

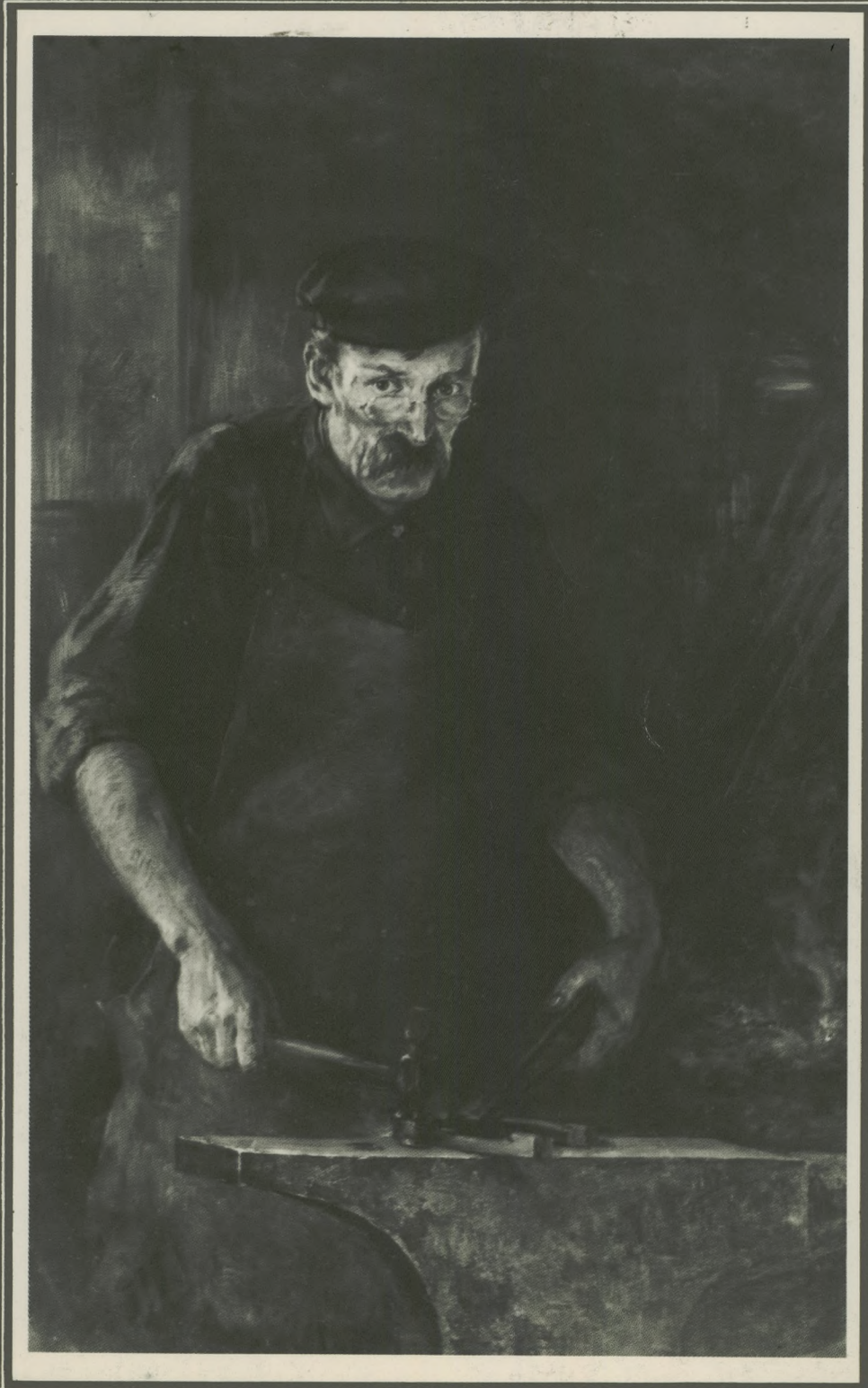


MONTHLY LABOR REVIEW

U.S. Department of Labor  
Bureau of Labor Statistics  
March 1984

*In this issue:*

Estimating job openings, reclassifying occupations,  
and Japan's unemployment





**U.S. DEPARTMENT OF LABOR**  
**Raymond J. Donovan, Secretary**

**BUREAU OF LABOR STATISTICS**

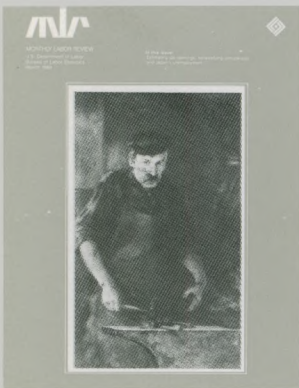
Janet L. Norwood, *Commissioner*

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## MONTHLY LABOR REVIEW

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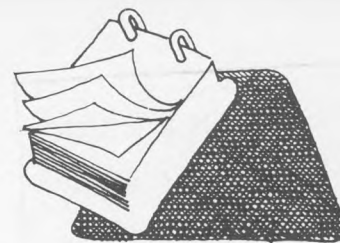
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# Labor Month In Review



**RECOVERY REPORT.** The Budget Committee of the U.S. Senate called on Commissioner of Labor Statistics Janet L. Norwood to report on the effect of the economic recovery on jobs and prices. Here are excerpts from the commissioner's February 28 testimony.

**Unemployment.** Just as men experienced the greatest increase in unemployment during the recession, their employment experience has improved the most during the expansion. The severity of the recession in certain industries caused the unemployment rate for adult men to be more than a percentage point above that for adult women, a statistical rarity. However, by January 1984, the rate for men (7.3 percent) was only two-tenths of a point above that for women.

The employment situation for adult black men has improved considerably during the recovery period. Their employment has increased by more than 400,000, and their jobless rate has dropped from 20.7 to 14.8 percent. Improvements for black women, which began in mid-1983, are still relatively modest.

The situation for black teenagers remains especially troublesome. Their jobless rate has straddled the 50-percent mark for more than a year and a half, and long-term joblessness is a serious problem among black youth. While almost half of the white teens have jobs, only one-sixth of all black teenagers work.

