and trucks[1]	142.9	133.3	131.0	130.8	131.0	131.2	131.3	131.8	130.6	132.1	133.8	136.5	136.8	136.7	137.3
Motor fuel	135.8	160.4	127.8	136.7	143.1	150.5	155.9	170.5	173.3	165.2	162.0	161.2	173.1	171.9	161.2
Gasoline (all types)	135.1	159.7	127.2	136.1	142.5	149.8	155.3	169.8	172.7	164.5	161.2	160.5	172.2	171.0	160.4
Motor vehicle parts and equipment	107.8	108.7	107.8	108.0	108.0	107.8	107.9	107.9	108.2	108.8	109.0	109.3	109.5	109.9	109.9
Motor vehicle maintenance and repair	195.6	200.2	198.0	198.2	198.2	198.5	198.6	199.0	199.7	200.3	200.8	200.7	201.7	202.9	203.3
Public transportation	209.3	209.1	205.6	206.3	208.1	209.9	211.5	210.7	212.3	214.4	209.7	205.3	206.5	208.6	205.4
Medical care	297.1	310.1	302.1	303.6	306.0	307.5	308.3	309.0	310.0	311.0	311.6	312.3	313.3	314.1	314.9
Medical care commodities	262.8	269.3	265.0	265.5	266.7	267.3	268.5	269.1	269.6	269.9	270.0	270.9	271.7	271.2	270.8
Medical care services	306.0	321.3	311.9	313.8	316.6	318.4	319.2	319.8	321.0	322.3	323.1	323.7	324.8	326.0	327.3
Professional services	261.2	271.5	261.2	262.5	268.0	269.7	270.6	270.9	271.6	272.3	273.3	273.3	273.7	274.2	274.6
Hospital and related services	394.8	417.9	407.0	409.7	412.5	413.8	413.6	414.6	416.9	419.1	418.8	420.3	422.5	425.0	428.0
Recreation[2]	107.5	108.6	107.7	107.9	108.4	108.8	109.0	108.8	108.9	108.7	108.5	108.6	108.7	108.7	108.5
Video and audio[1,2]	103.6	104.2	103.3	103.6	104.1	104.3	104.7	104.6	104.4	104.4	104.1	104.0	104.2	104.0	103.9
Education and communication[2]	109.8	111.6	110.9	111.1	111.2	111.1	110.9	110.6	110.8	110.9	111.7	112.9	112.5	112.7	112.6
Education[2]	134.4	143.7	139.4	140.1	140.4	140.6	140.7	140.9	141.6	142.1	145.1	147.9	148.3	148.4	148.5
Educational books and supplies	335.4	351.0	342.8	345.4	348.6	348.9	349.5	349.6	350.6	349.5	353.3	352.8	353.8	354.4	355.9
Tuition, other school fees, and child care	362.1	414.3	401.7	403.6	404.2	404.7	404.9	405.6	407.6	409.4	418.3	427.4	428.2	428.7	428.9
Communication[1,2]	89.7	86.7	88.2	88.1	88.1	87.7	87.4	86.9	86.8	86.5	86.1	86.2	85.5	85.6	85.4
Information and information processing[1,2]	87.8	84.6	86.2	86.1	86.1	85.7	85.4	84.8	84.7	84.5	84.0	84.1	83.4	83.5	83.3
Telephone services[1,2]	98.3	95.8	97.2	97.0	97.1	96.7	96.5	95.9	95.8	95.6	95.0	95.3	94.6	94.5	94.8
Information and information processing other than telephone services[1,4]	16.1	14.8	15.3	15.3	15.2	15.2	15.0	14.9	14.9	14.8	14.7	14.7	14.5	14.3	14.2
Personal computers and peripheral equipment[1,2]	17.6	15.3	16.2	16.2	16.0	15.8	15.9	15.7	15.5	15.3	15.1	15.0	14.6	14.2	13.9
Other goods and services	298.7	304.7	300.2	301.4	302.3	303.1	303.6	303.8	304.1	305.1	305.5	306.3	306.8	307.0	307.8
Tobacco and smoking products	469.0	478.0	470.4	473.0	472.6	473.6	473.3	473.5	476.0	480.5	481.6	482.9	482.3	481.7	484.8
Personal care[1]	178.0	181.7	179.0	179.7	180.4	180.9	181.3	181.4	181.4	181.7	181.9	182.3	182.8	83.0	183.3
Personal care products[1]	153.5	153.9	153.4	153.8	154.5	154.5	154.5	154.6	153.8	153.4	152.8	153.5	154.0	153.8	153.4
Personal care services[1]	193.2	197.6	194.3	194.6	195.2	195.8	196.1	196.6	196.9	197.5	198.9	199.1	199.4	200.0	201.2

See footnotes at end of table.

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37. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Miscellaneous personal services	283.5	293.9	287.1	288.8	290.4	291.6	292.7	293.1	293.6	294.4	295.2	295.9	296.3	296.9	297.7
Commodity and service group:															
Commodities	151.2	154.7	150.4	151.1	152.3	153.7	154.3	156.0	155.8	154.5	154.2	154.9	157.1	157.2	155.8
Food and beverages	180.5	186.6	184.1	184.3	184.5	184.9	185.0	186.5	186.8	187.2	187.3	187.2	188.4	188.6	188.9
Commodities less food and beverages	134.5	136.7	131.7	132.6	134.2	136.0	136.9	138.6	138.2	136.1	135.6	136.7	139.4	139.4	137.2
Nondurables less food and beverages	149.7	157.2	146.7	148.4	151.4	155.3	157.2	160.9	160.5	156.7	156.1	157.8	162.6	162.0	157.4
Apparel	120.9	120.4	119.0	115.8	118.6	123.5	124.3	123.4	120.1	115.9	116.5	121.2	124.1	123.0	118.8
Nondurables less food, beverages, and apparel	171.5	183.9	167.7	172.3	175.6	179.1	181.7	188.2	189.5	185.8	184.4	184.4	190.6	190.2	183.9
Durables	117.5	114.8	115.0	115.1	115.3	115.1	115.0	114.8	114.5	114.1	113.7	114.1	114.7	115.3	114.8
Services	216.5	222.8	217.9	219.1	219.9	221.0	221.5	221.9	223.3	224.1	224.5	224.5	224.5	224.6	224.6
Rent of shelter[3]	221.9	227.9	222.9	224.1	224.9	226.8	227.4	227.7	228.3	229.2	229.4	229.3	229.8	229.0	228.9
Transporatation services	216.3	220.6	217.7	218.7	219.3	219.7	220.0	220.0	220.5	221.6	220.8	220.1	221.4	222.8	221.8
Other services	254.4	261.3	257.4	258.4	259.2	259.5	259.7	259.6	260.2	260.5	261.9	263.8	263.7	264.2	264.3
Special indexes:															
All items less food	184.7	189.4	184.4	185.5	186.6	188.0	188.6	189.6	190.3	189.9	189.9	190.4	191.4	191.5	190.6
All items less shelter	174.6	179.3	174.7	175.6	176.7	177.6	178.2	179.6	180.2	179.6	179.5	180.1	181.4	181.9	180.9
All items less medical care	178.1	182.7	178.2	179.1	180.1	181.3	181.8	182.9	183.5	183.2	183.2	183.6	184.6	184.7	183.9
Commodities less food	136.5	138.8	133.8	134.7	136.3	138.0	138.9	140.6	140.3	138.2	137.7	138.8	141.1	141.4	139.3
Nondurables less food	151.9	159.3	149.2	150.8	153.7	157.5	159.3	162.8	162.4	158.8	158.2	159.9	164.2	163.9	159.5
Nondurables less food and apparel	172.1	183.8	168.8	173.0	176.1	179.4	181.7	187.7	189.0	185.6	184.3	184.4	190.0	189.7	185.1
Nondurables	165.3	172.2	165.4	166.4	168.1	170.3	171.4	174.1	174.0	172.2	171.9	172.8	175.8	175.6	173.3
Services less rent of shelter[3]	226.4	233.5	228.4	229.7	230.6	230.7	231.1	231.7	234.2	235.0	235.6	235.9	235.1	236.4	236.5
Services less medical care services	208.7	214.5	209.9	211.0	211.7	212.7	213.2	213.6	215.0	215.8	216.2	216.1	216.0	216.1	216.0
Energy	136.5	151.4	131.8	137.4	140.6	143.1	145.9	154.1	159.7	156.3	155.3	154.3	157.7	158.6	153.7
All items less energy	190.6	194.4	191.5	191.9	192.7	193.7	194.1	194.3	194.4	194.5	194.7	195.2	196.0	1196.0	195.8
All items less food and energy	193.2	196.6	193.6	194.0	194.9	196.1	196.5	196.5	196.6	196.6	196.8	197.4	198.2	198.1	197.8
Commodities less food and energy	140.9	139.6	139.0	138.5	139.3	140.3	140.5	140.2	139.4	138.2	138.1	139.4	140.5	140.6	139.8
Energy commodities	136.7	161.2	129.0	138.2	144.6	151.3	156.3	170.1	172.8	165.1	162.5	162.0	174.2	173.6	163.4
Services less energy	223.8	230.2	225.5	226.6	227.5	228.9	229.4	229.6	230.2	231.0	231.4	231.6	232.1	231.9	231.9
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS															
All items	179.8	184.5	179.9	180.9	181.9	182.9	183.5	184.7	185.3	184.9	185.0	185.4	186.5	186.8	186.0
All items (1967 = 100)	535.6	549.5	536.0	538.7	541.7	544.8	546.5	550.2	551.9	550.8	551.0	552.4	555.7	556.3	554.2
Food and beverages	179.9	186.2	183.6	183.8	184.0	184.4	184.5	186.0	186.4	186.8	186.9	186.8	187.9	188.1	188.4
Food	179.4	185.7	183.1	183.3	183.5	183.8	183.9	185.6	185.9	186.3	186.4	186.2	187.4	187.6	187.9
Food at home	178.5	185.4	183.3	183.2	183.2	183.5	183.3	185.8	186.1	186.3	186.1	185.5	187.1	187.3	187.6
Cereals and bakery products	202.8	206.0	202.4	203.8	204.4	204.9	205.5	206.0	206.7	207.2	207.0	206.3	206.9	206.8	206.3
Meats, poultry, fish, and eggs	169.2	181.8	181.0	179.9	179.7	179.6	179.1	181.1	182.4	183.7	183.7	183.4	183.0	182.4	183.2
Dairy and related products[1]	167.6	180.0	172.7	172.2	171.7	171.3	173.6	186.1	189.0	187.8	184.9	181.4	181.8	180.8	179.9
Fruits and vegetables	224.3	230.4	229.7	229.7	227.5	227.8	225.5	228.9	224.3	222.3	222.2	223.9	238.0	246.4	248.6
Nonalcoholic beverages and beverage materials	139.1	139.7	138.6	140.0	140.8	140.1	139.1	139.3	139.3	139.8	139.6	139.7	140.0	138.9	140.0
Other foods at home	162.2	164.5	162.5	162.3	163.3	164.7	164.6	165.1	165.5	165.6	165.8	164.8	165.0	163.8	163.2
Sugar and sweets	161.6	162.5	160.5	162.4	163.2	162.6	161.9	162.9	162.2	162.9	163.8	163.1	162.2	162.1	160.6
Fats and oils	157.4	167.8	157.7	160.7	162.2	166.0	166.1	169.4	171.4	172.0	169.9	170.3	170.0	167.7	167.3
Other foods	179.2	180.1	180.0	178.4	179.4	180.8	180.8	180.5	180.8	180.7	181.4	179.7	180.5	179.2	178.6
Other miscellaneous foods[1,2]	110.8	110.9	110.3	109.6	110.1	112.2	111.0	111.2	111.4	109.7	112.0	111.0	110.3	111.1	111.3
Food away from home[1]	182.0	187.4	184.2	184.8	185.3	185.6	186.1	186.6	186.8	187.6	188.2	188.8	189.3	189.5	189.7
Other food away from home[1,2]	121.5	125.1	123.1	123.6	123.8	123.8	124.3	124.6	124.7	124.9	125.2	125.8	126.8	126.8	127.0
Alcoholic beverages	187.1	192.4	188.9	189.5	190.0	191.2	192.1	192.0	192.7	192.2	192.8	194.0	193.9	194.2	194.2
Housing	180.4	185.0	181.0	182.1	182.6	183.2	183.6	184.1	185.6	186.2	186.6	186.5	186.2	186.4	186.4
Shelter	206.9	212.2	208.2	209.2	209.8	211.0	211.5	211.8	212.2	213.0	213.4	213.4	213.8	213.4	213.5
Rent of primary residence	204.7	210.2	207.0	207.4	208.0	208.4	208.9	209.4	209.9	210.3	211.0	211.6	212.0	212.4	213.0
Lodging away from home[2]	119.8	126.4	113.4	118.5	121.1	128.8	129.8	128.2	128.8	133.0	131.6	127.7	128.3	121.8	118.6
Owners' equivalent rent of primary residence[3]	199.7	204.1	201.7	202.1	202.3	202.7	203.1	203.6	203.9	204.2	204.7	205.1	205.5	205.8	206.1
Tenants' and household insurance[1,2]	114.7	116.4	114.4	114.9	115.1	115.2	116.0	116.4	116.5	116.3	116.5	116.8	116.5	118.1	118.9
Fuels and utilities	153.9	161.2	153.0	155.6	156.2	154.7	155.1	157.4	165.0	166.1	167.2	166.2	161.9	164.5	164.7
Fuels	137.0	143.2	135.4	138.0	138.3	136.6	137.0	139.3	147.4	148.4	149.3	148.2	143.5	146.2	146.4
Fuel oil and other fuels	138.7	160.0	136.2	149.6	154.5	152.0	148.9	149.6	149.8	150.2	156.8	161.1	177.2	186.5	183.4
Gas (piped) and electricity	144.1	149.8	142.5	144.7	144.7	142.9	143.5	146.1	155.1	156.2	156.8	155.3	149.1	151.7	152.0
Household furnishings and operations	121.9	121.1	120.4	121.0	121.4	121.4	121.3	121.1	121.3	120.7	120.4	120.6	121.7	121.5	121.3
Apparel	120.0	120.0	118.7	115.7	118.3	122.9	123.8	122.8	119.6	115.6	115.9	120.6	123.5	122.6	118.6
Men's and boys' apparel	117.5	117.3	117.8	115.6	117.4	120.0	120.6	120.3	117.8	115.2	113.3	115.6	117.8	118.6	115.7
Women's and girls' apparel	112.1	112.8	110.5	105.5	109.8	117.4	118.4	116.7	112.2	106.0	106.9	114.0	119.3	116.9	110.2
Infants' and toddlers' apparel[1]	124.1	121.3	121.4	120.1	122.2	125.2	123.4	120.9	118.8	117.0	117.6	122.3	123.3	123.1	121.4
Footwear	119.1	118.2	117.8	115.6	116.4	118.6	119.6	119.0	117.0	114.4	116.3	120.4	120.6	120.6	119.4
Transportation	156.3	161.5	152.5	154.9	156.8	158.5	159.9	163.6	164.0	162.2	161.4	161.6	165.3	165.8	163.4
Private transportation	153.5	158.8	149.7	152.2	154.0	155.7	157.1	160.9	161.3	159.3	158.6	159.1	162.7	163.2	160.9
New and used motor vehicles[2]	96.0	92.8	92.8	92.7	92.8	92.6	92.6	92.5	92.1	92.1	92.2	92.3	93.3	94.0	94.3

See footnotes at end of table.