Despite changes in living arrangements over the past several decades, most Americans continue to live in families, and many families have more than one worker. At the end of 1982, when unemployment hit its peak, more than 11 million persons were jobless, and nearly 10 million of them lived in families. In two-thirds of these families, someone else was working. Relatives in husband-wife families (typically teenage and young adult children) accounted for about a quarter of unemployed family members. In 9 out of 10 cases, at least one of their parents had a job.

Unemployed wives are also very likely to have an employed person in their fami-

ly. In fact, in 1983, almost 8 out of 10 unemployed wives had someone in their family working.

As married women have entered the labor force in increasing numbers, the likelihood of an unemployed husband having a working family relative has also increased markedly. Between 1977 and 1981, the proportion rose from 48 to 55 percent. It held about steady during the recession and with recovery resumed its upward course, reaching nearly 57 percent by the end of 1983.

Unemployment is a particularly severe problem for families maintained by women. Because there are generally few persons of working age in these families, there is little likelihood that there are any employed persons present to cushion the effects of their joblessness. Since data of this type first became available in 1977, the proportion of unemployed women who maintain families that include someone who is employed has never been much higher than 20 percent. Because the problem is largely structural in nature, the business cycle does not bring about substantial changes in this proportion.

**Prices.** The most important recent price development affecting economic welfare is the marked deceleration in the overall Consumer Price Index which began in October 1981. The CPI has increased at a seasonally adjusted annual rate of only 3.9 percent for the 27-month period ending in December 1983. This rate is well below the 11.0-percent increase recorded for the 12 months prior to October 1981 and is the lowest rate since early 1973.

The price deceleration that occurred in the 27 months through December 1983 has been particularly apparent in the energy, shelter, and food components of the CPI. Advances in these items were, of course, responsible for much of the increase in the CPI in the past decade. The index excluding the energy, shelter, and food components has also moderated.