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37. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New vehicles	139.0	138.1	139.2	139.2	139.5	139.0	138.7	138.5	138.2	137.0	136.0	136.0	136.9	138.9	139.8
Used cars and trucks[1]	143.7	134.1	131.7	131.6	131.7	132.0	132.1	132.6	131.4	133.0	134.6	137.3	137.6	137.5	138.1
Motor fuel	136.1	160.9	128.1	137.1	143.6	150.9	156.5	171.1	173.8	165.6	162.4	161.7	173.6	172.3	161.7
Gasoline (all types)	135.5	160.2	127.6	136.6	143.0	150.3	155.8	170.4	173.2	165.0	161.7	161.0	172.9	171.6	160.9
Motor vehicle parts and equipment	107.3	108.2	107.3	107.6	107.6	107.4	107.5	107.5	107.8	108.2	108.4	108.7	108.9	109.4	109.3
Motor vehicle maintenance and repair	197.3	202.0	199.8	199.9	200.1	200.3	200.4	200.8	201.5	202.1	202.7	202.7	203.8	204.9	205.3
Public transportation	206.0	207.1	203.6	204.6	206.2	208.0	209.4	208.8	210.0	212.1	208.0	203.1	204.2	207.1	204.2
Medical care	296.3	309.5	301.4	302.8	305.4	306.9	307.7	308.4	309.4	310.4	311.0	311.7	312.7	313.6	314.4
Medical care commodities	257.4	263.2	259.4	259.8	260.9	261.5	262.5	263.3	263.8	263.7	263.8	264.8	265.4	264.9	264.4
Medical care services	305.9	321.5	311.9	313.8	316.8	318.6	319.4	320.0	321.2	322.4	323.2	323.9	325.0	326.3	327.7
Professional services	263.4	274.0	266.5	267.8	270.6	272.3	273.2	273.5	274.1	274.8	275.8	275.9	276.3	276.9	277.2
Hospital and related services	391.2	414.0	403.4	405.9	408.7	409.9	409.8	410.7	413.0	415.2	414.9	416.4	418.5	421.0	424.2
Recreation[2]	105.5	106.3	105.5	105.6	106.2	106.5	106.7	106.6	106.7	106.3	106.1	106.2	106.2	106.3	106.1
Video and audio[1,2]	102.9	103.4	102.5	102.7	103.2	103.5	103.9	103.9	103.7	103.7	103.4	103.3	103.5	103.3	103.2
Education and communication[2]	109.0	110.0	109.7	109.8	110.0	109.8	109.6	109.2	109.4	109.4	109.9	110.8	110.5	110.6	110.5
Education[2]	133.8	142.5	138.0	139.1	139.4	139.6	139.7	139.9	140.6	141.0	143.6	146.3	146.7	146.8	147.0
Educational books and supplies	336.5	352.2	343.8	346.1	349.5	349.9	350.4	350.4	351.5	350.4	354.7	354.8	355.6	356.1	357.6
Tuition, other school fees, and child care	377.3	402.5	390.7	392.8	393.3	393.8	394.1	394.6	396.7	398.1	405.8	414.0	415.2	415.6	415.8
Communication[1,2]	91.2	88.3	89.7	89.6	89.6	89.3	89.0	88..4	88.4	88.1	87.6	87.8	87.1	87.2	87.0
Information and information processing[1,2]	89.9	86.8	88.3	88.2	88.2	87.9	87.5	87.0	86.9	86.7	86.2	86.3	85.6	85.7	85.5
Telephone services[1,2]	98.5	96.0	97.4	97.2	97.3	96.9	96.7	96.1	96.1	95.8	95.2	95.5	94.8	95.1	95.0
Information and information processing other than telephone services[1,4]	16.7	15.3	15.8	15.8	15.8	15.7	15.5	15.4	15.4	15.3	15.3	15.2	15.0	14.9	14.8
Personal computers and peripheral equipment[1,2]	17.3	15.0	15.9	15.8	15.7	15.5	15.6	15.4	15.2	15.0	14.9	14.8	14.3	13.9	13.7
Other goods and services	307.0	312.6	308.1	309.3	310.0	310.8	311.3	311.5	311.8	313.2	313.5	314.4	314.7	314.9	315.9
Tobacco and smoking products	470.5	478.8	471.5	473.8	473.2	474.2	474.1	474.4	476.9	481.6	482.6	483.9	483.0	482.5	485.7
Personal care[1]	177.0	180.4	177.8	177.4	179.1	179.7	180.1	180.2	180.0	180.3	180.5	180.9	181.4	181.7	181.9
Personal care products[1]	154.2	154.4	154. 2	154.3	155.0	155.0	155.1	155.1	154.3	153.9	153.1	154.0	154.3	154.3	153.8
Personal care services[1]	193.9	198.2	194.9	195.1	195.7	196.3	196.6	197.1	197.5	198.1	199.5	199.7	199.9	200.6	201.8
Miscellaneous personal services	283.3	294.0	286.6	288.4	290.2	291.6	292.9	293.1	293.5	294.7	295.4	296.2	296.6	297.5	298.4
Commodity and service group:															
Commodities	151.8	155.4	150.7	151.5	152.7	154.1	154.8	156.7	156.6	155.2	154.9	155.7	158.0	158.1	156.6
Food and beverages	179.9	186.2	183.6	183.8	184.0	184.4	184.5	186.0	186.4	186.8	186.9	186.8	187.9	188.1	188.4
Commodities less food and beverages	135.8	138.1	132.5	133.5	135.2	137.0	138.0	140.0	139.6	137.5	137.1	138.2	141.0	141.0	138.8
Nondurables less food and beverages	152.1	160.6	149.0	151.0	154.3	158.4	160.5	164.7	164.4	160.4	159.5	161.2	166.5	165.9	160.9
Apparel	120.0	120.0	118.7	115.7	118.3	122.9	123.8	122.8	119.6	115.6	115.9	120.6	123.5	122.6	118.6
Nondurables less food, beverages, and apparel	175.6	189.6	171.6	176.5	180.2	184.1	187.0	194.5	196.0	191.8	190.2	190.1	196.9	196.5	190.8
Durables	117.4	114.0	114.0	114.0	1142.0	114.0	113.9	113.9	113.5	113.2	113.1	113.7	114.3	114.8	115.1
Services	212.6	218.6	214.2	215.3	216.0	216.7	217.1	217.6	219.0	219.7	220.2	220.3	220.0	220.4	220.5
Rent of shelter[3]	199.2	204.3	200.6	201.4	202.0	203.2	203.7	203.9	204.4	205.1	205.5	205.5	205.9	205.5	205.6
Transporatation services	216.2	220.9	218.0	219.1	219.7	220.0	220.2	220.3	220.7	221.6	221.0	220.5	222.0	223.4	222.7
Other services	248.5	254.1	250.9	251.8	252.6	252.9	253.0	252.7	253.3	253.5	254.4	256.0	255.9	256.3	256.5
Special indexes:															
All items less food	179.7	184.1	179.2	180.2	181.4	182.6	183.2	184.4	185.0	184.5	184.5	185.1	186.2	186.4	185.5
All items less shelter	171.9	176.4	171.6	172.5	173.7	174.7	175.3	176.8	177.5	176.7	176.6	177.3	178.6	179.1	178.0
All items less medical care	174.8	179.1	174.7	175.6	176.6	177.6	178.2	179.4	180.0	179.6	179.6	180.0	181.1	181.3	180.6
Commodities less food	137.7	140.0	134.5	135.5	137.1	138.9	139.9	141.8	141.5	139.4	139.0	140.2	142.2	142.9	140.7
Nondurables less food	154.2	162.6	151.4	153.3	156.4	160.4	162.4	166.4	166.2	162.3	161.5	163.2	168.2	167.6	162.9
Nondurables less food and apparel	175.9	189.0	172.1	176.9	180.2	184.0	186.6	193.5	194.8	191.0	189.6	189.7	195.6	195.4	190.3
Nondurables	166.4	173.9	166.6	167.8	169.5	171.8	173.0	175.9	175.9	174.0	173.6	174.5	177.7	177.5	175.1
Services less rent of shelter[3]	201.3	207.4	202.9	204.1	204.9	204.9	205.2	205.8	208.2	208.9	209.3	209.5	208.6	209.8	209.9
Services less medical care services	205.2	210.6	206.6	207.6	208.2	208.8	209.2	209.7	211.1	211.8	212.2	212.3	212.0	212.3	212.4
Energy	135.9	151.3	131.1	136.9	140.2	143.0	146.0	154.5	159.9	156.2	155.1	154.2	157.8	158.5	153.3
All items less energy	186.1	189.5	186.9	187.2	187.9	188.7	189.0	189.3	189.3	189.3	189.5	190.2	191.0	191.1	191.0
All items less food and energy	187.9	190.6	188.0	188.3	189.1	190.1	190.4	190.4	190.3	190.3	190.5	191.4	192.1	192.2	192.0
Commodities less food and energy	141.1	139.4	141.1	138.2	139.0	140.0	140.1	139.9	139.0	138.0	138.0	139.5	140.5	140.6	139.9
Energy commodities	136.8	161.5	136.8	138.3	144.7	151.5	156.7	170.7	173.3	165.5	162.8	162.3	174.5	173.7	163.4
Services less energy	220.2	226.2	222.1	223.1	223.9	224.9	225.3	225.5	226.0	226.7	227.1	227.4	227.9	228.0	228.1

[1] Not seasonally adjusted.

[2] Indexes on a December 1997 = 100 base.

[3] Indexes on a December 1982 = 100 base.

[4] Indexes on a December 1988 = 100 base.

Dash indicates data not available.

NOTE: Index applied to a month as a whole, not to any specific date.

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38. Consumer Price Index: U.S. city average and available local area data: all items

[1982–84 = 100, unless otherwise indicated]

	Pricing schedule[1]	All Urban Consumers 2004						Urban Wage Earners 2004					
		July	Aug.	Sept.	Oct	Nov.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
U.S. city average	M	189.4	189.5	189.9	190.9	191.0	190.3	184.9	185.0	185.4	186.5	186.8	186.0
Region and area size[2]													
Northeast urban	M	201.0	201.0	201.2	202.5	202.6	201.9	197.3	197.2	197.7	199.0	200.2	198.7
Size A—More than 1,500,000	M	203.0	203.1	203.2	204.5	204.6	204.1	198.0	198.1	198.4	199.7	120.2	199.6
Size B/C—50,000 to 1,500,000[3]	M	119.2	118.9	119.2	120.1	120.1	119.2	119.1	118.7	119.2	120.1	179.8	119.4
Midwest urban[4]	M	183.2	183.3	183.6	184.5	184.8	183.8	178	178.2	178.6	179.5	181.2	178.8
Size A—More than 1,500,000	M	185.4	185.6	189.5	186.8	186.9	185.7	179.5	179.8	180.2	181.1	116.9	180.1
Size B/C—50,000 to 1,500,000[3]	M	116.3	116.5	116.8	117.4	117.7	117.3	115.5	115.7	115.9	116.6	175.2	116.4
Size D—Nonmetropolitan (less than 50,000)	M	177.1	176.3	176.4	177.1	177.7	177.2	173.7	173.4	173.7	174.4	180.7	174.9
South urban	M	182.6	182.6	182.8	183.7	183.7	183.3	179.3	179.4	179.7	180.6	182.5	180.3
Size A—More than 1,500,000	M	183.7	183.7	184.0	185.0	185.0	184.9	181.2	181.2	181.4	182.5	182.5	182.4
Size B/C—50,000 to 1,500,000[3]	M	116.9	116.9	116.9	117.4	117.4	117.1	115.2	115.3	115.4	115.9	116.0	115.6
Size D—Nonmetropolitan (less than 50,000)	M	180.1	180.0	181.2	182.8	182.5	181.9	179.4	179.5	180.7	182.3	182.2	181.5
West urban	M	192.9	193.0	193.8	195.0	195.1	194.2	188.0	188.0	188.8	190.0	190.2	189.4
Size A—More than 1,500,000	M	195.4	195.5	196.4	197.5	197.6	196.5	188.9	188.9	189.9	191.0	191.2	190.2
Size B/C—50,000 to 1,500,000[3]	M	117.9	118.1	118.4	119.2	119.3	119.0	117.4	117.6	117.8	118.7	118.9	118.6
Size classes:													
A[5]	M	173.1	173.2	173.6	174.6	174.6	174.0	171.3	171.4	171.8	172.8	173.0	172.4
B/C[3]	M	117.3	117.3	117.4	118.1	118.2	117.7	116.2	116.2	116.5	117.2	117.3	116.9
D	M	181.3	181.0	181.8	182.9	183.0	182.4	179.0	178.8	179.7	180.8	181.1	180.6
Selected local areas[6]													
Chicago–Gary–Kenosha, IL–IN–WI	M	189.2	190.2	190.0	190.8	190.7	189.6	182.4	183.2	183.1	184.0	184.2	183.1
Los Angeles–Riverside–Orange County, CA	M	193.4	193.1	194.5	196.3	196.9	195.2	186.8	186.5	187.8	189.8	190.3	188.5
New York, NY–Northern NJ–Long Island, NY–NJ–CT–PA	M	205.5	205.7	205.9	207.3	207.2	206.8	200.1	200.3	200.6	201.9	202.2	201.8
Boston–Brockton–Nashua, MA–NH–ME–CT	1	208.9	–	209.8	–	211.7	–	207.9	–	208.8	–	211	–
Cleveland–Akron, OH	1	181.7	–	183.8	–	185.2	–	172.8	–	174.8	–	173.9	–
Dallas–Ft Worth, TX	1	179.1	–	179.7	–	179.9	–	179.4	–	180.0	–	180.5	–
Washington–Baltimore, DC–MD–VA–WV[7]	1	120.2	–	120.8	–	120.9	–	119.7	–	120.4	–	120.4	–
Atlanta, GA	2	–	184.1	–	183.9	–	183.2	–	182.5	–	181.7	–	181.5
Detroit–Ann Arbor–Flint, MI	2	–	186.8	–	187.6	–	185.3	–	181.5	–	183.0	–	180.7
Houston–Galveston–Brazoria, TX	2	–	169.1	–	171.8	–	170	–	167.4	–	169.5	–	167.7
Miami–Ft. Lauderdale, FL	2	–	185.1	–	187.0	–	188.6	–	182.9	–	185.1	–	186.6
Philadelphia–Wilmington–Atlantic City, PA–NJ–DE–MD	2	–	199.1	–	200.2	–	197.8	–	198.0	–	199.8	–	197.9
San Francisco–Oakland–San Jose, CA	2	–	198.7	–	200.3	–	199.5	–	195.0	–	196.4	–	195.9
Seattle–Tacoma–Bremerton, WA	2	–	194.6	–	196.5	–	195.1	–	189.6	–	191.6	–	190.3

[1] Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated:
M—Every month.
1—January, March, May, July, September, and November.
2—February, April, June, August, October, and December.

[2] Regions defined as the four Census regions.

[3] Indexes on a December 1996 = 100 base.

[4] The "North Central" region has been renamed the "Midwest" region by the Census Bureau. It is composed of the same geographic entities.

[5] Indexes on a December 1986 = 100 base.

[6] In addition, the following metropolitan areas are published semiannually and appear in tables 34 and 39 of the January and July issues of the *CPI Detailed Report*: Anchorage, AK; Cincinnatti, OH–KY–IN; Kansas City, MO–KS; Milwaukee–Racine, WI; Minneapolis–St. Paul, MN–WI; Pittsburgh, PA; Port-land–Salem, OR–WA; St Louis, MO–IL; San Diego, CA; Tampa–St. Petersburg–Clearwater, FL.

[7] Indexes on a November 1996 = 100 base.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Each local index has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error. As a result, local area indexes show greater volatility than the national index, although their long-term trends are similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in their escalator clauses. Index applies to a month as a whole, not to any specific date. Dash indicates data not available.

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39. Annual data: Consumer Price Index, U.S. city average, all items and major groups

[1982–84 = 100]

Series	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Consumer Price Index for All Urban Consumers:											
All items:											
Index	148.2	152.4	156.9	160.5	163.0	166.6	172.2	177.1	179.9	184.0	188.9
Percent change	2.6	2.8	3.0	2.3	1.6	2.2	3.4	2.8	1.6	2.3	2.7
Food and beverages:											
Index	144.9	148.9	153.7	157.7	161.1	164.6	168.4	173.6	176.8	180.5	186.6
Percent change	2.3	2.8	3.2	2.6	2.2	2.2	2.3	3.1	1.8	2.1	3.3
Housing:											
Index	144.8	148.5	152.8	156.8	160.4	163.9	169.6	176.4	180.3	184.8	189.5
Percent change	2.5	2.6	2.9	2.6	2.3	2.2	3.5	4.0	2.2	2.5	2.5
Apparel:											
Index	133.4	132.0	131.7	132.9	133.0	131.3	129.6	127.3	124.0	120.9	120.4
Percent change	–.2	–1.0	–.2	.9	.1	–1.3	–1.3	–1.8	–2.6	–2.5	–.4
Transportation:											
Index	134.3	139.1	143.0	144.3	141.6	144.4	153.3	154.3	152.9	157.6	163.1
Percent change	3.0	3.6	2.8	0.9	–1.9	2.0	6.2	0.7	–.9	3.1	3.5
Medical care:											
Index	211.0	220.5	228.2	234.6	242.1	250.6	260.8	272.8	285.6	297.1	310.1
Percent change	4.8	4.5	3.5	2.8	3.2	3.5	4.1	4.6	4.7	4.0	4.4
Other goods and services:											
Index	198.5	206.9	215.4	224.8	237.7	258.3	271.1	282.6	293.2	298.7	304.7
Percent change	2.9	4.2	4.1	4.4	5.7	8.7	5.0	4.2	3.8	1.9	2.0
Consumer Price Index for Urban Wage Earners and Clerical Workers:											
All items:											
Index	145.6	149.8	154.1	157.6	159.7	163.2	168.9	173.5	175.9	179.8	188.9
Percent change	2.5	2.9	2.9	2.3	1.3	2.2	3.5	2.7	1.4	2.2	5.1

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40. Producer Price Indexes, by stage of processing

[1982 = 100]

Grouping	Annual average		2003	2004											
	2003	2004	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.[P]	Oct.[P]	Nov.[P]	Dec.[P]
Finished goods	143.3	148.5	144.5	145.4	145.3	146.3	147.3	148.9	148.7	148.5	148.5	148.7	151.9	151.7	150.4
Finished consumer goods	145.3	151.6	146.7	147.8	147.8	149.0	150.4	152.5	152.0	151.9	151.8	152.0	155.5	155.3	153.5
Finished consumer foods	145.9	152.6	150.3	148.1	148.4	150.7	152.7	155.5	155.0	152.3	152.2	152.2	154.7	154.5	154.5
Finshed consumer goods excluding foods	144.7	150.9	145.0	147.4	147.3	148.0	149.1	150.9	150.5	151.4	151.3	151.5	155.5	155.2	152.8
Nondurable goods less food	148.4	156.6	148.2	151.7	151.6	152.4	154.3	156.7	156.0	158.0	157.9	158.1	162.0	161.8	158.2
Durable goods	133.1	135.1	134.3	134.3	134.2	134.7	134.4	134.8	134.9	133.6	133.6	133.8	137.7	137.5	137.3
Capital equipment	139.5	141.5	140.2	140.5	140.2	140.5	140.6	140.8	141.1	140.7	141.2	141.3	143.5	143.4	143.6
Intermediate materials, supplies, and components	133.7	142.5	134.5	136.2	137.3	138.3	140.2	142.0	142.8	143.5	144.8	145.3	146.2	147.2	146.7
Materials and components for manufacturing	129.7	137.9	130.9	131.9	133.2	134.3	136.2	137.4	137.7	138.1	139.4	140.8	141.2	141.8	142.8
Materials for food manufacturing	134.4	145.0	140.7	138.4	139.3	141.7	146.6	152.2	152.0	147.3	144.9	144.2	144.2	144.0	145.1
Materials for nondurable manufacturing	137.2	147.6	137.9	140.2	141.0	141.4	143.5	144.5	145.9	147.3	149.8	152.1	153.5	154.9	156.8
Materials for durable manufacturing	127.9	146.6	131.2	132.9	137.3	140.7	144.3	146.9	145.8	147.2	150.3	153.3	152.8	153.3	154.8
Components for manufacturing	125.9	127.4	125.8	125.9	126.2	126.5	127.1	127.3	127.6	127.4	127.7	128.0	128.2	128.4	128.6
Materials and components for construction	153.6	166.4	155.6	156.2	159.0	161.9	164.7	166.9	166.9	167.5	169.8	171.1	170.7	170.6	171.2
Processed fuels and lubricants	112.6	124.1	111.7	116.8	116.8	116.5	118.4	122.3	124.9	126.4	128.5	127.1	130.4	133.8	127.7
Containers	153.7	159.2	153.5	153.9	153.7	154.1	154.9	156.7	158.9	159.7	162.0	162.5	164.1	164.3	165.2
Supplies	141.5	146.7	142.8	143.2	143.8	144.8	146.4	147.2	147.3	148.0	147.6	147.7	147.8	147.9	148.6
Crude materials for further processing	135.3	159.0	141.1	147.8	150.1	152.9	155.7	161.8	163.0	162.5	162.2	153.8	159.7	171.9	166.5
Foodstuffs and feedstuffs	113.5	126.9	124.7	117.1	122.2	131.7	135.4	141.1	137.4	130.9	124.8	121.7	119.9	119.3	121.6
Crude nonfood materials	148.2	179.2	149.5	167.3	167.3	164.8	166.6	172.9	178.0	182.2	186.6	174.1	186.1	208.1	196.6
Special groupings:															
Finished goods, excluding foods	142.4	147.2	142.8	144.5	144.3	144.9	145.7	147.0	146.8	147.2	147.3	147.5	150.9	150.7	149.1
Finished energy goods	102.0	113.0	101.0	106.0	105.7	107.0	109.5	113.6	112.5	115.4	115.0	114.9	120.9	120.3	114.5
Finished goods less energy	149.0	152.4	150.9	150.6	150.5	151.3	151.9	152.7	152.7	151.7	151.9	152.1	154.4	154.3	154.4
Finished consumer goods less energy	153.1	157.2	155.5	154.9	155.0	156.1	156.9	158.0	157.9	156.5	156.6	156.8	159.1	159.1	159.1
Finished goods less food and energy	150.5	152.7	151.4	151.8	151.7	152.0	152.1	152.2	152.3	151.9	152.2	152.5	154.7	154.6	154.7
Finished consumer goods less food and energy	157.9	160.3	159.0	159.4	159.4	159.7	159.8	159.9	160.0	159.4	159.6	160.0	162.2	162.2	162.2
Consumer nondurable goods less food and energy	177.9	180.7	178.9	179.7	179.8	179.8	180.5	180.2	180.2	180.3	180.8	181.3	181.6	182.0	182.2
Intermediate materials less foods and feeds	134.2	142.9	134.7	136.5	137.6	138.4	140.2	141.9	142.8	143.7	145.3	146.0	147.0	148.1	147.5
Intermediate foods and feeds	125.9	137.0	134.1	132.2	133.7	137.0	143.2	147.7	144.9	142.3	136.3	133.8	131.2	130.6	131.5
Intermediate energy goods	111.9	123.1	110.9	115.8	115.8	115.6	117.3	121.1	123.7	125.1	127.1	126.0	129.5	132.6	127.2
Intermediate goods less energy	137.7	145.8	139.0	139.8	141.1	142.4	144.4	145.7	146.0	146.4	147.5	148.5	148.7	149.2	149.9
Intermediate materials less foods and energy	138.5	146.5	139.5	140.4	141.7	142.9	144.6	145.7	146.2	146.8	148.3	149.5	149.9	150.4	151.1
Crude energy materials	147.2	174.7	141.8	163.5	158.9	153.0	158.8	172.1	180.0	177.9	181.9	166.3	179.5	210.1	194.7
Crude materials less energy	123.4	143.9	136.2	133.2	139.8	148.0	148.7	150.1	147.0	147.5	144.6	140.9	142.0	142.3	143.2
Crude nonfood materials less energy	152.5	192.8	170.1	179.3	189.9	195.2	187.6	177.9	176.3	195.4	200.8	195.4	204.6	207.0	204.3

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41. Producer Price Indexes for the net output of major industry groups

[December 2003 = 100, unless otherwise indicated]

NAICS	Industry	2004									
		Mar.	Apr.	May	June	July	Aug.	Sept.[P]	Oct.[P]	Nov.[P]	Dec.[P]
–	**Total mining industries (December 1984=100)**	136.6	140.9	149.5	155.5	155.6	159.3	148.8	158.9	180.5	170.0
211	Oil and gas extraction(December 1985=100)	165.4	171.7	188.1	198.0	196.6	202.7	182.8	199.9	237.5	216.7
212	Mining, except oil and gas	105.9	108.5	107.3	108.1	110.2	110.4	111.6	112.3	112.7	116.1
213	Mining support activities	100.8	101.0	101.3	102.2	103.7	105.3	107.5	110.1	112.7	113.1
–	**Total manufacturing industries (December 1984=100)**	140.3	141.8	143.3	142.9	143.2	143.7	144.1	146.5	146.0	144.7
311	Food manufacturing (December 1984=100)	142.4	146.1	149.1	148.6	146.5	144.6	143.3	142.9	142.9	144.0
312	Beverage and tobacco manufacturing	100.7	101.5	100.2	101.2	100.6	101.1	101.0	101.6	101.6	101.7
313	Textile mills	100.2	100.7	101.1	101.3	101.5	101.2	101.2	101.7	102.0	101.6
315	Apparel manufacturing	99.8	99.9	100.0	99.8	99.7	99.7	99.9	100.1	100.1	100.1
316	Leather and allied product manufacturing (December 1984=100)	143.8	143.5	143.4	143.5	143.7	143.6	143.5	143.7	143.9	144.1
321	Wood products manufacturing	105.9	108.1	110.2	108.3	106.8	109.8	110.8	107.4	105.0	106.0
322	Paper manufacturing	99.5	100.1	101.1	102.3	103.2	104.4	104.9	105.7	105.7	106.0
323	Printing and related support activities	100.4	100.8	100.8	101.0	101.3	101.3	102.0	101.9	102.1	102.0
324	Petroleum and coal products manufacturing (December 1984=100)	134.3	141.9	152.0	144.1	152.3	155.6	158.9	176.7	170.6	148.5
325	Chemical manufacturing (December 1984=100)	168.8	169.7	170.3	171.6	172.2	173.8	175.6	177.1	178.3	180.2
326	Plastics and rubber products manufacturing (December 1984=100)	129.6	130.0	130.4	130.8	131.2	131.7	132.5	134.3	134.7	135.9
331	Primary metal manufacturing (December 1984=100)	132.3	138.4	142.2	142.3	144.7	148.3	150.9	152.0	154.1	154.9
332	Fabricated metal product manufacturing (December 1984=100)	137.5	139.4	140.8	141.9	142.5	143.4	144.2	144.7	145.2	145.5
333	Machinery manufacturing	100.9	101.3	101.6	101.8	102.1	102.3	102.5	103.1	103.2	103.5
334	Computer and electronic products manufacturing	99.3	99.5	99.3	99.1	98.9	98.9	98.9	98.9	98.6	98.4
335	Electrical equipment, appliance, and components manufacturing	101.8	102.7	103.3	103.5	103.6	103.8	104.1	104.4	104.4	105.0
336	Transportation equipment manufacturing	100.4	100.2	100.4	100.6	99.7	99.8	99.9	103.2	102.7	102.8
337	Furniture and related product manufacturing(December 1984=100)	149.0	149.7	151.4	151.7	152.0	152.7	152.7	153.5	154.6	155.0
339	Miscellaneous manufacturing	100.8	101.0	100.9	101.2	101.2	101.4	101.6	101.6	101.6	102.1
	Retail trade										
441	Motor vehicle and parts dealers	103.2	103.8	103.7	103.7	103.3	103.8	103.5	104.2	104.0	104.3
442	Furniture and home furnishings stores	101.8	102.0	101.4	102.8	102.6	102.8	103.6	104.0	105.1	104.1
443	Electronics and appliance stores	99.9	101.2	101.2	98.8	98.6	98.7	101.6	100.6	97.9	93.8
446	Health and personal care stores	96.9	97.4	97.5	98.7	101.3	105.6	107.3	106.8	104.6	107.7
447	Gasoline stations (June 2001=100)	55.4	56.6	53.2	59.3	48.3	48.6	45.8	42.0	52.0	62.5
454	Nonstore retailers	113.2	108.6	107.0	108.7	103.6	102.0	107.5	103.1	111.7	117.5
	Transportation and warehousing										
481	Air transportation (December 1992=100)	162.0	162.3	162.2	162.8	163.9	163.4	160.6	161.6	160.4	163.0
483	Water transportation	99.4	100.1	100.3	100.3	101.5	102.1	103.0	103.6	103.4	103.5
491	Postal service (June 1989=100)	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0
	Utilities										
221	Utilities	101.2	101.8	103.1	106.9	107.1	107.4	105.1	104.0	108.5	108.5
	Health care and social assistance										
6211	Office of physicians (December 1996=100)	114.3	114.4	114.4	114.3	114.3	114.3	114.5	114.4	114.4	114.4
6215	Medical and diagnostic laboratories	99.8	99.8	100.0	100.0	100.0	100.1	100.0	100.1	100.1	100.1
6216	Home health care services (December 1996=100)	119.6	119.7	119.7	119.7	119.7	119.7	119.7	119.9	120.0	120.1
622	Hospitals (December 1992=100)	140.3	140.7	140.8	140.9	141.6	141.6	142.4	142.9	143.3	143.6
6231	Nursing care facilities	101.6	101.9	102.0	102.0	102.9	103.0	103.1	103.5	103.6	103.3
62321	Residential mental retardation facilities	99.9	99.9	100.5	100.5	102.1	102.1	100.6	100.9	102.0	101.9
	Other services industries										
511	Publishing industries, except Internet	101.3	101.4	101.3	101.4	101.5	101.5	101.0	101.5	102.0	101.7
515	Broadcasting, except Internet	100.3	101.6	103.1	102.7	99.6	100.9	101.9	103.6	105.5	104.9
517	Telecommunications	100.2	100.1	99.9	99.9	99.8	99.9	99.5	99.2	99.0	98.9
5182	Data processing and related services	98.4	98.5	98.9	99.0	99.0	99.0	98.8	98.9	98.5	98.5
523	Security, commodity contracts, and like activity	101.7	102.3	102.4	102.7	103.2	104.1	103.2	104.0	105.3	106.0
53112	Lessors or nonresidental buildings (except miniwarehouse)	99.6	101.0	102.6	102.1	103.5	104.0	104.7	104.1	104.2	103.1
5312	Offices of real estate agents and brokers	100.7	100.8	100.8	101.0	101.0	101.1	101.0	99.5	99.6	100.1
5313	Real estate support activities	101.1	101.3	101.9	98.5	101.4	101.0	100.7	98.5	100.1	101.5
5321	Automotive equipment rental and leasing (June 2001=100)	107.4	106.0	104.5	105.6	110.0	110.8	108.2	108.0	107.9	108.5
5411	Legal services (December 1996=100)	131.7	131.8	131.8	131.8	131.6	131.5	132.3	132.5	132.1	132.0
541211	Offices of certified public accountants	100.8	101.1	101.2	101.1	101.3	101.4	101.8	102.0	102.3	102.1
5413	Architectural, engineering, and related services (December 1996=100)	126.5	126.6	126.5	126.6	127.0	127.0	127.2	127.4	127.3	127.4
54181	Advertising agencies	99.8	99.9	99.9	99.9	100.0	100.3	100.4	100.4	100.7	100.6
5613	Employment services (December 1996=100)	113.2	113.1	113.4	113.8	114.6	114.6	114.6	115.3	115.2	114.1
56151	Travel agencies	98.7	98.7	98.7	97.4	95.1	94.7	94.8	96.9	96.4	96.1
56172	Janitorial services	100.4	100.5	100.6	101.0	101.0	101.1	100.9	101.5	101.3	101.1
5621	Waste collection	100.8	101.3	101.5	101.5	101.4	101.4	101.3	101.4	101.4	101.5
721	Accommodation (December 1996=100)	124.9	124.8	124.4	125.6	126.6	127.0	125.4	125.4	124.7	122.6

NOTE: Data reflect the conversion to the 2002 version of the North American Industry Classification System (NAICS), replacing the Standard Industrial Classification (SIC) system.

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42. Annual data: Producer Price Indexes, by stage of processing

[1982 = 100]

Index	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Finished goods											
Total	125.5	127.9	131.3	131.8	130.7	133.0	138.0	140.7	138.9	143.3	148.5
Foods	126.8	129.0	133.6	134.5	134.3	135.1	137.2	141.3	140.1	146.0	152.6
Energy	77.0	78.1	83.2	83.4	75.1	78.8	94.1	96.8	88.8	102.0	113.0
Other	137.1	140.0	142.0	142.4	143.7	146.1	148.0	150.0	150.2	150.5	152.7
Intermediate materials, supplies, and components											
Total	118.5	124.9	125.7	125.6	123.0	123.2	129.2	129.7	127.8	133.7	142.5
Foods	118.5	119.5	125.3	123.2	123.2	120.8	119.2	124.3	123.3	134.4	145.0
Energy	83.0	84.1	89.8	89.0	80.8	84.3	101.7	104.1	95.9	111.9	123.1
Other	127.1	135.2	134.0	134.2	133.5	133.1	136.6	136.4	135.8	138.5	146.5
Crude materials for further processing											
Total	101.8	102.7	113.8	111.1	96.8	98.2	120.6	121.3	108.1	135.3	159.0
Foods	106.5	105.8	121.5	112.2	103.9	98.7	100.2	106.2	99.5	113.5	126.9
Energy	72.1	69.4	85.0	87.3	68.6	78.5	122.1	122.8	102.0	147.5	174.7
Other	97.0	105.8	105.7	103.5	84.5	91.1	118.0	101.8	101.0	116.8	149.0

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43. U.S. export price indexes by Standard International Trade Classification

[2000 = 100]

SITC Rev. 3	Industry	2003	2004											
		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	**Food and live animals**	116.5	117.0	119.9	122.7	126.1	126.7	123.9	119.8	116.4	117.6	118.2	118.5	119.8
01	Meat and meat preparations	123.0	122.8	125.0	127.1	127.6	127.7	127.3	123.0	126.1	124.8	126.9	125.4	124.4
04	Cereals and cereal preparations	130.8	131.6	135.2	139.6	147.7	146.0	141.2	128.0	120.6	122.0	115.5	113.0	116.3
05	Vegetables, fruit, and nuts, prepared fresh or dry	103.2	103.1	108.4	110.1	109.5	113.3	111.1	110.0	113.2	119.8	130.6	136.7	138.5
2	**Crude materials, inedible, except fuels**	116.9	120.2	122.3	129.0	132.8	132.5	125.7	132.1	118.0	119.4	118.2	120.1	119.0
22	Oilseeds and oleaginous fruits	152.5	157.2	160.9	181.6	197.1	199.0	168.5	184.5	117.4	125.1	109.1	110.3	111.1
24	Cork and wood	93.7	94.5	95.6	96.5	97.6	98.2	98.3	98.9	98.8	99.1	99.1	98.4	98.8
25	Pulp and waste paper	91.7	91.7	92.5	94.2	98.8	100.4	100.8	100.1	99.5	98.7	98.1	98.2	98.9
26	Textile fibers and their waste	121.2	123.7	122.2	121.9	115.9	114.9	108.7	102.9	101.1	102.1	100.2	97.5	96.4
28	Metalliferous ores and metal scrap	136.6	148.9	156.8	171.4	176.2	170.6	167.5	190.2	183.6	178.5	190.4	200.4	192.4
3	**Mineral fuels, lubricants, and related products**	110.7	120.5	119.3	123.0	123.2	135.1	131.8	137.5	139.6	141.2	156.1	151.4	141.3
32	Coal, coke, and briquettes	112.9	–	–	–	–	–	–	–	–	–	–	–	–
33	Petroleum, petroleum products, and related materials	106.2	116.8	114.7	120.1	119.8	135.0	129.7	134.5	136.2	138.0	156.4	151.0	135.1
5	**Chemicals and related products, n.e.s.**	101.4	102.9	104.0	104.9	105.5	105.6	105.8	107.0	108.6	109.7	111.5	112.6	113.7
54	Medicinal and pharmaceutical products	105.8	105.4	105.3	105.5	105.7	105.7	105.8	107.9	108.1	108.0	107.1	107.3	107.7
55	Essential oils; polishing and cleaning preparations	100.1	104.3	104.2	104.3	104.1	104.4	104.3	104.1	105.1	105.6	106.0	105.7	106.4
57	Plastics in primary forms	96.5	98.3	100.9	102.1	102.2	102.9	103.2	104.8	107.3	109.9	113.2	116.6	119.2
58	Plastics in nonprimary forms	97.2	96.8	97.2	97.4	96.9	96.7	96.5	97.2	97.1	97.4	98.2	98.8	99.2
59	Chemical materials and products, n.e.s.	102.6	105.0	105.2	104.8	104.8	104.8	104.9	104.6	106.2	105.5	105.2	105.5	106.0
6	**Manufactured goods classified chiefly by materials**	100.8	101.7	103.0	104.1	105.6	106.6	107.0	108.5	109.6	110.5	111.4	111.9	112.3
62	Rubber manufactures, n.e.s.	109.9	110.4	110.9	110.4	110.9	110.8	111.2	111.8	112.0	111.4	111.6	112.4	112.9
64	Paper, paperboard, and articles of paper, pulp, and paperboard	97.6	97.9	97.8	97.9	98.7	99.0	99.2	101.2	101.9	102.7	104.0	103.5	103.8
66	Nonmetallic mineral manufactures, n.e.s.	99.8	99.7	99.6	99.7	99.7	99.5	99.9	99.9	100.2	100.4	101.1	101.3	101.7
68	Nonferrous metals	84.5	85.9	90.9	94.1	98.1	97.6	95.4	95.4	96.5	99.0	99.1	100.6	101.5
7	**Machinery and transport equipment**	97.8	97.9	98.1	98.2	98.4	98.4	98.2	98.2	98.2	98.2	98.4	98.4	98.5
71	Power generating machinery and equipment	108.7	109.3	109.4	109.4	108.7	108.7	108.7	108.9	109.0	109.0	109.5	110.2	110.3
72	Machinery specialized for particular industries	103.4	103.9	104.0	104.2	105.1	105.4	105.4	105.7	105.9	106.1	107.2	107.5	108.0
74	General industrial machines and parts, n.e.s., and machine parts	102.8	103.3	103.5	104.0	104.5	104.8	104.9	105.2	105.3	105.3	106.4	106.6	106.8
75	Computer equipment and office machines	88.6	87.7	88.2	88.4	88.8	88.6	87.2	86.6	86.4	86.0	85.4	84.7	84.5
76	Telecommunications and sound recording and reproducing apparatus and equipment	92.0	92.6	92.5	92.4	92.2	92.0	91.8	91.5	90.7	90.7	90.4	90.4	90.4
77	Electrical machinery and equipment	88.1	88.0	88.3	88.6	88.5	88.6	88.2	88.3	88.2	88.1	87.9	87.7	87.6
78	Road vehicles	101.5	101.7	101.9	101.9	102.3	102.3	102.4	102.5	102.5	102.4	102.8	102.8	103.0
87	**Professional, scientific, and controlling instruments and apparatus**	102.3	102.2	102.3	102.3	102.2	102.1	102.0	101.7	101.9	101.8	102.2	102.3	102.6

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44. U.S. import price indexes by Standard International Trade Classification

[2000 = 100]