**Price differences.** Has any particular groups faced price experience that was higher or lower than average? The BLS has undertaken research in recent years which may help to shed some light on

these issues. I want to caution, however, that it is experimental. Any conclusions it might suggest must be critically evaluated.

The Bureau has constructed experimental indexes for alternative population groupings which focus solely on the impact of different expenditure patterns on measured price change. The rate of price increase for individual consumption categories is assumed to be the same for all consumers. The experimental indexes use the rental equivalence approach to measuring homeowner shelter costs. Quarterly indexes were computed for the 1979-1983 period and all indexes were normalized to start at the same level in the first quarter of 1979.

The experimental indexes for alternative population groupings show no evidence of large, persistent differences among the inflation rates experienced by different groups of the population. When consumers are grouped by their position in the income distribution, the index for middle income consumers rises slightly faster than that for either higher or lower income consumers. The largest absolute difference occurs in the fourth quarter of 1981, just as prices started to decelerate.

Experimental indexes by age and race also present no real evidence of persistent differences between groups. When households are separated by age of the reference person (65 years and over, compared with those under 65 years), despite some small variations between the first and the last periods, by the last quarter of 1983 the indexes stand at the same level. When households are classified by the race of the reference person, our indexes indicate a slightly higher rate of increase for the white group during 1979, and virtually identical rates of increase since then.

Although a definitive conclusion must await additional research, it is probably safe to assume that the labor market experience of different population groups varies much more than the inflation experience.

Single copies of the testimony are available from BLS, 441 G Street N.W., Washington, D.C. 20212. □

# New occupational separation data improve estimates of job replacement needs

*BLS projections of job openings are greatly enhanced because separation rates, on which the estimates are based, now include data on workers who transfer to other occupations and those not working for any reason, except death*

ALAN ECK

Each year, many workers leave the occupation in which they are employed. Many reasons prompt these separations—some individuals change occupations to better utilize their skills, improve their working environment, or earn higher wages; others stop working to enjoy leisure time, care for their families, or go to school. However, others lose their jobs and subsequently may begin working in another occupation, become unemployed, or leave the labor force. Many workers who leave an occupation are replaced. Thus, information about replacement needs is valuable to the Bureau of Labor Statistics' occupational outlook program because in most occupations replacement requirements provide more employment opportunities than job growth.

Information on replacement needs previously published by the BLS was confined almost exclusively to estimates of the need to replace workers who permanently left the labor force because of death or retirement.<sup>1</sup> Sufficient data were not available to develop estimates of replacement needs resulting from workers who temporarily left the labor force or transferred to another occupation.

Using the Current Population Survey (CPS) as a data base, the Bureau of Labor Statistics has developed a procedure which improves estimates of the number of job openings arising from workers who leave their occupations.<sup>2</sup> The procedure results in data which identify the numbers and types of separations and the characteristics of workers who change occupations, become unemployed, or leave the labor force. The data are then used to calculate replacement needs,

a vital part of the BLS occupational outlook program. Because of the new procedure, projected replacement needs now include occupational transfers and all labor force separations, except deaths.

## How the data are derived

At 1-year intervals, 50 percent of the households in the CPS sample are the same.<sup>3</sup> Individuals who had not changed residence were identified in each survey by matching the household address and micro-data about the age, sex, and race of the individuals. Data were then prepared which described labor force changes of these matched individuals over a 1-year period for each of 18 months beginning with January 1979 to January 1980 and ending with June 1980 to June 1981. The monthly CPS samples were combined to create a matched sample of 665,000 persons age 15 and older in the initial year of the matched data.<sup>4</sup> The larger sample increased the reliability of data for smaller occupational groups, and is called "1980-81 matched data."

To produce weighted data, weights from the full CPS sample for each month were applied to each person and divided by the number of months for which matched data were prepared. The weighted numbers approximate 35 percent of those that would result if it were possible to match a complete monthly sample each year.