SITC Rev. 3	Industry	2003	2004											
		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	**Food and live animals**	101.0	102.2	104.7	105.4	106.4	106.1	106.9	107.4	107.4	109.2	111.0	110.9	111.7
01	Meat and meat preparations	120.4	117.7	118.0	120.4	121.7	124.4	128.9	133.7	134.2	134.9	134.1	131.8	132.9
03	Fish and crustaceans, mollusks, and other aquatic invertebrates	79.2	78.2	80.0	83.3	85.1	84.1	84.1	86.1	86.9	86.0	85.5	84.4	84.7
05	Vegetables, fruit, and nuts, prepared fresh or dry	109.4	112.3	115.7	111.3	109.5	106.1	105.9	102.1	100.6	109.2	114.5	116.1	111.5
07	Coffee, tea, cocoa, spices, and manufactures thereof	96.0	100.1	101.9	101.7	103.6	102.4	107.0	102.7	103.4	105.6	104.5	108.9	114.4
1	**Beverages and tobacco**	104.4	104.7	105.0	105.3	105.3	105.4	105.3	105.9	106.1	106.2	106.5	106.6	107.1
11	Beverages	104.3	104.9	105.2	105.5	105.5	105.7	105.6	106.4	106.6	106.7	106.9	107.0	107.5
2	**Crude materials, inedible, except fuels**	107.9	109.5	114.1	120.0	122.9	127.3	125.8	125.7	134.0	135.1	125.1	121.7	125.4
24	Cork and wood	108.0	108.9	115.7	123.3	127.8	139.0	136.1	132.1	148.9	151.1	126.2	117.2	124.9
25	Pulp and waste paper	92.8	93.3	91.9	95.4	100.8	103.4	106.5	108.0	107.7	105.5	99.8	98.0	99.5
28	Metalliferous ores and metal scrap	115.3	124.2	134.6	148.0	148.2	143.5	140.4	145.3	160.8	162.6	166.2	167.0	167.1
29	Crude animal and vegetable materials, n.e.s.	99.6	98.9	99.5	99.7	99.3	102.1	98.0	101.2	97.6	98.7	96.3	96.5	98.3
3	**Mineral fuels, lubricants, and related products**	108.2	117.3	117.7	120.8	121.1	131.6	131.5	133.9	144.2	146.8	161.5	158.4	141.9
33	Petroleum, petroleum products, and related materials	106.9	114.0	114.5	120.0	120.3	131.5	130.0	133.0	144.8	149.5	165.9	156.4	137.6
34	Gas, natural and manufactured	113.9	138.0	137.1	122.9	123.3	129.5	140.0	134.8	136.3	121.9	124.7	168.0	170.2
5	**Chemicals and related products, n.e.s.**	101.1	103.0	103.4	103.8	103.5	103.5	103.8	104.6	105.1	106.7	108.2	108.4	108.9
52	Inorganic chemicals	114.0	119.3	120.6	120.5	115.9	117.5	119.8	122.2	123.8	124.1	125.6	126.5	126.8
53	Dying, tanning, and coloring materials	99.6	99.9	99.7	99.5	100.6	100.8	100.3	98.3	98.4	98.4	98.5	98.7	98.7
54	Medicinal and pharmaceutical products	103.4	107.2	107.7	108.1	107.7	107.3	107.1	107.3	107.3	106.6	106.1	106.7	108.0
55	Essential oils; polishing and cleaning preparations	91.6	92.7	93.3	93.7	93.5	93.4	93.5	93.5	93.4	93.4	93.3	93.2	93.3
57	Plastics in primary forms	105.5	104.4	105.2	106.9	105.5	105.8	104.6	107.8	108.4	109.6	110.4	113.7	116.7
58	Plastics in nonprimary forms	101.8	102.1	102.4	102.9	102.9	102.9	102.3	103.0	103.2	103.8	104.4	105.4	105.9
59	Chemical materials and products, n.e.s.	93.3	94.3	94.9	95.8	95.4	95.1	95.2	94.7	94.1	94.4	94.8	95.3	95.6
6	**Manufactured goods classified chiefly by materials**	97.8	98.9	101.4	103.6	105.6	106.9	106.1	106.1	107.7	108.9	108.9	109.3	110.4
62	Rubber manufactures, n.e.s.	98.8	99.0	99.2	99.7	99.9	100.0	100.5	100.5	100.8	100.8	101.0	101.3	101.7
64	Paper, paperboard, and articles of paper, pulp, and paperboard	93.7	94.1	94.5	95.0	94.8	95.5	95.5	96.4	96.9	97.9	99.2	99.4	99.2
66	Nonmetallic mineral manufactures, n.e.s.	98.1	98.5	98.9	99.0	99.3	99.4	99.4	99.3	100.2	100.4	100.6	100.7	100.7
68	Nonferrous metals	87.7	92.3	97.0	102.6	105.8	106.1	101.6	102.3	105.6	106.3	106.6	108.8	111.3
69	Manufactures of metals, n.e.s.	99.5	99.7	100.3	101.1	102.3	102.4	102.4	102.7	103.3	103.9	104.1	104.7	105.7
7	**Machinery and transport equipment**	95.3	95.4	95.5	95.5	95.2	95.2	95.1	95.0	95.0	95.0	95.0	95.1	95.2
72	Machinery specialized for particular industries	103.6	104.9	106.4	106.7	106.5	106.7	106.6	107.2	107.6	107.4	107.7	108.1	109.1
74	General industrial machines and parts, n.e.s., and machine parts	101.2	101.8	102.5	103.3	103.5	103.6	103.5	104.0	104.1	104.3	104.6	104.8	105.2
75	Computer equipment and office machines	78.2	78.0	78.0	77.7	76.5	76.4	75.5	74.9	74.3	73.9	73.0	72.8	72.6
76	Telecommunications and sound recording and reproducing apparatus and equipment	86.7	86.4	85.4	85.1	84.9	84.9	84.7	84.3	84.0	83.8	83.5	83.5	83.2
77	Electrical machinery and equipment	95.3	95.4	95.7	95.6	94.9	94.8	94.7	94.6	94.7	94.6	94.4	94.6	94.8
78	Road vehicles	101.6	101.9	102.0	102.0	102.2	102.3	102.4	102.6	102.8	103.1	103.6	103.8	103.9
85	Footwear	100.1	100.5	100.5	100.6	100.6	100.6	100.4	100.4	100.1	100.5	100.5	100.6	100.7
88	Photographic apparatus, equipment, and supplies, and optical goods, n.e.s.	99.9	99.9	100.3	100.0	99.4	99.3	99.0	98.2	98.2	98.2	98.2	98.5	99.3

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45. U.S. export price indexes by end-use category

[2000 = 100]

Category	2003	2004											
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
ALL COMMODITIES	100.8	101.5	102.2	103.0	103.7	104.1	103.4	103.9	103.4	103.8	104.4	104.7	104.9
Foods, feeds, and beverages	122.4	123.1	125.6	130.5	134.8	135.6	129.1	128.0	116.5	118.7	117.6	118.1	118.6
Agricultural foods, feeds, and beverages	123.8	124.6	127.2	132.4	137.0	138.0	131.1	129.9	117.0	119.3	117.8	118.3	118.5
Nonagricultural (fish, beverages) food products	108.5	109.5	110.7	112.1	113.4	112.7	110.7	110.1	110.9	113.0	114.4	115.3	118.9
Industrial supplies and materials	102.5	105.1	106.4	108.1	109.1	110.2	109.9	112.0	113.1	114.0	116.6	117.5	117.5
Agricultural industrial supplies and materials	117.5	118.6	116.6	117.2	114.8	113.7	110.7	109.0	108.4	109.4	108.7	107.2	107.7
Fuels and lubricants	99.0	106.1	106.5	108.9	109.6	117.5	114.9	118.6	120.4	121.5	132.5	128.6	120.5
Nonagricultural supplies and materials, excluding fuel and building materials	102.5	104.7	106.4	108.1	109.4	109.9	110.0	112.4	113.5	114.4	116.4	118.0	119.1
Selected building materials	99.5	98.7	100.9	102.3	103.4	103.9	103.4	102.8	103.3	104.0	103.9	104.0	104.1
Capital goods	97.5	97.5	97.8	98.0	98.1	98.1	97.8	97.8	97.8	97.8	98.0	98.1	98.2
Electric and electrical generating equipment	101.7	102.0	101.9	102.0	101.7	101.7	102.0	102.2	102.2	102.4	103.3	103.4	103.4
Nonelectrical machinery	94.1	93.9	94.3	94.5	94.6	94.6	94.1	94.0	94.0	93.9	93.9	93.9	93.9
Automotive vehicles, parts, and engines	101.8	101.9	102.0	101.9	102.2	102.3	102.3	102.4	102.6	102.5	102.7	102.8	102.9
Consumer goods, excluding automotive	99.9	100.2	100.1	100.2	100.4	100.5	100.4	100.9	101.1	101.0	101.0	101.1	101.4
Nondurables, manufactured	99.2	99.9	99.9	99.9	100.1	100.1	100.0	100.8	101.0	101.0	100.7	100.9	101.3
Durables, manufactured	100.3	100.1	100.0	100.1	100.5	100.6	100.7	100.8	101.0	100.9	100.8	101.0	101.1
Agricultural commodities	122.7	123.5	125.3	129.7	133.0	133.7	127.4	126.1	115.5	117.6	116.2	116.4	116.6
Nonagricultural commodities	99.1	99.8	100.4	100.9	101.4	101.7	101.5	102.2	102.5	102.8	103.6	103.9	104.0

46. U.S. import price indexes by end-use category

[2000 = 100]

Category	2003	2004											
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
ALL COMMODITIES	97.5	99.0	99.4	100.2	100.4	101.9	101.7	102.1	103.6	104.1	105.8	105.6	104.2
Foods, feeds, and beverages	103.2	103.7	105.3	105.9	107.2	106.8	106.9	107.5	107.3	108.7	110.0	110.2	111.3
Agricultural foods, feeds, and beverages	110.9	112.0	113.4	113.0	114.2	114.0	114.3	114.5	114.1	116.4	118.4	119.0	120.4
Nonagricultural (fish, beverages) food products	86.0	85.1	87.2	90.1	91.7	90.6	90.3	91.8	92.3	91.4	91.0	90.5	90.7
Industrial supplies and materials	103.6	108.5	110.0	112.7	113.9	119.7	119.3	120.6	126.6	128.5	135.0	133.6	127.2
Fuels and lubricants	107.2	116.5	117.0	120.2	120.6	131.0	130.9	133.2	143.4	146.2	161.1	158.0	142.4
Petroleum and petroleum products	106.0	113.7	114.3	120.1	119.9	131.2	129.7	132.7	144.4	149.2	166.1	156.7	138.7
Paper and paper base stocks	93.9	94.1	94.2	95.6	96.8	98.2	99.0	100.0	100.4	101.1	101.4	101.1	101.4
Materials associated with nondurable supplies and materials	104.4	104.7	104.8	105.4	105.1	105.4	106.0	106.5	107.7	108.0	108.6	109.4	109.9
Selected building materials	108.0	106.8	113.7	118.4	120.2	123.6	120.5	117.6	124.0	125.6	115.3	110.9	115.2
Unfinished metals associated with durable goods	99.2	104.5	109.5	114.9	121.7	126.2	124.4	126.1	129.8	133.1	134.2	136.9	138.9
Nonmetals associated with durable goods	98.2	98.5	99.2	99.3	99.3	99.1	98.7	98.5	98.5	98.8	98.8	99.2	99.7
Capital goods	92.9	93.1	93.1	93.1	92.6	92.6	92.2	92.2	92.1	92.0	91.7	91.8	92.1
Electric and electrical generating equipment	96.8	97.4	97.9	97.8	97.2	97.1	97.0	97.5	97.7	97.4	97.4	97.5	98.1
Nonelectrical machinery	91.1	91.2	91.2	91.2	90.6	90.5	90.1	90.0	89.9	89.8	89.4	89.5	89.8
Automotive vehicles, parts, and engines	101.4	101.6	101.7	101.8	102.0	102.0	102.2	102.3	102.5	102.7	103.1	103.3	103.5
Consumer goods, excluding automotive	98.1	98.6	98.7	98.7	98.6	98.5	98.5	98.5	98.4	98.4	98.4	98.5	98.8
Nondurables, manufactured	100.1	101.1	101.2	101.3	101.1	101.0	100.9	101.0	100.9	100.8	100.7	100.8	101.1
Durables, manufactured	96.2	96.3	96.3	96.3	96.3	96.0	96.1	95.9	95.9	95.9	96.0	96.1	96.4
Nonmanufactured consumer goods	96.2	95.9	96.2	96.4	96.4	97.3	96.8	97.4	97.9	97.9	97.9	98.0	98.1

47. U.S. international price indexes for selected categories of services

[2000 = 100, unless indicated otherwise]

Category	2002	2003				2004			
	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.
Air freight (inbound)	105.9	108.8	109.4	112.5	112.9	116.2	116.6	118.7	125.2
Air freight (outbound)	95.4	97.2	95.4	95.5	94.9	96.1	99.0	100.7	105.2
Inbound air passenger fares (Dec. 2003 = 100)	–	–	–	–	100.0	105.1	106.1	110.1	112.5
Outbound air passenger fares (Dec. 2003 = 100))	–	–	–	–	100.0	99.3	114.2	114.2	108.4
Ocean liner freight (inbound)	93.3	94.0	116.1	116.2	117.7	119.1	121.1	120.3	122.7

NOTE: Dash indicates data not available.

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48. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

[1992 = 100]

Item	2001	2002				2003				2004			
	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Business													
Output per hour of all persons	120.9	122.7	123.2	124.7	125.0	126.2	128.6	131.2	132.0	133.3	134.2	135.0	135.8
Compensation per hour	141.5	143.2	144.4	145.0	145.5	147.4	149.6	151.7	153.2	154.2	156.2	157.7	159.3
Real compensation per hour	114.2	115.2	115.2	115.0	114.8	115.3	116.8	117.7	118.7	118.4	118.6	119.1	119.3
Unit labor costs	117.0	116.7	117.2	116.3	116.3	116.8	116.4	115.6	116.0	115.7	116.4	116.8	117.3
Unit nonlabor payments	113.1	113.4	113.6	115.7	116.8	117.7	119.0	120.8	120.7	122.9	124.4	124.6	125.3
Implicit price deflator	115.6	115.5	115.9	116.1	116.5	117.1	117.3	117.5	117.8	118.4	119.4	119.7	120.3
Nonfarm business													
Output per hour of all persons	120.4	122.4	122.8	124.1	124.6	125.8	127.8	130.6	131.7	132.8	134.1	134.7	135.0
Compensation per hour	140.7	142.6	143.8	144.3	144.7	146.6	148.7	150.9	152.5	153.3	155.5	156.8	158.0
Real compensation per hour	113.5	114.7	114.7	114.4	114.3	114.7	116.1	117.1	118.2	117.7	118.0	118.5	118.4
Unit labor costs	116.8	116.4	117.1	116.2	116.1	116.6	116.3	115.5	115.9	115.4	115.7	116.4	117.1
Unit nonlabor payments	114.7	115.1	115.4	117.7	118.9	119.6	120.4	122.3	121.9	124.3	125.7	126.3	126.8
Implicit price deflator	116.0	116.0	116.5	116.8	117.2	117.7	117.8	118.0	118.1	118.7	119.6	120.1	120.7
Nonfinancial corporations													
Output per hour of all employees	124.5	126.8	128.1	129.0	129.6	130.2	132.7	135.3	136.8	137.0	138.1	139.4	–
Compensation per hour	139.3	139.9	141.3	142.1	142.9	144.1	146.3	148.5	150.0	150.9	152.9	154.4	
Real compensation per hour	112.5	112.6	112.7	112.7	112.8	112.7	114.2	115.3	116.2	115.9	116.1	116.6	–
Total unit costs	113.0	111.3	111.0	110.9	110.9	111.6	110.9	110.5	110.4	110.4	110.9	111.0	–
Unit labor costs	111.9	110.4	110.3	110.1	110.2	110.7	110.3	109.8	109.7	110.2	110.7	110.7	–
Unit nonlabor costs	115.7	113.6	112.7	112.8	112.8	114.0	112.6	112.6	112.2	111.1	111.4	111.7	–
Unit profits	75.5	88.8	94.5	95.8	102.3	100.0	112.2	120.3	125.1	129.9	136.3	136.5	–
Unit nonlabor payments	105.0	107.0	107.9	108.3	110.0	110.3	112.5	114.7	115.7	116.1	118.1	118.3	–
Implicit price deflator	109.6	109.3	109.5	109.5	110.1	110.5	111.0	111.4	111.7	112.2	113.2	113.2	–
Manufacturing													
Output per hour of all persons	140.8	144.5	146.4	148.7	149.7	151.6	152.7	156.7	158.1	158.8	161.7	163.4	165.6
Compensation per hour	139.1	142.8	146.7	148.3	149.6	155.4	158.2	161.3	163.6	161.9	164.6	166.4	168.8
Real compensation per hour	112.3	115.7	117.0	117.6	118.1	121.6	123.5	125.2	126.7	124.3	124.9	125.7	126.5
Unit labor costs	98.8	99.6	100.2	99.7	99.9	102.6	103.6	103.0	103.5	101.9	101.8	101.8	101.9

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49. Annual indexes of multifactor productivity and related measures, selected years

[1996 = 100]

Item	1980	1990	1991	1992	1993	1994	1995	1997	1998	1999	2000	2001
Private business												
Productivity:												
Output per hour of all persons	75.8	90.2	91.3	94.8	95.4	96.6	97.3	102.2	105.0	107.7	111.0	112.4
Output per unit of capital services	103.3	99.7	96.5	98.0	98.7	100.4	99.8	100.3	99.3	98.2	96.6	92.8
Multifactor productivity	88.8	95.5	94.5	96.7	97.1	98.2	98.4	101.2	102.5	103.4	105.0	103.9
Output	59.4	83.6	82.6	85.7	88.5	92.8	95.8	105.2	110.5	115.7	120.4	120.2
Inputs:												
Labor input	71.9	89.4	88.3	89.3	91.8	95.6	98.0	103.5	106.1	109.0	110.1	109.5
Capital services	57.6	83.8	85.7	87.5	89.7	92.5	96.0	104.9	111.3	117.9	124.5	129.6
Combined units of labor and capital input	67.0	87.5	87.4	88.7	91.1	94.6	97.3	104.0	107.9	110.9	114.7	115.7
Capital per hour of all persons	73.4	90.4	94.6	96.8	96.6	96.2	97.5	101.9	105.8	109.7	114.8	121.1
Private nonfarm business												
Productivity:												
Output per hour of all persons	77.3	90.3	91.4	94.8	95.3	96.5	97.5	102.0	104.7	107.1	110.3	111.6
Output per unit of capital services	107.6	100.4	97.0	98.2	99.0	100.4	100.0	100.0	99.0	97.6	95.9	92.0
Multifactor productivity	91.0	95.8	94.8	96.7	97.2	98.2	98.6	101.0	102.2	102.9	104.4	103.3
Output	59.6	83.5	82.5	85.5	88.4	92.6	95.8	105.1	110.5	115.7	120.2	120.1
Inputs:												
Labor input	70.7	89.2	87.9	89.0	91.8	95.4	97.8	103.6	106.4	109.5	110.6	110.1
Capital services	55.4	83.2	85.1	87.0	89.4	92.2	95.8	105.1	111.7	118.5	125.4	130.5
Combined units of labor and capital input	65.5	87.2	87.0	88.4	91.0	94.3	97.2	104.1	108.1	112.4	115.2	116.3
Capital per hour of all persons	71.8	89.9	94.3	96.5	96.3	96.1	97.6	101.9	105.8	109.7	115.0	121.3
Manufacturing												
Productivity:												
Output per hour of all persons	62.0	82.2	84.1	88.6	90.2	93.0	96.5	103.8	108.9	114.0	118.3	119.7
Output per unit of capital services	97.2	97.5	93.6	95.9	96.9	99.7	100.6	101.4	101.7	101.7	101.0	95.1
Multifactor productivity	81.2	93.3	92.4	94.0	95.1	97.3	99.2	103.1	105.7	108.7	111.3	110.3
Output	64.3	83.2	81.5	85.5	88.3	92.9	96.9	105.6	110.5	114.7	117.4	112.1
Inputs:												
Hours of all persons	103.7	101.1	96.9	96.5	97.8	99.9	100.4	101.7	101.5	100.7	99.2	99.6
Capital services	66.1	85.3	87.1	89.1	91.1	93.2	96.4	104.1	108.7	112.8	116.2	117.9
Energy	86.1	93.1	93.2	93.1	96.6	99.9	102.3	97.5	100.6	102.9	104.3	98.9
Nonenergy materials	63.9	77.5	78.5	83.5	86.5	90.3	93.1	101.9	107.5	107.9	106.9	105.5
Purchased business services	65.8	84.7	84.6	92.0	92.9	96.0	100.4	103.9	103.1	105.4	106.5	97.7
Combined units of all factor inputs	79.2	89.1	88.3	90.9	92.8	95.5	97.7	102.4	104.6	105.5	105.5	101.6

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50. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

[1992 = 100]