In addition to identifying changes in labor force status, the matched data identify workers who change occupations.<sup>4</sup> However, actual movements are significantly overstated because individuals may respond differently to the same CPS question about their occupation, response may be recorded

---

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differently among interviewers, or recorded information may be coded differently among clerks.<sup>5</sup>

To eliminate the overstatement of occupational change, the matched data were adjusted using the January 1981 CPS study of occupational mobility. In the January 1981 CPS, persons who said they were employed were asked to report their labor force status in January 1980 and, if they were employed, their occupation.<sup>6</sup> Only employed persons were asked to respond to these questions; therefore, separations from the work force could not be determined—that is, the survey could not identify individuals employed in January 1980 but not in January 1981. These longitudinal data on occupational mobility from the January 1981 CPS are called “retrospective data.”

Matched data about changes in labor force status were adjusted using retrospective data about occupational mobility to produce data on labor force and occupational changes. The results, termed “merged data”, describe movements into, out of, and between occupations over a 1-year period.

The following illustrates how “merged data” were derived.<sup>7</sup> Matched data for secretaries indicated their employment in 1981 by labor force status in 1980:

	<i>Number</i> <i>(in thousands)</i>	<i>Percent</i>
Employed in 1981 .....	1,333,807	100.0
Status in 1980:		
Employed .....	1,189,596	89.2
Same occupation as in 1981 .....	811,747	60.9
Different occupation from 1981 .....	377,849	28.3
Unemployed .....	31,963	2.4
Not in labor force .....	112,249	8.4

The proportion who were in a different occupation in 1980 (28 percent) is excessively large. More reliable retrospective data indicate that of the 89.2 percent of secretaries employed in both years, 92.4 percent had been in the same occupation in 1980.

When matched data are adjusted based on the proportions in the retrospective data, the resulting merged data are as shown in the following:

	<i>Number</i> <i>(in thousands)</i>	<i>Percent</i>
Employed in 1981 .....	1,333,807	100.0
Status in 1980:		
Employed .....	1,189,596	89.2
Same occupation as in 1981 .....	1,098,592	82.4
Different occupation from 1981 .....	91,004	6.8
Unemployed .....	31,963	2.4
Not in labor force .....	112,249	8.4

Separations were derived in the following manner. The matched data for secretaries showed the distribution of employment in 1980 by their labor force status in 1981:

	<i>Number</i> <i>(in thousands)</i>	<i>Percent</i>
Employed in 1980 .....	1,323,086	100.0
Status in 1981:		
Employed, total .....	1,189,428	89.9
Same occupation as in 1980 .....	811,747	61.4
Different occupation than in 1980 .....	377,681	28.6
Unemployed .....	27,264	2.1
Not in labor force .....	106,395	8.1

Retrospective data indicated that of the 89.9 percent of secretaries employed in both years, 91 percent were in the same occupation in 1980 and only 9 percent were in a different occupation.

The number of secretaries who remained in the same occupation developed in the merged data on entrants (1,098,592) was divided by the proportion of the 1980 secretaries who were in the same occupation in 1981 (91 percent). This results in a revised total of secretaries employed in 1980 who were employed in any occupation in 1981. The difference between that total (1,206,978) and those remaining in the same occupation (1,098,592) is the revised total for those transferring out. Finally, the numbers employed, unemployed, and not in the labor force in 1981 were totaled and a new percentage distribution was calculated as shown in the following:

	<i>Number</i>	<i>Percent</i> <i>(separation rate)</i>
Employed in 1980 .....	1,340,637	100.0
Status in 1981:		
Employed, total .....	1,206,978	90.1
Same occupation as in 1980 .....	1,098,592	82.0
Different occupation from 1980 .....	108,386	8.1
Unemployed .....	27,264	2.0
Not in labor force .....	106,395	7.9

These are the separation rates for secretaries in table 1.