Item	1960	1970	1980	1990	1996	1997	1998	1999	2000	2001	2002	2003	2004
Business													
Output per hour of all persons	48.9	66.2	79.2	94.5	104.6	106.5	109.4	112.6	115.9	118.8	123.9	129.5	134.7
Compensation per hour	13.9	23.6	54.2	90.6	109.6	113.1	119.9	125.6	134.5	140.1	144.5	150.5	156.9
Real compensation per hour	60.9	78.8	89.2	96.2	99.6	100.6	105.1	107.9	111.8	113.3	115.0	117.1	118.9
Unit labor costs	28.4	35.6	68.4	95.9	104.8	106.1	109.5	111.6	116.1	118.0	116.6	116.2	116.5
Unit nonlabor payments	24.9	31.4	61.3	93.9	111.8	113.8	109.8	109.2	107.2	109.9	114.9	119.6	124.3
Implicit price deflator	27.1	34.1	65.8	95.1	107.4	109.0	109.7	110.7	112.7	114.9	116.0	117.4	119.4
Nonfarm business													
Output per hour of all persons	51.8	67.9	80.6	94.6	104.8	106.5	109.3	112.3	115.5	118.3	123.5	129.0	134.2
Compensation per hour	14.5	23.7	54.4	90.4	109.5	112.9	119.6	125.1	134.0	139.3	143.8	149.7	156.0
Real compensation per hour	63.3	79.1	89.5	96.0	99.5	100.4	104.9	107.5	111.4	112.7	114.5	116.5	118.2
Unit labor costs	27.9	34.9	67.5	95.6	104.5	106.0	109.4	111.4	116.0	117.7	116.5	116.1	116.2
Unit nonlabor payments	24.3	31.1	60.4	93.6	112.0	114.5	110.8	110.7	108.7	111.5	116.8	121.1	125.8
Implicit price deflator	26.6	33.5	64.9	94.9	107.3	109.1	109.9	111.1	113.3	115.4	116.6	117.9	119.8
Nonfinancial corporations													
Output per hour of all employees	56.2	69.8	80.8	95.4	107.1	109.9	113.5	117.3	121.5	123.5	128.7	133.7	–
Compensation per hour	16.2	25.7	57.2	91.1	108.5	111.7	118.1	123.5	132.0	137.3	141.5	147.3	–
Real compensation per hour	70.8	85.9	94.1	96.8	98.6	99.4	103.6	106.1	109.7	111.1	112.7	114.6	–
Total unit costs	27.3	35.6	69.2	96.0	100.9	101.1	102.9	104.0	107.4	111.6	111.0	110.8	–
Unit labor costs	28.8	36.9	70.8	95.5	101.3	101.7	104.1	105.3	108.6	111.2	110.3	110.1	–
Unit nonlabor costs	23.3	32.2	64.9	97.3	100.0	99.7	99.5	100.4	104.2	112.6	113.0	112.9	–
Unit profits	50.2	44.4	66.9	96.9	150.0	154.3	137.0	129.1	108.7	82.2	95.4	114.6	–
Unit nonlabor payments	30.5	35.4	65.5	97.2	113.3	114.3	109.5	108.0	105.4	104.5	108.3	113.3	–
Implicit price deflator	29.4	36.4	69.0	96.1	105.3	105.9	105.9	106.2	107.5	108.9	109.6	111.2	–
Manufacturing													
Output per hour of all persons	41.8	54.2	70.1	92.9	113.9	118.0	123.6	128.1	134.1	136.9	147.3	154.7	162.4
Compensation per hour	14.9	23.7	55.6	90.5	109.3	112.2	118.7	123.4	134.7	137.8	147.1	159.6	165.4
Real compensation per hour	65.0	79.2	91.4	96.1	99.3	99.8	104.2	106.0	112.0	111.5	117.1	124.2	125.4
Unit labor costs	35.6	43.8	79.3	97.3	96.0	95.1	96.0	96.4	100.5	100.7	99.8	103.2	101.9
Unit nonlabor payments	26.8	29.3	80.2	100.8	110.7	110.4	104.2	105.1	107.1	105.9	–	–	–
Implicit price deflator	30.2	35.0	79.9	99.5	105.2	104.6	101.1	101.8	104.6	103.9	–	–	–

Dash indicates data not available.

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51. Annual indexes of output per hour for selected NAICS industries, 1990-2002

[1997=100]

NAICS	Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	Mining													
21	Mining	86.0	86.8	95.2	96.2	99.6	101.8	101.7	100.0	103.4	111.1	109.5	107.7	112.3
211	Oil and gas extraction	78.4	78.8	81.9	85.1	90.3	95.5	98.9	100.0	101.6	107.9	115.2	117.4	119.3
212	Mining, except oil and gas	79.3	80.0	86.8	89.9	93.0	94.0	96.0	100.0	104.6	105.9	106.8	109.0	111.7
2121	Coal mining	68.1	69.3	75.3	79.9	83.9	88.2	94.9	100.0	106.5	110.3	115.8	114.4	112.2
2122	Metal ore mining	79.9	82.7	91.7	102.2	104.1	98.5	95.3	100.0	109.5	112.7	124.4	131.8	143.9
2123	Nonmetallic mineral mining and quarrying	92.3	89.5	96.1	93.6	96.9	97.3	97.1	100.0	101.3	101.2	96.2	99.3	103.8
	Utilities													
2211	Power generation and supply	71.2	73.8	74.2	78.7	83.0	88.6	95.5	100.0	103.8	104.1	107.0	106.4	102.4
2212	Natural gas distribution	71.4	72.7	75.8	79.8	82.1	89.0	96.1	100.0	99.1	103.1	113.1	110.0	114.9
	Manufacturing													
3111	Animal food	90.1	89.3	90.2	90.2	87.3	94.0	87.5	100.0	109.4	109.5	109.7	127.2	–
3112	Grain and oilseed milling	89.0	91.2	91.1	93.8	94.7	99.1	91.3	100.0	107.5	114.2	112.5	117.3	–
3113	Sugar and confectionery products	91.0	93.8	90.5	92.5	94.0	94.3	98.2	100.0	104.0	107.1	111.9	109.9	–
3114	Fruit and vegetable preserving and specialty	86.4	89.7	90.7	93.8	94.9	97.1	98.2	100.0	106.8	108.4	109.8	117.0	–
3115	Dairy products	90.8	92.1	95.4	93.9	95.4	98.7	98.0	100.0	99.1	94.5	96.0	96.2	–
3116	Animal slaughtering and processing	94.5	96.8	101.5	100.9	97.4	98.5	94.3	100.0	99.9	100.3	101.9	102.7	–
3117	Seafood product preparation and packaging	117.5	112.0	115.3	113.9	114.1	108.4	116.2	100.0	117.0	130.2	137.6	147.3	–
3118	Bakeries and tortilla manufacturing	92.6	92.3	95.6	96.0	96.7	99.7	97.7	100.0	103.8	105.4	105.3	106.3	–
3119	Other food products	91.9	93.5	95.9	102.8	100.3	101.3	103.0	100.0	106.9	108.8	110.2	103.2	–
3121	Beverages	86.5	90.1	93.8	93.2	97.7	99.6	101.1	100.0	98.5	92.4	90.6	91.7	–
3122	Tobacco and tobacco products	81.4	77.3	79.6	73.7	89.8	97.5	99.4	100.0	98.1	92.1	98.0	100.0	–
3131	Fiber, yarn, and thread mills	73.9	74.7	80.1	84.6	87.2	92.0	98.7	100.0	102.2	104.6	102.6	110.5	–
3132	Fabric mills	75.0	77.7	81.5	85.0	91.9	95.8	98.0	100.0	103.9	109.8	110.2	109.1	–
3133	Textile and fabric finishing mills	81.7	80.4	83.7	86.0	87.8	84.5	85.0	100.0	100.6	101.7	104.0	109.7	–
3141	Textile furnishings mills	88.2	88.6	93.0	93.7	90.1	92.5	93.3	100.0	99.9	101.2	106.8	106.9	–
3149	Other textile product millsv	91.1	90.0	92.0	90.3	94.5	95.9	96.3	100.0	97.0	110.4	110.4	105.0	–
3151	Apparel knitting mills	85.6	88.7	93.2	102.5	104.3	109.5	121.9	100.0	96.6	102.0	110.2	108.4	–
3152	Cut and sew apparel	70.1	72.0	73.1	76.6	80.5	85.5	90.5	100.0	104.0	118.8	127.7	131.7	–
3159	Accessories and other apparel	100.9	97.3	98.7	99.0	104.6	112.4	112.6	100.0	110.8	103.3	104.9	114.8	–
3161	Leather and hide tanning and finishing	60.8	56.6	76.7	83.1	75.9	78.6	91.5	100.0	98.0	101.6	110.0	109.7	–
3162	Footwear	77.1	74.7	83.1	81.7	90.4	95.6	103.4	100.0	100.9	116.8	124.1	142.7	–
3169	Other leather products	102.5	100.2	97.0	94.3	80.0	73.2	79.7	100.0	109.2	100.4	107.6	114.1	–
3211	Sawmills and wood preservation	79.2	81.6	86.1	82.6	85.1	91.0	96.2	100.0	100.8	105.4	106.5	109.0	–
3212	Plywood and engineered wood products	102.3	107.4	114.7	108.9	105.8	101.8	101.2	100.0	105.6	99.9	100.5	105.0	–
3219	Other wood products	105.4	104.7	104.0	103.0	99.3	100.4	100.8	100.0	101.5	105.4	104.0	104.6	–
3221	Pulp, paper, and paperboard mills	88.5	88.1	92.3	92.9	97.6	102.0	97.6	100.0	103.1	111.4	115.7	117.5	–
3222	Converted paper products	90.5	93.5	93.7	96.3	97.6	97.2	98.3	100.0	102.7	101.5	101.9	101.0	–
3231	Printing and related support activities	96.6	95.4	101.3	100.1	98.3	98.8	99.6	100.0	100.5	103.5	104.9	105.6	–
3241	Petroleum and coal products	76.7	75.8	78.9	84.5	85.6	90.1	94.8	100.0	102.1	107.8	113.2	112.2	–
3251	Basic chemicals	91.4	90.1	89.4	89.9	95.1	92.3	90.0	100.0	102.5	114.7	118.4	111.0	–
3252	Resin, rubber, and artificial fibers	75.8	74.7	80.6	83.8	93.5	95.9	93.3	100.0	105.5	108.8	108.1	103.8	–
3253	Agricultural chemicals	84.6	81.0	81.3	85.6	87.4	90.7	92.1	100.0	98.8	87.6	91.4	91.1	–
3254	Pharmaceuticals and medicines	91.4	92.6	88.2	88.1	92.4	96.3	99.9	100.0	92.9	94.6	93.4	97.4	–
3255	Paints, coatings, and adhesives	85.1	85.9	87.6	90.9	94.1	92.7	98.3	100.0	99.1	98.8	98.5	102.1	–
3256	Soap, cleaning compounds, and toiletries	83.2	84.2	83.4	86.9	88.6	93.9	95.6	100.0	96.6	91.1	99.2	102.7	–
3259	Other chemical products and preparations	76.6	78.0	84.7	90.6	92.6	94.4	94.2	100.0	99.4	109.2	120.0	111.3	–
3261	Plastics products	84.7	86.3	90.3	91.9	94.4	94.5	97.0	100.0	103.5	109.3	111.2	113.3	–
3262	Rubber products	83.0	83.8	84.9	90.4	90.3	92.8	94.4	100.0	100.5	101.4	103.9	104.2	–
3271	Clay products and refractories	89.2	87.5	91.5	91.9	96.6	97.4	102.6	100.0	101.3	103.5	103.6	97.6	–
3272	Glass and glass products	80.0	79.1	84.3	86.1	87.5	88.8	96.5	100.0	102.7	108.6	109.7	105.2	–
3273	Cement and concrete products	94.8	93.7	94.8	96.5	95.0	98.2	100.6	100.0	103.5	104.1	100.4	97.1	–
3274	Lime and gypsum products	84.1	82.7	88.5	90.1	87.8	88.8	92.4	100.0	113.1	102.7	97.0	100.1	–
3279	Other nonmetallic mineral products	79.8	81.4	90.2	89.3	90.5	91.7	96.5	100.0	98.8	95.5	95.6	96.8	–
3311	Iron and steel mills and ferroalloy production	69.6	67.2	74.1	81.7	87.2	89.7	94.1	100.0	101.7	106.5	108.5	106.7	–
3312	Steel products from purchased steel	83.8	86.4	89.9	95.9	100.0	100.5	100.5	100.0	100.3	94.2	96.4	97.1	–
3313	Alumina and aluminum production	91.9	93.3	96.8	96.0	100.3	96.8	95.9	100.0	101.1	104.3	97.8	96.9	–
3314	Other nonferrous metal production	95.6	95.8	98.8	101.8	105.1	102.9	105.7	100.0	111.2	108.9	103.1	100.5	–
3315	Foundries	85.3	84.5	85.8	89.8	91.4	93.1	96.2	100.0	101.6	104.9	104.0	109.3	–
3321	Forging and stamping	88.6	86.5	91.7	94.6	93.7	94.2	97.6	100.0	103.7	110.9	121.3	121.8	–
3322	Cutlery and hand tools	85.1	85.4	87.2	91.7	94.4	97.8	104.4	100.0	100.0	107.8	105.8	110.2	–
3323	Architectural and structural metals	87.8	89.1	92.5	93.4	95.1	93.9	94.2	100.0	101.1	101.8	101.0	100.7	–
3324	Boilers, tanks, and shipping containers	90.4	92.6	95.3	94.8	100.5	97.8	100.7	100.0	101.3	98.9	97.7	98.2	–
3325	Hardware	84.4	83.8	86.9	89.6	95.7	97.3	102.6	100.0	101.0	106.5	115.8	114.6	–
3326	Spring and wire products	85.2	88.4	90.9	95.3	91.5	99.5	102.8	100.0	111.6	112.9	114.6	110.6	–
3327	Machine shops and threaded products	78.8	79.8	87.2	86.9	91.6	98.7	100.0	100.0	99.3	103.9	107.2	107.2	–

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51. Continued—Annual indexes of output per hour for selected NAICS industries, 1990-2002

[1997=100]

NAICS	Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
3328	Coating, engraving, and heat treating metals	81.6	78.1	86.9	91.9	96.5	102.8	102.9	100.0	101.7	101.5	105.9	105.1	-
3329	Other fabricated metal products	86.7	85.9	90.6	92.1	95.0	97.1	98.9	100.0	102.3	100.2	100.8	98.2	-
3331	Agriculture, construction, and mining machinery	82.8	77.2	79.6	84.1	91.0	95.6	95.9	100.0	104.2	95.0	101.0	99.5	-
3332	Industrial machinery	80.6	81.1	79.5	84.9	90.0	97.9	98.8	100.0	94.4	105.2	129.7	104.6	-
3333	Commercial and service industry machinery	91.4	89.6	96.5	101.7	101.2	103.0	106.3	100.0	107.5	111.2	101.4	94.4	-
3334	HVAC and commercial refrigeration equipment	88.8	88.2	90.8	93.8	97.3	96.6	97.8	100.0	106.6	110.4	108.3	110.8	-
3335	Metalworking machinery	85.3	82.3	89.3	89.3	94.0	99.1	98.1	100.0	99.1	100.5	106.4	102.0	-
3336	Turbine and power transmission equipment	85.1	84.6	81.2	84.8	93.3	92.1	97.9	100.0	106.4	113.3	117.1	130.2	-
3339	Other general purpose machinery	85.9	85.2	85.1	89.8	91.5	94.6	95.1	100.0	103.2	105.6	113.0	109.4	-
3341	Computer and peripheral equipment	14.3	15.8	20.6	27.9	35.9	51.3	72.6	100.0	138.6	190.3	225.4	237.0	-
3342	Communications equipment	47.3	49.3	59.3	62.1	70.1	74.6	84.3	100.0	102.7	134.0	165.5	155.2	-
3343	Audio and video equipment	75.5	82.8	92.1	98.8	108.5	140.0	104.7	100.0	103.1	116.2	123.3	126.3	-
3344	Semiconductors and electronic components	21.4	24.5	29.6	34.1	43.1	63.4	81.8	100.0	125.2	174.5	233.3	231.6	-
3345	Electronic instruments	76.0	80.5	83.1	85.8	88.8	96.8	97.7	100.0	101.3	105.1	114.3	116.1	-
3346	Magnetic media manufacturing and reproduction	86.6	91.2	93.0	96.8	106.1	106.7	103.8	100.0	105.4	106.8	104.0	98.6	-
3351	Electric lighting equipment	87.3	88.5	93.6	90.8	94.5	92.2	95.6	100.0	103.8	102.5	101.9	105.4	-
3352	Household appliances	76.4	76.4	82.4	88.9	95.0	92.7	93.1	100.0	105.1	104.3	117.5	122.6	-
3353	Electrical equipment	73.6	72.7	78.9	85.8	89.0	98.1	100.2	100.0	99.8	98.9	100.6	101.0	-
3359	Other electrical equipment and components	75.3	74.2	81.6	86.8	89.4	92.0	96.0	100.0	105.5	114.8	120.5	113.5	-
3361	Motor vehicles	86.0	82.4	91.2	89.8	90.3	88.6	91.0	100.0	113.3	123.3	110.4	108.7	-
3362	Motor vehicle bodies and trailers	75.8	71.8	88.3	96.3	97.7	97.3	98.4	100.0	102.7	103.1	98.4	99.4	-
3363	Motor vehicle parts	75.7	74.5	82.4	88.5	91.8	92.3	93.1	100.0	104.8	110.4	112.7	114.8	-
3364	Aerospace products and parts	87.7	92.1	94.1	98.2	93.8	93.7	98.1	100.0	118.5	118.0	101.0	114.7	-
3365	Railroad rolling stock	77.2	80.0	81.1	82.3	83.1	82.0	80.9	100.0	102.9	116.0	117.7	124.7	-
3366	Ship and boat building	99.6	92.6	98.5	101.3	99.0	93.1	94.1	100.0	100.3	112.2	120.1	119.8	-
3369	Other transportation equipment	62.6	62.0	88.4	99.8	93.4	93.1	99.8	100.0	110.8	113.3	130.9	146.9	-
3371	Household and institutional furniture	87.6	88.2	92.9	93.8	94.1	97.1	99.5	100.0	102.7	103.7	102.5	106.1	-
3372	Office furniture and fixtures	80.8	78.8	86.2	87.9	83.4	84.3	85.6	100.0	100.1	98.5	100.2	97.1	-
3379	Other furniture-related products	88.1	88.6	88.4	90.5	93.6	94.5	96.7	100.0	107.2	102.5	100.1	105.3	-
3391	Medical equipment and supplies	81.2	83.1	88.1	91.1	90.8	95.0	100.0	100.0	108.9	109.6	114.2	119.0	-
3399	Other miscellaneous manufacturing	90.1	90.6	90.0	92.3	93.0	96.0	99.6	100.0	101.9	105.2	112.9	110.9	-
	Wholesale trade													
42	Wholesale trade	77.8	79.1	86.2	89.5	91.3	93.3	96.2	100.0	104.4	110.9	114.1	117.1	123.6
423	Durable goods	65.7	66.1	75.0	80.5	84.5	88.9	94.0	100.0	105.6	115.3	119.6	120.3	127.7
4231	Motor vehicles and parts	76.6	73.3	82.2	88.0	94.1	93.6	94.9	100.0	104.7	119.8	114.0	114.1	121.7
4232	Furniture and furnishings	82.4	87.2	92.0	95.8	93.3	96.8	97.0	100.0	97.5	100.8	105.5	105.4	101.8
4233	Lumber and construction supplies	115.0	113.2	119.6	113.9	111.9	103.6	103.0	100.0	102.9	104.8	101.7	108.6	119.2
4234	Commercial equipment	33.8	37.3	48.2	56.2	60.5	74.7	88.4	100.0	118.2	141.1	148.9	164.9	189.4
4235	Metals and minerals	101.6	102.6	109.1	111.7	110.1	101.2	102.7	100.0	102.4	96.0	99.2	102.2	102.2
4236	Electric goods	46.8	47.6	51.4	59.1	68.2	79.3	87.8	100.0	105.9	126.2	151.7	148.1	161.2
4237	Hardware and plumbing	88.8	86.5	95.6	94.3	101.3	98.0	99.1	100.0	103.5	107.8	111.1	102.6	107.9
4238	Machinery and supplies	78.9	74.2	79.7	84.3	85.4	89.7	93.9	100.0	104.2	101.4	104.1	102.7	100.2
4239	Miscellaneous durable goods	89.5	96.6	112.1	113.2	106.1	99.2	101.0	100.0	101.8	112.6	116.7	116.1	125.5
424	Nondurable goods	98.4	99.8	103.2	103.0	101.8	99.7	99.2	100.0	102.8	104.1	103.5	106.9	112.6
4241	Paper and paper products	81.0	85.5	96.5	97.2	101.5	99.0	96.5	100.0	100.4	105.5	105.5	109.0	120.2
4242	Druggists' goods	81.8	86.6	91.8	89.3	92.8	95.4	98.3	100.0	99.6	101.7	96.8	101.2	116.0
4243	Apparel and piece goods	103.9	103.3	100.1	97.7	103.8	92.2	99.0	100.0	104.1	103.5	102.7	102.4	111.5
4244	Grocery and related products	96.4	98.2	103.6	105.1	103.3	103.0	99.8	100.0	101.9	103.6	105.2	109.4	111.8
4245	Farm product raw materials	80.6	85.9	85.9	84.0	80.4	87.7	90.6	100.0	100.4	114.2	119.0	120.0	135.4
4246	Chemicals	107.3	106.6	112.5	110.0	110.5	102.1	100.0	100.0	99.3	98.0	95.8	93.6	96.9
4247	Petroleum	97.3	107.0	118.3	119.1	115.8	108.7	105.9	100.0	115.0	112.0	112.5	116.5	126.0
4248	Alcoholic beverages	109.4	111.2	107.4	105.6	105.9	102.5	104.5	100.0	109.7	110.1	111.0	111.6	117.3
4249	Miscellaneous nondurable goods	107.3	98.2	93.9	97.5	94.8	96.2	98.7	100.0	101.7	99.6	106.2	104.2	97.0
425	Electronic markets and agents and brokers	70.7	73.6	81.5	85.9	88.0	91.1	95.7	100.0	104.6	114.4	124.1	131.3	132.6
42511	Business to business electronic markets	70.4	72.6	80.3	84.8	88.3	90.5	95.3	100.0	103.5	121.7	141.3	169.4	205.0
42512	Wholesale trade agents and brokers	70.8	74.0	82.3	86.8	88.4	91.8	96.1	100.0	104.8	110.5	115.7	114.2	109.3
	Retail trade													
44-45	Retail trade	83.2	83.3	86.8	89.4	92.8	94.7	97.7	100.0	104.3	110.3	114.2	117.4	122.7
441	Motor vehicle and parts dealers	89.7	88.3	92.6	94.0	96.9	97.0	98.8	100.0	102.7	106.4	107.2	110.0	109.7
4411	Automobile dealers	92.1	90.8	94.8	96.0	98.0	97.2	98.9	100.0	102.7	106.4	106.6	109.1	106.0
4412	Other motor vehicle dealers	69.0	71.7	78.3	84.1	90.2	91.0	97.7	100.0	105.9	113.0	108.6	112.6	116.4
4413	Auto parts, accessories, and tire stores	85.0	84.0	89.1	90.6	95.4	97.9	98.3	100.0	105.7	110.0	112.0	109.3	115.8
442	Furniture and home furnishings stores	80.7	81.1	88.1	88.3	90.4	94.1	99.4	100.0	101.7	109.6	115.7	118.5	125.1
4421	Furniture stores	82.1	83.5	89.0	89.0	88.9	92.5	97.8	100.0	102.1	108.2	114.8	121.1	128.6
4422	Home furnishings stores	78.5	77.6	86.8	87.2	92.1	95.9	101.3	100.0	101.3	111.4	116.8	115.6	121.4
443	Electronics and appliance stores	46.0	49.2	56.9	65.5	77.6	89.2	95.0	100.0	122.9	152.2	177.7	199.1	240.0
444	Building material and garden supply stores	81.8	80.2	84.0	88.0	93.7	93.7	97.5	100.0	106.7	112.3	113.1	115.8	119.9