### Data limitations

The CPS is conducted primarily to obtain current, rather than longitudinal, data on the labor force changes of individuals over the period of a year. Therefore, there are significant limitations to the data which describe these changes. One limitation is that the matched sample can only be developed from the responses of individuals who do not change residence, as the CPS is a household survey. Movers tend to change their labor force status more than nonmovers; hence, the separation rates are biased downward. Also, separation rates are biased downward because of the exclusion of individuals who die between surveys.<sup>8</sup> Response and coding errors, however, bias the separation rates upward. For example, if employed persons were incorrectly classi-

**Table 1. Separation rates, 1980-81, and replacement rates, 1980-90, for selected occupations with 100,000 employees or more**

Occupation	Separation rates, 1980-81 <sup>1</sup>					Replacement rates, 1980-90 <sup>2</sup>
	Total	Transfers to another occupation	Not working			
			Total	Unemployed	Not in the labor force	
<b>Total employed, age 16 and over</b> .....	20.0	8.9	11.1	3.4	7.7	19.4
<b>Professional, technical and kindred workers</b> .....	11.2	5.2	6.0	1.2	4.8	11.2
Accountants .....	8.2	4.0	4.2	1.0	3.2	8.2
Computer programmers .....	8.7	4.7	4.0	1.4	2.6	8.7
Computer systems analysts .....	5.3	4.0	1.2	.5	.7	5.3
Civil engineers .....	6.9	4.3	2.6	.6	2.0	6.9
Electrical engineers .....	4.1	1.6	2.4	.7	1.7	4.1
Industrial engineers .....	14.6	9.5	5.2	2.2	3.0	14.6
Mechanical engineers .....	6.2	4.4	1.9	.5	1.4	4.3
Lawyers .....	4.9	2.6	2.3	.1	2.2	4.8
Librarians .....	15.0	5.0	10.0	1.2	8.8	13.9
Chemists .....	4.2	1.8	2.4	.4	2.0	4.2
Operations and systems analysts .....	9.8	6.6	3.2	.5	2.7	9.8
Personnel, labor relations workers .....	9.7	5.2	4.4	.8	3.6	9.7
Dentists .....	1.2	.0	1.2	.2	1.0	1.2
Pharmacists .....	6.9	1.9	5.0	.2	4.8	5.9
Physicians .....	1.4	.0	1.4	.1	1.3	1.4
Registered nurses .....	10.2	2.3	7.9	.9	7.1	10.2
Therapists .....	10.2	4.4	5.8	1.0	4.9	10.2
Clinical laboratory technicians .....	10.3	4.5	5.8	1.6	4.1	10.3
Radiologic technicians .....	10.0	1.7	8.3	1.2	7.1	10.0
Clergy .....	8.4	4.1	4.3	.4	3.9	8.4
Economists .....	11.7	7.3	4.4	2.2	2.1	11.7
Psychologists .....	7.9	2.9	5.0	1.5	3.5	7.9
Social workers .....	16.3	9.1	7.2	2.2	5.0	16.3
Recreation workers .....	26.3	14.5	11.8	2.5	9.4	26.3
Elementary schoolteachers .....	11.0	3.8	7.2	.6	6.6	10.6
Preschool, kindergarten teachers .....	23.2	9.6	13.7	1.9	11.8	19.3
Secondary schoolteachers .....	9.3	4.0	5.3	.8	4.5	9.3
Drafters .....	12.6	6.7	5.9	2.8	3.1	12.6
Electrical, electronic technicians .....	11.4	6.6	4.8	.7	4.1	10.8
Vocational, educational counselors .....	13.5	7.2	6.3	1.6	4.6	13.5
Athletes and kindred workers .....	32.4	5.4	27.0	7.7	19.3	32.4
Designers .....	14.7	8.1	6.6	1.5	5.1	14.7
Editors and reporters .....	18.1	9.6	8.5	2.4	6.1	17.4
Musicians and composers .....	20.8	6.6	14.2	4.7	9.4	20.8
Painters and sculptors .....	24.4	13.8	10.6	1.1	9.5	23.2
Photographers .....	12.3	5.0	7.3	2.8	4.6	12.3
Public relations specialists .....	20.8	13.3	7.5	2.1	5.5	19.4
<b>Managers and administrators, except farm</b> .....	11.6	5.9	5.7	1.5	4.1	11.6
Bank, financial managers .....	9.6	5.3	4.2	1.5	2.8	9.6
Buyers, wholesale and retail trade .....	15.3	8.6	6.8	1.9	4.9	13.9
Health administrators .....	9.2	5.1	4.1	.3	3.8	6.1
Inspectors, except construction, public administration .....	11.4	6.9	4.5	.5	4.0	6.8
Managers and superintendents, building .....	19.9	7.2	12.7	1.4	11.3	18.7
Office managers, nec. .....	14.0	8.2	5.9	1.5	4.4	14.0
Officials and administrators, public administrations .....	10.2	3.4	6.9	.7	6.2	10.2
Officials of lodges, unions .....	13.6	5.1	8.6	2.4	6.2	13.6
Purchasing agents, buyers, nec. .....	9.6	5.6	4.0	1.9	2.1	9.4
Restaurant, cafe, bar managers .....	18.9	9.8	9.1	2.7	6.4	18.9
Sales managers, retail trade .....	15.2	8.5	6.7	3.0	3.7	12.2
Sales managers, except retail trade .....	12.0	8.3	3.7	1.5	2.2	12.0
School administrators, college .....	9.7	6.4	3.3	.8	2.5	9.7
School administrators, elementary and secondary .....	7.1	3.9	3.2	.7	2.5	7.1
Managers and administrators, nec. .....	10.8	5.3	5.5	1.5	4.0	10.5
<b>Salesworkers</b> .....	23.3	11.0	12.4	2.6	9.8	23.3
Advertising agents, salesworkers .....	9.2	3.7	5.6	1.7	3.9	9.2
Hucksters and peddlers .....	49.8	8.3	41.4	4.5	36.9	48.5
Insurance agents, brokers .....	12.5	7.4	5.1	1.0	4.1	10.7
Newspaper carriers and vendors .....	47.1	12.3	34.9	6.8	28.1	47.1
Real estate agents, brokers .....	14.9	6.6	8.3	.6	7.7	12.4
Stock and bond sales agents .....	7.8	2.8	5.0	.8	4.2	7.8
Sales representatives, manufacturing .....	14.8	10.0	4.8	1.9	2.9	13.7
Sales representatives, wholesale trade .....	15.1	9.9	5.2	2.0	3.2	13.8
Salesclerks, retail trade .....	31.0	14.4	16.6	3.3	13.3	31.0
Salesworkers, retail trade, except clerks .....	23.4	13.2	10.2	3.7	6.5	22.3
Salesworkers, services and construction .....	24.2	12.8	11.4	2.7	8.7	24.2
<b>Clerical workers</b> .....	21.6	10.5	11.1	2.4	8.7	21.6
Bank tellers .....	20.9	14.0	7.0	1.4	5.6	20.9
Billing clerks .....	20.8	11.6	9.2	4.0	5.2	20.8
Bookkeepers .....	19.1	7.6	11.5	1.6	9.9	18.8
Cashiers .....	33.1	14.3	18.8	4.4	14.4	33.1
Clerical supervisors, nec. .....	12.4	7.0	5.3	1.1	4.3	11.8
Counter clerks, except food .....	26.0	13.3	12.7	2.3	10.4	26.0

**Table 1. Continued—Separation rates, 1980–81, and replacement rates, 1980–90, for selected occupations with 100,000 employees or more**