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51. Continued—Annual indexes of output per hour for selected NAICS industries, 1990-2002

[1997=100]

NAICS	Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
4441	Building material and supplies dealers	83.2	80.7	84.7	89.1	94.8	94.8	97.6	100.0	107.6	113.7	113.8	115.3	119.8
4442	Lawn and garden equipment and supplies stores	74.5	77.5	80.2	81.5	86.9	87.0	97.1	100.0	101.2	103.5	108.2	119.4	121.2
445	Food and beverage stores	107.1	106.6	106.9	105.4	104.3	102.5	100.3	100.0	99.9	103.7	105.1	107.6	110.3
4451	Grocery stores	106.5	106.6	106.7	105.9	104.9	103.0	100.8	100.0	100.3	104.3	104.9	107.5	110.3
4452	Specialty food stores	122.9	115.0	111.4	107.6	104.5	101.1	95.5	100.0	95.0	99.6	105.6	110.8	114.2
4453	Beer, wine and liquor stores	100.1	100.2	101.0	94.4	92.9	96.2	103.1	100.0	105.8	99.8	111.1	110.4	111.8
446	Health and personal care stores	92.0	91.6	90.7	91.9	91.8	93.0	95.7	100.0	104.1	106.9	111.4	112.7	118.8
447	Gasoline stations	84.8	85.7	88.5	92.8	96.8	99.7	99.4	100.0	105.6	110.6	106.5	109.8	117.5
448	Clothing and clothing accessories stores	69.5	70.5	75.3	78.9	83.3	91.2	97.9	100.0	105.4	112.8	120.3	123.5	129.0
4481	Clothing stores	68.9	71.4	77.1	79.2	81.9	90.1	97.1	100.0	106.7	113.3	120.9	125.2	132.7
4482	Shoe stores	73.7	73.1	78.2	79.2	88.3	93.7	102.4	100.0	97.8	104.9	109.6	115.8	120.0
4483	Jewelry, luggage, and leather goods stores	68.6	64.5	65.0	77.1	85.0	94.1	97.3	100.0	107.0	118.3	128.0	122.5	121.5
451	Sporting goods, hobby, book, and music stores	80.8	85.6	83.8	84.0	87.2	93.0	94.7	100.0	108.7	114.9	121.1	125.4	132.9
4511	Sporting goods and musical instrument stores	77.1	82.8	79.8	80.6	83.9	92.3	92.5	100.0	112.9	120.4	128.3	130.4	137.9
4512	Book, periodical, and music stores	89.0	91.8	92.5	91.6	94.5	94.5	99.3	100.0	101.0	104.7	108.0	116.0	123.8
452	General merchandise stores	75.3	79.0	83.0	88.5	90.6	92.2	96.9	100.0	105.0	113.1	119.9	124.2	130.5
4521	Department stores	84.0	88.3	91.6	95.0	95.1	94.7	98.4	100.0	100.6	104.5	106.3	104.0	104.7
4529	Other general merchandise stores	61.4	64.8	69.7	77.8	82.6	87.6	94.3	100.0	113.4	129.8	145.9	162.1	177.5
453	Miscellaneous store retailers	70.6	68.0	74.2	79.1	87.0	89.5	95.0	100.0	108.3	109.8	111.3	108.4	115.6
4531	Florists	75.1	75.9	85.1	91.4	85.4	83.5	96.1	100.0	101.2	117.3	116.0	108.6	120.7
4532	Office supplies, stationery and gift stores	64.6	66.3	71.5	75.8	87.5	90.9	91.8	100.0	113.0	118.0	124.1	125.1	140.3
4533	Used merchandise stores	84.9	83.1	89.7	88.9	87.3	90.2	97.4	100.0	113.5	109.8	115.7	115.0	121.4
4539	Other miscellaneous store retailers	79.6	69.2	74.7	80.5	89.7	90.5	98.0	100.0	105.0	101.6	99.6	93.2	92.8
454	Nonstore retailers	54.4	55.0	63.4	66.7	73.8	80.9	91.6	100.0	111.3	125.4	142.8	146.9	169.6
4541	Electronic shopping and mail-order houses	43.5	46.7	50.6	58.3	62.9	71.9	84.4	100.0	118.2	141.5	159.8	177.5	209.8
4542	Vending machine operators	97.1	95.4	95.1	92.8	94.1	89.3	96.9	100.0	114.1	118.1	127.1	110.4	113.3
4543	Direct selling establishments	70.0	67.6	82.1	79.7	89.2	94.7	102.2	100.0	96.2	96.3	104.3	98.7	110.2
	Transportation and warehousing													
481	Air transportation	77.5	78.2	81.4	84.7	90.8	95.3	98.8	100.0	97.6	98.2	98.2	91.9	103.2
482111	Line-haul railroads	69.8	75.3	82.3	85.7	88.6	92.0	98.4	100.0	102.1	105.5	114.3	121.9	131.9
48412	General freight trucking, long-distance	88.5	92.4	97.5	95.6	98.1	95.4	95.7	100.0	99.1	102.0	105.5	104.2	109.4
491	U.S. Postal service	96.1	95.8	96.5	99.0	98.5	98.3	96.7	100.0	101.4	102.4	104.9	106.1	107.0
	Information													
5111	Newspaper, book, and directory publishers	97.4	96.1	95.8	95.3	93.0	93.5	92.7	100.0	104.5	108.5	110.1	106.4	108.1
5112	Software publishers	28.6	30.6	42.7	51.7	64.6	73.0	88.0	100.0	115.9	113.0	103.9	101.9	106.7
51213	Motion picture and video exhibition	109.4	108.9	104.1	104.6	103.4	99.9	100.0	100.0	99.9	102.0	106.5	104.7	104.4
5151	Radio and television broadcasting	96.1	97.8	102.8	101.4	106.0	106.1	104.1	100.0	99.1	99.4	98.4	94.3	100.4
5152	Cable and other subscription programming	98.8	94.3	96.0	93.6	92.0	94.4	93.7	100.0	129.3	133.2	135.7	125.3	131.4
5171	Wired telecommunications carriers	64.8	68.4	74.5	79.7	85.1	90.6	97.5	100.0	105.5	112.7	119.9	121.0	130.6
5172	Wireless telecommunications carriers	76.3	73.8	85.6	94.8	97.1	98.3	103.0	100.0	114.2	134.3	139.0	172.7	192.0
5175	Cable and other program distribution	99.1	94.3	95.9	93.5	91.9	94.2	93.5	100.0	95.7	94.5	90.4	87.6	93.5
	Finance and insurance													
52211	Commercial banking	80.5	83.2	83.3	90.3	92.9	96.0	99.3	100.0	98.0	101.5	104.2	101.6	103.8
	Real estate and rental and leasing													
532111	Passenger car rental	89.8	97.8	104.4	106.1	107.9	101.1	108.9	100.0	101.2	113.1	112.0	112.1	113.3
53212	Truck, trailer and RV rental and leasing	70.7	71.7	69.5	75.8	82.0	90.3	96.7	100.0	93.7	97.8	95.9	93.6	91.4
	Professional, scientific, and technical services													
541213	Tax preparation services	92.4	84.7	99.5	119.1	119.9	96.2	92.1	100.0	105.1	99.2	91.8	78.2	92.1
54181	Advertising agencies	105.0	99.7	111.9	111.3	106.8	101.4	102.1	100.0	95.8	110.1	116.6	116.7	123.9
	Accomodation and food services													
7211	Traveler accommodations	82.9	85.4	92.9	93.0	97.0	99.2	100.1	100.0	100.0	103.6	107.7	102.0	104.1
722	Food services and drinking places	102.9	102.3	101.7	102.3	100.8	100.6	99.2	100.0	101.2	101.1	103.5	103.7	104.9
7221	Full-service restaurants	99.1	98.3	97.5	97.7	97.8	96.6	96.3	100.0	100.0	99.2	100.8	100.8	102.0
7222	Limited-service eating places	103.3	103.3	102.7	105.6	103.6	104.7	102.2	100.0	102.4	102.5	105.1	106.6	107.1
7223	Special food services	107.2	106.9	106.4	103.8	101.1	99.3	97.6	100.0	102.1	106.0	111.7	108.4	108.1
7224	Drinking places, alcoholic beverages	125.7	121.2	121.5	112.7	102.6	104.4	102.4	100.0	100.0	99.4	100.4	98.2	107.2
	Other services (except public administration)													
8111	Automotive repair and maintenance	92.8	86.5	90.0	91.2	96.7	102.9	98.9	100.0	105.0	106.9	108.6	109.3	103.7
81211	Hair, nail and skin care services	81.6	79.8	85.6	84.3	88.7	92.4	97.1	100.0	102.7	103.6	103.0	109.5	104.2
81221	Funeral homes and funeral services	96.1	94.3	104.7	100.4	103.6	100.4	97.9	100.0	103.8	100.4	94.5	93.9	90.9
8123	Drycleaning and laundry services	95.6	93.2	94.9	93.8	95.9	98.8	101.6	100.0	105.0	109.5	113.7	121.1	120.2
81292	Photofinishing	117.3	115.6	116.2	123.6	124.9	114.7	103.2	100.0	99.4	106.9	107.6	115.0	133.6

NOTE: Dash indicates data are not available.

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52. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted

Country	Annual average		2002		2003				2004		
	2002	2003	III	IV	I	II	III	IV	I	II	III
United States	5.8	6.0	5.7	5.9	5.8	6.1	6.1	5.9	5.6	5.6	–
Canada	7.0	6.9	7.0	6.9	6.7	6.9	7.2	6.8	6.7	6.6	6.4
Australia	6.4	6.1	6.3	6.2	6.2	6.2	6.1	5.8	5.7	5.6	5.6
Japan	5.4	5.3	5.5	5.4	5.4	5.4	5.2	5.1	5.0	4.7	4.8
France	8.7	9.3	8.7	8.9	9.0	9.2	9.4	9.4	9.4	9.4	9.4
Germany	8.6	9.3	8.7	8.9	9.2	9.4	9.4	9.3	9.2	9.9	10.0
Italy[1]	9.1	8.8	9.1	9.0	9.0	8.8	8.7	8.6	8.6	–	–
Sweden[2]	5.1	5.8	5.1	5.2	5.2	5.6	5.8	6.2	6.6	6.8	6.6
United Kingdom	5.2	5.0	5.2	5.1	5.1	5.0	5.0	4.9	4.8	4.8	4.7

[1] Quarterly rates are for the first month of the quarter.

[2] Preliminary data for 2003.

NOTE: Quarterly figures for France and Germany are calculated by applying annual adjustment factors to current published data, and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures. See "Notes on the data" for information on breaks in series. For further qualifications and historical data, see *Comparative Civilian Labor Force Statistics, Ten Countries, 1959-2003* (Bureau of Labor Statistics, June 23, 2004), on the Internet at **http://www.bls.gov/fls/home.htm**. Monthly and quarterly unemployment rates, updated monthly, are also on this site.

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53. Annual data: employment status of the working-age population, approximating U.S. concepts, 10 countries

[Numbers in thousands]

Employment status and country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Civilian labor force											
United States	129,200	131,056	132,304	133,943	136,297	137,673	139,368	142,583	143,734	144,863	146,510
Canada	14,308	14,400	14,517	14,669	14,958	15,237	15,536	15,789	16,027	16,475	16,819
Australia	8,613	8,770	8,995	9,115	9,204	9,339	9,414	9,590	9,752	9,907	10,092
Japan	65,470	65,780	65,990	66,450	67,200	67,240	67,090	66,990	66,870	66,240	66,010
France	24,480	24,670	24,760	25,010	25,130	25,460	25,790	26,070	26,350	26,590	26,730
Germany	39,102	39,074	38,980	39,142	39,415	39,754	39,375	39,302	39,459	39,413	39,276
Italy	22,570	22,450	22,460	22,570	22,680	22,960	23,130	23,340	23,540	23,750	23,880
Netherlands	7,010	7,150	7,210	7,300	7,540	7,620	7,850	8,150	8,340	8,300	8,330
Sweden	4,444	4,418	4,460	4,459	4,418	4,402	4,430	4,489	4,530	4,544	4,567
United Kingdom	28,165	28,149	28,157	28,260	28,417	28,479	28,769	28,930	29,053	29,288	29,490
Participation rate[1]											
United States	66.3	66.6	66.6	66.8	67.1	67.1	67.1	67.1	66.8	66.6	66.2
Canada	65.5	65.2	64.9	64.7	65.0	65.4	65.8	65.9	66.0	66.8	67.3
Australia	63.5	63.9	64.5	64.6	64.3	64.3	64.0	64.4	64.4	64.4	64.6
Japan	63.3	63.1	62.9	63.0	63.2	62.8	62.4	62.0	61.6	60.8	60.3
France	55.4	55.5	55.4	55.6	55.5	55.9	56.3	56.6	56.8	57.0	57.0
Germany	57.8	57.4	57.1	57.1	57.3	57.7	56.8	56.6	56.6	56.3	56.1
Italy	47.9	47.3	47.1	47.1	47.2	47.6	47.8	48.1	48.3	48.6	48.8
Netherlands	57.9	58.6	58.8	59.2	60.8	61.1	62.6	64.5	65.8	65.0	64.6
Sweden	64.5	63.7	64.1	64.0	63.3	62.8	62.8	63.8	63.7	64.0	64.0
United Kingdom	62.7	62.6	62.4	62.4	62.6	62.5	62.9	62.9	62.7	62.9	62.9
Employed											
United States	120,259	123,060	124,900	126,708	129,558	131,463	133,488	136,891	136,933	136,485	137,736
Canada	12,770	13,027	13,271	13,380	13,705	14,068	14,456	14,827	14,997	15,325	15,660
Australia	7,699	7,942	8,256	8,364	8,444	8,618	8,762	8,989	9,091	9,271	9,481
Japan	63,810	63,860	63,890	64,200	64,900	64,450	63,920	63,790	63,470	62,650	62,510
France	21,710	21,750	21,960	22,040	22,170	22,600	23,050	23,690	24,140	24,280	24,250
Germany	35,989	35,756	35,780	35,637	35,508	36,061	36,042	36,236	36,350	36,018	35,615
Italy	20,270	19,940	19,820	19,920	19,990	20,210	20,460	20,840	21,270	21,580	21,790
Netherlands	6,570	6,660	6,730	6,860	7,160	7,320	7,600	7,910	8,130	8,070	8,010
Sweden	4,028	3,992	4,056	4,019	3,973	4,034	4,117	4,229	4,303	4,310	4,303
United Kingdom	25,242	25,429	25,718	25,964	26,433	26,696	27,048	27,350	27,570	27,768	28,011
Employment-population ratio[2]											
United States	61.7	62.5	62.9	63.2	63.8	64.1	64.3	64.4	63.7	62.7	62.3
Canada	58.5	59.0	59.4	59.1	59.7	60.4	61.3	62.1	61.9	62.4	63.0
Australia	56.8	57.8	59.2	59.3	59.0	59.3	59.6	60.3	60.1	60.3	60.7
Japan	61.7	61.3	60.9	60.9	61.0	60.2	59.4	59.0	58.4	57.5	57.1
France	49.1	49.0	49.1	49.0	49.0	49.7	50.3	51.4	52.0	52.0	51.7
Germany	53.2	52.6	52.4	52.0	51.6	52.3	52.0	52.2	52.2	51.5	50.9
Italy	43.0	42.0	41.5	41.6	41.6	41.9	42.3	42.9	43.6	44.1	44.6
Netherlands	54.2	54.6	54.9	55.7	57.8	58.7	60.6	62.6	64.2	63.2	62.1
Sweden	58.5	57.6	58.3	57.7	56.9	57.6	58.4	60.1	60.5	60.7	60.3
United Kingdom	56.2	56.5	57.0	57.4	58.2	58.6	59.1	59.4	59.5	59.6	59.8
Unemployed											
United States	8,940	7,996	7,404	7,236	6,739	6,210	5,880	5,692	6,801	8,378	8,774
Canada	1,539	1,373	1,246	1,289	1,252	1,169	1,080	962	1,031	1,150	1,159
Australia	914	829	739	751	759	721	652	602	661	636	611
Japan	1,660	1,920	2,100	2,250	2,300	2,790	3,170	3,200	3,400	3,590	3,500
France	2,770	2,920	2,800	2,970	2,960	2,870	2,740	2,380	2,210	2,310	2,480
Germany	3,113	3,318	3,200	3,505	3,907	3,693	3,333	3,065	3,110	3,396	3,661
Italy	2,300	2,510	2,640	2,650	2,690	2,750	2,670	2,500	2,270	2,160	2,100
Netherlands	440	490	480	440	370	300	250	240	210	230	320
Sweden	416	426	404	440	445	368	313	260	227	234	264
United Kingdom	2,916	2,716	2,439	2,297	1,985	1,783	1,721	1,580	1,483	1,520	1,479
Unemployment rate											
United States	6.9	6.1	5.6	5.4	4.9	4.5	4.2	4.0	4.7	5.8	6.0
Canada	10.8	9.5	8.6	8.8	8.4	7.7	7.0	6.1	6.4	7.0	6.9
Australia	10.6	9.4	8.2	8.2	8.3	7.7	6.9	6.3	6.8	6.4	6.1
Japan	2.5	2.9	3.2	3.4	3.4	4.1	4.7	4.8	5.1	5.4	5.3
France	11.3	11.8	11.3	11.9	11.8	11.3	10.6	9.1	8.4	8.7	9.3
Germany	8.0	8.5	8.2	9.0	9.9	9.3	8.5	7.8	7.9	8.6	9.3
Italy	10.2	11.2	11.8	11.7	11.9	12.0	11.5	10.7	9.6	9.1	8.8
Netherlands	6.3	6.9	6.7	6.0	4.9	3.9	3.2	2.9	2.5	2.8	3.8
Sweden	9.4	9.6	9.1	9.9	10.1	8.4	7.1	5.8	5.0	5.1	5.8
United Kingdom	10.4	9.6	8.7	8.1	7.0	6.3	6.0	5.5	5.1	5.2	5.0

[1] Labor force as a percent of the working-age population.

[2] Employment as a percent of the working-age population.

NOTE: See "Notes on the data" for information on breaks in series.

For further qualifications and historical data, see *Comparative Civilian Labor Force Statistics, Ten Countries,* 1959-2003 (Bureau of Labor Statistics, June 23, 2004), on the Internet at: **http://www.bls.gov/fls/home.htm**.

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Table 54. Annual indexes of manufacturing productivity and related measures, 15 economies

[1992 = 100]

Measure and economy	1960	1970	1980	1990	1991	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Output per hour																
United States	–	0.0	70.5	96.9	97.9	102.1	107.3	113.8	117.0	121.3	126.5	132.8	143.5	145.2	160.0	171.0
Canada	37.8	54.9	72.9	93.4	95.3	105.8	110.8	112.4	109.7	113.5	115.5	122.1	129.3	127.0	130.5	132.1
Australia	–	–	69.5	91.6	96.4	106.1	104.9	105.8	113.6	115.2	118.5	119.9	128.0	132.4	136.2	140.7
Japan	13.9	37.7	63.6	94.4	99.0	101.7	103.3	111.0	116.1	121.0	121.2	126.7	135.9	135.9	139.9	146.2
Korea	–	–	–	81.5	91.6	108.5	118.2	129.3	142.3	160.4	178.8	198.9	215.8	214.3	235.2	256.4
Taiwan	–	–	47.6	88.8	96.5	102.8	106.7	115.1	123.1	129.3	135.9	143.4	151.0	160.8	170.9	177.2
Belgium	18.0	32.9	65.4	96.8	99.1	102.5	108.4	113.2	116.3	125.5	126.9	125.5	130.8	132.6	141.7	146.2
Denmark	25.2	46.3	83.2	98.4	100.3	100.2	112.6	112.5	109.8	118.0	117.4	123.1	126.6	127.2	131.3	136.9
France	19.9	39.0	61.6	93.9	97.0	101.0	108.9	114.4	114.7	121.7	127.9	133.0	142.5	148.0	155.1	158.0
Germany	29.2	52.0	77.2	99.0	98.3	101.8	109.6	112.3	114.7	120.4	122.0	121.4	127.0	127.8	131.0	134.4
Italy	24.6	46.2	78.6	96.6	96.1	101.2	104.8	107.9	108.3	110.3	110.8	110.6	113.5	114.0	112.1	110.9
Netherlands	18.8	38.5	69.1	98.7	99.0	102.0	113.1	117.3	119.3	121.4	124.1	127.0	132.7	132.5	135.4	–
Norway	37.6	59.1	77.9	98.1	98.2	99.6	99.6	100.7	102.5	102.0	99.9	103.6	106.6	109.8	111.7	113.5
Sweden	27.3	52.2	73.1	94.6	95.5	107.3	117.8	124.5	129.5	141.0	149.5	162.7	175.5	170.3	185.6	196.5
United Kingdom	30.0	43.2	54.3	89.2	93.9	103.8	108.0	106.2	105.4	106.9	108.4	113.6	121.0	125.1	127.7	134.8
Output																
United States	–	–	75.8	101.6	98.3	103.5	111.1	118.4	121.3	127.9	133.1	138.9	147.6	139.6	142.9	145.4
Canada	33.4	58.9	83.6	106.0	99.0	105.9	114.1	119.6	119.6	127.7	133.9	144.9	159.2	153.6	158.0	157.3
Australia	–	–	89.8	104.1	100.7	103.8	109.1	108.7	112.6	115.1	118.6	118.3	123.8	123.8	128.7	130.2
Japan	10.8	39.4	60.8	97.1	102.0	96.3	94.9	98.9	103.0	106.5	100.2	101.9	109.2	105.5	103.4	106.7
Korea	–	7.0	29.9	86.7	95.0	105.4	116.8	129.9	138.3	145.0	133.5	162.6	190.2	194.3	209.1	219.1
Taiwan	–	12.7	44.0	90.0	96.1	102.4	108.5	114.9	120.3	128.3	132.6	141.5	151.8	143.1	152.1	160.9
Belgium	30.7	57.6	78.2	101.0	100.7	97.0	101.4	104.2	105.9	112.7	114.4	114.4	119.9	120.4	121.6	120.9
Denmark	42.0	72.7	94.3	101.7	100.7	97.0	107.3	112.6	107.7	115.9	116.7	117.9	121.9	121.6	120.8	121.4
France	27.9	57.7	81.6	99.1	99.8	95.7	100.3	104.9	104.6	109.7	115.0	118.7	124.3	128.0	129.1	128.5
Germany	41.5	70.9	85.3	99.1	102.3	92.4	95.1	95.2	92.5	95.7	97.7	95.8	100.1	99.9	99.6	99.8
Italy	23.0	48.1	84.4	99.4	99.3	96.5	102.4	107.2	105.4	108.8	110.7	110.3	113.6	113.0	111.7	110.2
Netherlands	31.9	59.8	76.9	99.0	99.8	97.7	104.5	108.2	108.9	111.6	114.9	117.6	122.8	121.9	121.0	117.6
Norway	57.7	91.0	104.9	101.4	99.0	101.7	104.6	107.3	110.3	114.2	113.7	113.6	112.8	112.3	111.5	107.3
Sweden	45.9	80.7	90.7	110.1	104.1	101.9	117.0	131.9	136.4	146.5	158.3	172.5	188.3	183.1	190.6	194.4
United Kingdom	67.5	90.2	87.2	105.3	100.1	101.5	106.2	107.8	108.6	110.7	111.3	112.1	115.0	113.4	109.9	110.3
Total hours																
United States	92.1	104.4	107.5	104.8	100.4	101.4	103.6	104.0	103.6	105.4	105.2	104.6	102.9	96.2	89.3	85.0
Canada	88.3	107.1	114.6	113.5	103.9	100.1	103.0	106.4	109.0	112.4	115.9	118.7	123.1	120.9	121.1	119.1
Australia	–	–	129.2	113.6	104.4	97.8	103.9	102.8	99.1	100.0	100.1	98.7	96.7	93.5	94.5	92.5
Japan	77.8	101.3	95.5	102.9	103.1	94.7	91.9	89.1	88.7	88.0	82.7	80.4	80.3	77.7	74.0	73.0
Korea	–	–	–	106.5	103.7	97.1	98.8	100.4	97.2	90.4	74.7	81.8	88.1	90.7	88.9	85.4
Taiwan	–	–	92.4	101.4	99.6	99.6	101.7	99.8	97.7	99.2	97.6	98.7	100.5	89.0	89.0	90.8
Belgium	170.7	174.7	119.7	104.3	101.5	94.7	93.6	92.0	91.0	89.8	90.2	91.2	91.7	90.8	85.8	82.7
Denmark	166.7	157.1	113.4	103.3	100.5	96.7	95.2	100.1	98.1	98.2	99.4	95.8	96.3	95.6	92.0	88.7
France	140.3	147.8	132.5	105.6	102.9	94.7	92.1	91.7	91.2	90.2	89.9	89.2	87.2	86.5	83.2	81.3
Germany	142.3	136.3	110.5	100.1	104.1	90.8	86.8	84.8	80.6	79.5	80.1	78.9	78.8	78.2	76.1	74.3
Italy	93.5	104.0	107.4	102.9	103.3	95.4	97.7	99.4	97.3	98.6	99.9	99.8	100.1	99.1	99.7	99.3
Netherlands	169.8	155.5	111.2	100.3	100.8	95.8	92.4	92.3	91.2	91.9	92.6	92.6	92.5	92.0	89.4	–
Norway	153.6	153.9	134.7	103.4	100.8	102.1	105.0	106.6	107.6	112.0	113.7	109.6	105.9	102.3	99.8	94.5
Sweden	168.3	154.7	124.0	116.4	109.0	94.9	99.4	105.9	105.3	103.9	105.9	106.0	107.3	107.5	102.7	98.9
United Kingdom	224.6	208.8	160.5	118.1	106.6	97.7	98.4	101.5	103.1	103.5	102.7	98.7	95.0	90.7	86.0	81.9
Hourly compensation (national currency basis)																
United States	14.9	23.7	55.6	90.8	95.6	102.7	105.6	107.9	109.4	111.5	117.4	122.0	133.2	136.3	145.4	157.8
Canada	10.0	17.1	47.5	88.3	95.0	102.0	103.7	106.0	107.0	109.3	111.7	115.8	119.6	123.7	126.8	131.4
Australia	–	–	–	86.3	94.0	105.9	104.3	113.2	122.8	124.6	128.2	133.0	140.0	149.5	154.7	–
Japan	4.3	16.4	58.6	90.6	96.5	102.7	104.7	108.3	109.1	112.6	115.4	114.8	113.7	114.6	122.8	123.8
Korea	–	–	–	68.6	86.2	114.3	129.8	158.3	184.3	200.3	218.2	219.4	234.2	241.7	266.1	290.9
Taiwan	–	–	29.6	85.2	93.5	105.9	111.1	120.2	128.2	132.4	140.3	144.3	146.6	150.0	145.8	146.7
Belgium	5.4	13.7	52.5	90.1	97.3	104.8	106.1	109.2	111.1	115.2	117.0	118.5	120.6	127.2	136.5	–
Denmark	3.9	11.1	45.1	93.5	97.9	102.4	106.0	108.1	112.8	116.6	119.6	127.3	130.2	136.5	143.2	150.0
France	4.3	10.5	41.2	90.9	96.4	103.1	106.5	110.4	112.2	111.8	112.7	116.6	122.8	128.3	135.2	139.1
Germany	8.1	20.7	53.6	89.4	91.5	106.4	111.8	117.6	123.3	125.7	127.6	130.6	137.4	142.0	145.5	148.9
Italy	1.8	5.3	30.4	87.6	94.2	105.7	106.8	111.3	119.0	123.0	122.2	124.2	127.8	132.5	135.7	140.0
Netherlands	6.2	19.4	60.5	89.8	94.8	104.5	109.0	112.1	114.4	117.2	122.0	126.0	132.0	138.2	147.3	–
Norway	4.7	11.8	39.0	92.3	97.5	101.5	104.4	109.2	113.6	118.7	125.7	133.0	140.5	148.9	157.9	164.6
Sweden	4.1	10.7	37.3	87.8	95.5	97.4	99.8	106.8	115.2	121.0	125.6	130.3	136.8	143.8	148.8	154.3
United Kingdom	2.9	6.1	32.0	82.9	93.8	104.5	107.3	108.8	111.4	115.7	123.0	129.9	137.6	144.3	152.2	160.3

See notes at end of table.

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Table 54. Continued— Annual indexes of manufacturing productivity and related measures, 15 economies

Measure and economy	1960	1970	1980	1990	1991	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Unit labor costs																
(national currency basis)																
United States	–	–	78.8	93.7	97.6	100.6	98.5	94.8	93.5	91.9	92.8	91.9	92.8	93.9	90.9	92.3
Canada	26.4	31.1	65.2	94.6	99.6	96.4	93.6	94.3	97.5	96.2	96.7	94.9	92.5	97.4	97.2	99.4
Australia	–	–	–	94.2	97.5	99.8	99.4	107.0	108.1	108.2	108.2	110.9	109.4	112.9	113.5	–
Japan	31.1	43.6	92.1	95.9	97.5	101.0	101.4	97.5	94.0	93.0	95.2	90.6	83.6	84.4	87.8	84.7
Korea	–	–	–	84.2	94.1	105.4	109.8	122.4	129.6	124.9	122.0	110.3	108.5	112.8	113.1	113.5
Taiwan	–	23.8	62.2	95.9	96.8	103.0	104.1	104.5	104.1	102.3	103.2	100.7	97.1	93.3	85.3	82.7
Belgium	30.1	41.7	80.3	93.0	98.1	102.3	97.9	96.4	95.5	91.8	92.2	94.4	92.2	95.9	96.4	–
Denmark	15.3	23.9	54.2	95.0	97.6	102.2	94.2	96.1	102.8	98.8	101.9	103.4	102.8	107.3	109.0	109.6
France	21.7	26.8	67.0	96.8	99.3	102.0	97.8	96.5	97.8	91.9	88.1	87.6	86.2	86.6	87.2	88.0
Germany	27.8	39.8	69.4	90.3	93.1	104.5	102.0	104.7	107.5	104.5	104.6	107.6	108.1	111.2	111.1	110.8
Italy	7.2	11.4	38.7	90.7	98.0	104.5	101.9	103.2	109.8	111.4	110.3	112.3	112.6	116.2	121.1	126.2
Netherlands	32.9	50.4	87.6	91.1	95.7	102.4	96.4	95.6	95.9	96.5	98.3	99.1	99.5	104.3	108.8	112.6
Norway	12.6	20.0	50.0	94.2	99.2	101.9	104.8	108.4	110.8	116.4	125.7	128.4	131.9	135.6	141.3	144.9
Sweden	15.0	20.6	51.0	92.9	100.0	90.8	84.7	85.8	89.0	85.8	84.0	80.1	77.9	84.4	80.2	78.6
United Kingdom	9.8	14.1	59.0	93.0	100.0	100.7	99.4	102.5	105.7	108.2	113.5	114.3	113.7	115.4	119.2	118.9
Unit labor costs																
(U.S. dollar basis)																
United States	–	–	78.8	93.7	97.6	100.6	98.5	94.8	93.5	91.9	92.8	91.9	92.8	93.9	90.9	92.3
Canada	32.9	36.0	67.4	98.0	105.1	90.3	82.8	83.0	86.4	84.0	78.8	77.2	75.2	76.0	74.8	85.8
Australia	–	–	–	100.1	103.3	92.3	98.9	107.8	115.1	109.4	92.6	97.3	86.5	79.4	84.0	–
Japan	11.0	15.4	51.5	83.9	91.8	115.3	125.8	131.6	109.5	97.4	92.2	101.0	98.4	88.0	88.9	92.6
Korea	–	–	–	93.0	100.3	102.6	106.8	124.3	126.3	103.4	68.4	72.7	75.3	68.5	71.0	74.7
Taiwan	–	14.9	43.4	89.7	91.1	98.1	99.0	99.2	95.4	89.5	77.4	78.3	78.1	69.4	62.1	60.5
Belgium	19.4	27.0	88.3	89.5	92.3	95.1	94.2	105.2	99.1	82.4	81.6	80.2	67.8	68.4	72.6	–
Denmark	13.4	19.3	58.1	92.7	92.0	95.1	89.4	103.6	107.0	90.2	91.7	89.3	76.7	77.8	83.5	100.6
France	23.4	25.7	83.9	94.1	93.1	95.3	93.4	102.5	101.2	83.3	79.1	75.3	64.2	62.6	66.5	80.4
Germany	10.4	17.1	59.6	87.3	87.5	98.7	98.2	114.2	111.6	94.0	92.9	91.5	79.7	79.5	83.9	100.1
Italy	14.3	22.3	55.7	93.3	97.3	81.8	77.9	78.0	87.7	80.6	78.2	76.2	66.2	66.2	72.9	90.9
Netherlands	15.3	24.5	77.5	87.9	90.0	96.9	93.2	104.8	100.0	87.0	87.2	84.3	73.3	74.5	82.1	101.7
Norway	11.0	17.4	62.9	93.6	95.0	89.2	92.3	106.4	106.6	102.1	103.5	102.2	93.0	93.7	110.0	127.2
Sweden	16.9	23.1	70.2	91.3	96.3	67.8	64.0	70.0	77.3	65.4	61.5	56.4	49.5	47.6	48.1	56.6
United Kingdom	15.6	19.1	77.6	93.9	100.0	85.6	86.2	91.6	93.4	100.4	106.5	104.7	97.6	94.0	101.4	110.0

NOTE: Data for Germany for years before 1991 are for the former West Germany. Data for 1991 onward are for unified Germany. Dash indicates data not available

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55. Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]												
	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]	1997[4]	1998[4]	1999[4]	2000[4]	2001[4]
PRIVATE SECTOR[5]													
Total cases	8.6	8.8	8.4	8.9	8.5	8.4	8.1	7.4	7.1	6.7	6.3	6.1	5.7
Lost workday cases	4.0	4.1	3.9	3.9	3.8	3.8	3.6	3.4	3.3	3.1	3.0	3.0	2.8
Lost workdays	78.7	84.0	86.5	93.8	–	–	–	–	–	–	–	–	–
Agriculture, forestry, and fishing[5]													
Total cases	10.9	11.6	10.8	11.6	11.2	10.0	9.7	8.7	8.4	7.9	7.3	7.1	7.3
Lost workday cases	5.7	5.9	5.4	5.4	5.0	4.7	4.3	3.9	4.1	3.9	3.4	3.6	3.6
Lost workdays	100.9	112.2	108.3	126.9	–	–	–	–	–	–	–	–	–
Mining													
Total cases	8.5	8.3	7.4	7.3	6.8	6.3	6.2	5.4	5.9	4.9	4.4	4.7	4.0
Lost workday cases	4.8	5.0	4.5	4.1	3.9	3.9	3.9	3.2	3.7	2.9	2.7	3.0	2.4
Lost workdays	137.2	119.5	129.6	204.7	–	–	–	–	–	–	–	–	–
Construction													
Total cases	14.3	14.2	13.0	13.1	12.2	11.8	10.6	9.9	9.5	8.8	8.6	8.3	7.9
Lost workday cases	6.8	6.7	6.1	5.8	5.5	5.5	4.9	4.5	4.4	4.0	4.2	4.1	4.0
Lost workdays	143.3	147.9	148.1	161.9	–	–	–	–	–	–	–	–	–
General building contractors:													
Total cases	13.9	13.4	12.0	12.2	11.5	10.9	9.8	9.0	8.5	8.4	8.0	7.8	6.9
Lost workday cases	6.5	6.4	5.5	5.4	5.1	5.1	4.4	4.0	3.7	3.9	3.7	3.9	3.5
Lost workdays	137.3	137.6	132.0	142.7	–	–	–	–	–	–	–	–	–
Heavy construction, except building:													
Total cases	13.8	13.8	12.8	12.1	11.1	10.2	9.9	9.0	8.7	8.2	7.8	7.6	7.8
Lost workday cases	6.5	6.3	6.0	5.4	5.1	5.0	4.8	4.3	4.3	4.1	3.8	3.7	4.0
Lost workdays	147.1	144.6	160.1	165.8	–	–	–	–	–	–	–	–	–
Special trades contractors:													
Total cases	14.6	14.7	13.5	13.8	12.8	12.5	11.1	10.4	10.0	9.1	8.9	8.6	8.2
Lost workday cases	6.9	6.9	6.3	6.1	5.8	5.8	5.0	4.8	4.7	4.1	4.4	4.3	4.1
Lost workdays	144.9	153.1	151.3	168.3	–	–	–	–	–	–	–	–	–
Manufacturing													
Total cases	13.1	13.2	12.7	12.5	12.1	12.2	11.6	10.6	10.3	9.7	9.2	9.0	8.1
Lost workday cases	5.8	5.8	5.6	5.4	5.3	5.5	5.3	4.9	4.8	4.7	4.6	4.5	4.1
Lost workdays	113.0	120.7	121.5	124.6	–	–	–	–	–	–	–	–	–
Durable goods:													
Total cases	14.1	14.2	13.6	13.4	13.1	13.5	12.8	11.6	11.3	10.7	10.1	–	8.8
Lost workday cases	6.0	6.0	5.7	5.5	5.4	5.7	5.6	5.1	5.1	5.0	4.8	–	4.3
Lost workdays	116.5	123.3	122.9	126.7	–	–	–	–	–	–	–	–	–
Lumber and wood products:													
Total cases	18.4	18.1	16.8	16.3	15.9	15.7	14.9	14.2	13.5	13.2	13.0	12.1	10.6
Lost workday cases	9.4	8.8	8.3	7.6	7.6	7.7	7.0	6.8	6.5	6.8	6.7	6.1	5.5
Lost workdays	177.5	172.5	172.0	165.8	–	–	–	–	–	–	–	–	–
Furniture and fixtures:													
Total cases	16.1	16.9	15.9	14.8	14.6	15.0	13.9	12.2	12.0	11.4	11.5	11.2	11.0
Lost workday cases	7.2	7.8	7.2	6.6	6.5	7.0	6.4	5.4	5.8	5.7	5.9	5.9	5.7
Lost workdays	–	–	–	128.4	–	–	–	–	–	–	–	–	–
Stone, clay, and glass products:													
Total cases	15.5	15.4	14.8	13.6	13.8	13.2	12.3	12.4	11.8	11.8	10.7	10.4	10.1
Lost workday cases	7.4	7.3	6.8	6.1	6.3	6.5	5.7	6.0	5.7	6.0	5.4	5.5	5.1
Lost workdays	149.8	160.5	156.0	152.2	–	–	–	–	–	–	–	–	–
Primary metal industries:													
Total cases	18.7	19.0	17.7	17.5	17.0	16.8	16.5	15.0	15.0	14.0	12.9	12.6	10.7
Lost workday cases	8.1	8.1	7.4	7.1	7.3	7.2	7.2	6.8	7.2	7.0	6.3	6.3	5.3
Lost workdays	168.3	180.2	169.1	175.5	–	–	–	–	–	–	–	–	11.1
Fabricated metal products:													
Total cases	18.5	18.7	17.4	16.8	16.2	16.4	15.8	14.4	14.2	13.9	12.6	11.9	11.1
Lost workday cases	7.9	7.9	7.1	6.6	6.7	6.7	6.9	6.2	6.4	6.5	6.0	5.5	5.3
Lost workdays	147.6	155.7	146.6	144.0	–	–	–	–	–	–	–	–	–
Industrial machinery and equipment:													
Total cases	12.1	12.0	11.2	11.1	11.1	11.6	11.2	9.9	10.0	9.5	8.5	8.2	11.0
Lost workday cases	4.8	4.7	4.4	4.2	4.2	4.4	4.4	4.0	4.1	4.0	3.7	3.6	6.0
Lost workdays	86.8	88.9	86.6	87.7	–	–	–	–	–	–	–	–	–
Electronic and other electrical equipment:													
Total cases	9.1	9.1	8.6	8.4	8.3	8.3	7.6	6.8	6.6	5.9	5.7	5.7	5.0
Lost workday cases	3.9	3.8	3.7	3.6	3.5	3.6	3.3	3.1	3.1	2.8	2.8	2.9	2.5
Lost workdays	77.5	79.4	83.0	81.2	–	–	–	–	–	–	–	–	–
Transportation equipment:													
Total cases	17.7	17.8	18.3	18.7	18.5	19.6	18.6	16.3	15.4	14.6	13.7	13.7	12.6
Lost workday cases	6.8	6.9	7.0	7.1	7.1	7.8	7.9	7.0	6.6	6.6	6.4	6.3	6.0
Lost workdays	138.6	153.7	166.1	186.6	–	–	–	–	–	–	–	–	–
Instruments and related products:													
Total cases	5.6	5.9	6.0	5.9	5.6	5.9	5.3	5.1	4.8	4.0	4.0	4.5	4.0
Lost workday cases	2.5	2.7	2.7	2.7	2.5	2.7	2.4	2.3	2.3	1.9	1.8	2.2	2.0
Lost workdays	55.4	57.8	64.4	65.3	–	–	–	–	–	–	–	–	–
Miscellaneous manufacturing industries:													
Total cases	11.1	11.3	11.3	10.7	10.0	9.9	9.1	9.5	8.9	8.1	8.4	7.2	6.4
Lost workday cases	5.1	5.1	5.1	5.0	4.6	4.5	4.3	4.4	4.2	3.9	4.0	3.6	3.2
Lost workdays	97.6	113.1	104.0	108.2	–	–	–	–	–	–	–	–	–

See footnotes at end of table.

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55. Continued—Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 workers[3]												
	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]	1997[4]	1998[4]	1999[4]	2000[4]	2001[4]
Nondurable goods:													
Total cases	11.6	11.7	11.5	11.3	10.7	10.5	9.9	9.2	8.8	8.2	7.8	7.8	6.8
Lost workday cases	5.5	5.6	5.5	5.3	5.0	5.1	4.9	4.6	4.4	4.3	4.2	4.2	3.8
Lost workdays	107.8	116.9	119.7	121.8	–	–	–	–	–	–	–	–	–
Food and kindred products:													
Total cases	18.5	20.0	19.5	18.8	17.6	17.1	16.3	15.0	14.5	13.6	12.7	12.4	10.9
Lost workday cases	9.3	9.9	9.9	9.5	8.9	9.2	8.7	8.0	8.0	7.5	7.3	7.3	6.3
Lost workdays	174.7	202.6	207.2	211.9	–	–	–	–	–	–	–	–	–
Tobacco products:													
Total cases	8.7	7.7	6.4	6.0	5.8	5.3	5.6	6.7	5.9	6.4	5.5	6.2	6.7
Lost workday cases	3.4	3.2	2.8	2.4	2.3	2.4	2.6	2.8	2.7	3.4	2.2	3.1	4.2
Lost workdays	64.2	62.3	52.0	42.9	–	–	–	–	–	–	–	–	–
Textile mill products:													
Total cases	10.3	9.6	10.1	9.9	9.7	8.7	8.2	7.8	6.7	7.4	6.4	6.0	5.2
Lost workday cases	4.2	4.0	4.4	4.2	4.1	4.0	4.1	3.6	3.1	3.4	3.2	3.2	2.7
Lost workdays	81.4	85.1	88.3	87.1	–	–	–	–	–	–	–	–	–
Apparel and other textile products:													
Total cases	8.6	8.8	9.2	9.5	9.0	8.9	8.2	7.4	7.0	6.2	5.8	6.1	5.0
Lost workday cases	3.8	3.9	4.2	4.0	3.8	3.9	3.6	3.3	3.1	2.6	2.8	3.0	2.4
Lost workdays	80.5	92.1	99.9	104.6	–	–	–	–	–	–	–	–	–
Paper and allied products:													
Total cases	12.7	12.1	11.2	11.0	9.9	9.6	8.5	7.9	7.3	7.1	7.0	6.5	6.0
Lost workday cases	5.8	5.5	5.0	5.0	4.6	4.5	4.2	3.8	3.7	3.7	3.7	3.4	3.2
Lost workdays	132.9	124.8	122.7	125.9	–	–	–	–	–	–	–	–	–
Printing and publishing:													
Total cases	6.9	6.9	6.7	7.3	6.9	6.7	6.4	6.0	5.7	5.4	5.0	5.1	4.6
Lost workday cases	3.3	3.3	3.2	3.2	3.1	3.0	3.0	2.8	2.7	2.8	2.6	2.6	2.4
Lost workdays	63.8	69.8	74.5	74.8	–	–	–	–	–	–	–	–	–
Chemicals and allied products:													
Total cases	7.0	6.5	6.4	6.0	5.9	5.7	5.5	4.8	4.8	4.2	4.4	4.2	4.0
Lost workday cases	3.2	3.1	3.1	2.8	2.7	2.8	2.7	2.4	2.3	2.1	2.3	2.2	2.1
Lost workdays	63.4	61.6	62.4	64.2	–	–	–	–	–	–	–	–	–
Petroleum and coal products:													
Total cases	6.6	6.6	6.2	5.9	5.2	4.7	4.8	4.6	4.3	3.9	4.1	3.7	2.9
Lost workday cases	3.3	3.1	2.9	2.8	2.5	2.3	2.4	2.5	2.2	1.8	1.8	1.9	1.4
Lost workdays	68.1	77.3	68.2	71.2	–	–	–	–	–	–	–	–	–
Rubber and miscellaneous plastics products:													
Total cases	16.2	16.2	15.1	14.5	13.9	14.0	12.9	12.3	11.9	11.2	10.1	10.7	8.7
Lost workday cases	8.0	7.8	7.2	6.8	6.5	6.7	6.5	6.3	5.8	5.8	5.5	5.8	4.8
Lost workdays	147.2	151.3	150.9	153.3	–	–	–	–	–	–	–	–	–
Leather and leather products:													
Total cases	13.6	12.1	12.5	12.1	12.1	12.0	11.4	10.7	10.6	9.8	10.3	9.0	8.7
Lost workday cases	6.5	5.9	5.9	5.4	5.5	5.3	4.8	4.5	4.3	4.5	5.0	4.3	4.4
Lost workdays	130.4	152.3	140.8	128.5	–	–	–	–	–	–	–	–	–
Transportation and public utilities													
Total cases	9.2	9.0	9.3	9.1	9.5	9.3	9.1	8.7	8.2	7.3	7.3	6.9	6.9
Lost workday cases	5.3	5.5	5.4	5.1	5.4	5.5	5.2	5.1	4.8	4.3	4.4	4.3	4.3
Lost workdays	121.5	134.1	140.0	144.0	–	–	–	–	–	–	–	–	–
Wholesale and retail trade													
Total cases	8.0	7.9	7.6	8.4	8.1	7.9	7.5	6.8	6.7	6.5	6.1	5.9	6.6
Lost workday cases	3.6	3.5	3.4	3.5	3.4	3.4	3.2	2.9	3.0	2.8	2.7	2.7	2.5
Lost workdays	63.5	65.6	72.0	80.1	–	–	–	–	–	–	–	–	–
Wholesale trade:													
Total cases	7.7	7.4	7.2	7.6	7.8	7.7	7.5	6.6	6.5	6.5	6.3	5.8	5.3
Lost workday cases	4.0	3.7	3.7	3.6	3.7	3.8	3.6	3.4	3.2	3.3	3.3	3.1	2.8
Lost workdays	71.9	71.5	79.2	82.4	–	–	–	–	–	–	–	–	–
Retail trade:													
Total cases	8.1	8.1	7.7	8.7	8.2	7.9	7.5	6.9	6.8	6.5	6.1	5.9	5.7
Lost workday cases	3.4	3.4	3.3	3.4	3.3	3.3	3.0	2.8	2.9	2.7	2.5	2.5	2.4
Lost workdays	60.0	63.2	69.1	79.2	–	–	–	–	–	–	–	–	–
Finance, insurance, and real estate													
Total cases	2.0	2.4	2.4	2.9	2.9	2.7	2.6	2.4	2.2	.7	1.8	1.9	1.8
Lost workday cases	.9	1.1	1.1	1.2	1.2	1.1	1.0	.9	.9	.5	.8	.8	.7
Lost workdays	17.6	27.3	24.1	32.9	–	–	–	–	–	–	–	–	–
Services													
Total cases	5.5	6.0	6.2	7.1	6.7	6.5	6.4	6.0	5.6	5.2	4.9	4.9	4.6
Lost workday cases	2.7	2.8	2.8	3.0	2.8	2.8	2.8	2.6	2.5	2.4	2.2	2.2	2.2
Lost workdays	51.2	56.4	60.0	68.6	–	–	–	–	–	–	–	–	–

[1] Data for 1989 and subsequent years are based on the *Standard Industrial Classification Manual*, 1987 Edition. For this reason, they are not strictly comparable with data for the years 1985–88, which were based on the *Standard Industrial Classification Manual*, 1972 Edition, 1977 Supplement.

[2] Beginning with the 1992 survey, the annual survey measures only nonfatal injuries and illnesses, while past surveys covered both fatal and nonfatal incidents. To better address fatalities, a basic element of workplace safety, BLS implemented the Census of Fatal Occupational Injuries.

[3] The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as (N/EH) X 200,000, where:
N = number of injuries and illnesses or lost workdays;
EH = total hours worked by all employees during the calendar year; and
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

[4] Beginning with the 1993 survey, lost workday estimates will not be generated. As of 1992, BLS began generating percent distributions and the median number of days away from work by industry and for groups of workers sustaining similar work disabilities.

[5] Excludes farms with fewer than 11 employees since 1976.

NOTE: Dash indicates data not available.

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56. Fatal occupational injuries by event or exposure, 1997-2002

Event or exposure[1]	Fatalities			
	1997-2001 average	2001[2]	2002	
		Number	Number	Percent
Total	6,036	5,915	5,524	100
Transportation incidents	2,593	2,524	2,381	43
Highway incident	1,421	1,409	1,372	25
Collision between vehicles, mobile equipment	697	727	635	11
Moving in same direction	126	142	155	3
Moving in opposite directions, oncoming	254	257	202	4
Moving in intersection	148	138	145	3
Vehicle struck stationary object or equipment	300	297	326	6
Noncollision incident	369	339	373	7
Jackknifed or overturned—no collision	300	273	312	6
Nonhighway (farm, industrial premises) incident	368	326	322	6
Overturned	202	158	164	3
Aircraft	248	247	192	3
Worker struck by a vehicle	382	383	356	6
Water vehicle	99	90	71	1
Rail vehicle	68	62	64	1
Assaults and violent acts	964	908	840	15
Homicides	709	643	609	11
Shooting	567	509	469	8
Stabbing	64	58	58	1
Other, including bombing	78	76	82	1
Self-inflicted injuries	221	230	199	4
Contact with objects and equipment	995	962	873	16
Struck by object	562	553	506	9
Struck by falling object	352	343	303	5
Struck by flying object	58	60	38	1
Caught in or compressed by equipment or objects	290	266	231	4
Caught in running equipment or machinery	156	144	110	2
Caught in or crushed in collapsing materials	126	122	116	2
Falls	737	810	714	13
Fall to lower level	654	700	634	11
Fall from ladder	111	123	126	2
Fall from roof	155	159	143	3
Fall from scaffold, staging	91	91	87	2
Fall on same level	61	84	63	1
Exposure to harmful substances or environments	529	499	538	10
Contact with electric current	291	285	289	5
Contact with overhead power lines	134	124	122	2
Contact with temperature extremes	41	35	60	1
Exposure to caustic, noxious, or allergenic substances	106	96	98	2
Inhalation of substances	52	49	49	1
Oxygen deficiency	89	83	90	2
Drowning, submersion	71	59	60	1
Fires and explosions	197	188	165	3
Other events or exposures[3]	21	24	13	–

[1] Based on the 1992 BLS Occupational Injury and Illness Classification Structures.

[2] The BLS news release issued Sept. 25, 2002, reported a total of 5,900 fatal work injuries for calendar year 2001. Since then, an additional 15 job-related fatalities were identified, bringing the total job-related fatality count for 2001 to 5,915.

[3] Totals for 2001 exclude fatalities from the September 11 terrorist attacks.

[3] Includes the category "Bodily reaction and exertion."

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding. Dash indicates less than 0.5 percent.

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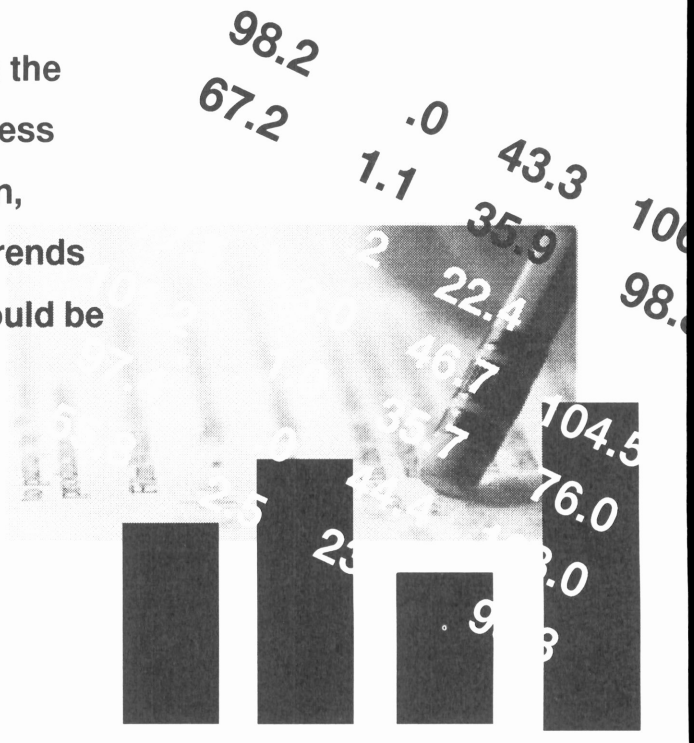

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