Occupation	Separation rates, 1980–81 <sup>1</sup>					Replacement rates, 1980–90 <sup>2</sup>
	Total	Transfers to another occupation	Not working			
			Total	Unemployed	Not in the labor force	
Dispatchers and starters, vehicle	14.7	6.7	8.0	2.0	6.0	14.7
Estimators and investigators, nec.	18.6	10.6	8.0	2.0	6.0	18.6
Expeditors, production controllers	18.0	12.4	5.6	2.4	3.2	18.0
<b>File clerks</b>	<b>38.1</b>	<b>16.8</b>	<b>21.2</b>	<b>5.5</b>	<b>15.8</b>	<b>38.1</b>
Insurance adjusters, examiners	10.4	6.2	4.2	.6	3.6	10.4
Library attendants, assistants	27.3	9.0	18.3	3.1	15.3	27.3
Mail carriers, post office	6.4	2.2	4.2	.5	3.7	6.4
Mail handlers, except post office	29.0	17.6	11.4	2.4	9.0	29.0
Computer, peripheral equipment operators	16.6	9.5	7.1	2.0	5.1	16.6
Keypunch operators	24.9	15.3	9.6	2.8	6.7	19.7
Payroll and timekeeping clerks	15.4	9.3	6.1	1.6	4.5	15.4
Postal clerks	8.3	2.5	5.9	.6	5.3	8.3
Receptionists	27.6	13.5	14.1	2.6	11.6	27.6
Secretaries, nec.	18.0	8.1	9.9	2.0	7.9	17.9
Shipping and receiving clerks	20.5	12.8	7.8	3.1	4.7	19.1
Statistical clerks	20.6	12.3	8.3	1.6	6.7	20.1
Stock clerks, storekeepers	23.1	13.0	10.2	3.1	7.1	23.1
Teacher aides, except monitors	25.6	12.2	13.4	1.7	11.7	25.6
Telephone operators	23.7	15.2	8.5	1.3	7.2	20.1
Ticket, station, and express agents	12.2	4.0	8.3	4.3	4.0	9.3
Typists	24.2	11.7	12.5	3.0	9.5	24.2
<b>Craft and kindred workers</b>	<b>16.0</b>	<b>7.2</b>	<b>8.9</b>	<b>4.3</b>	<b>4.5</b>	<b>14.1</b>
Bakers	28.1	13.0	15.1	3.5	11.6	23.2
Brickmasons and stonemasons	20.4	5.3	15.2	10.7	4.5	13.3
Bulldozer operators	21.2	11.3	9.9	6.7	3.2	17.5
Carpenters	24.0	9.5	14.5	8.1	6.4	20.0
Compositors and typesetters	17.5	8.2	9.3	2.7	6.6	17.5
Crane, derrick, and hoist operators	18.8	10.6	8.1	4.8	3.4	16.5
Decorators, window dressers	36.3	18.8	17.5	2.6	15.0	22.3
Electricians	10.5	2.6	7.9	4.4	3.5	8.4
Electric line installers, repairers	7.5	2.7	4.8	1.9	2.9	4.5
Excavating machine operators, except bulldozer	22.4	9.1	13.3	8.2	5.1	15.1
Blue-collar worker supervisors, nec.	12.4	6.5	5.8	2.3	3.5	11.4
Inspectors, nec.	17.6	10.6	7.0	3.5	3.5	15.6
Machinists	12.3	5.7	6.7	3.0	3.7	11.6
Air conditioner, heating, refrigeration repairers	15.4	6.0	9.4	5.2	4.2	10.9
Aircraft mechanics	14.3	8.4	5.9	.9	5.0	8.0
Automobile body repairers	12.3	1.7	10.6	7.1	3.5	12.3
Automobile mechanics	17.4	9.0	8.4	4.5	3.8	15.1
Heavy equipment mechanics, including diesel	12.2	6.2	6.0	3.0	3.0	12.2
Household appliance repairers	15.8	6.0	9.8	3.1	6.7	9.9
Radio and TV repairers	18.5	14.1	4.4	1.1	3.4	15.6
Millwrights	19.8	3.0	16.8	11.0	5.9	9.5
Painters, construction and maintenance	22.7	7.4	15.4	6.6	8.7	22.7
Plumbers and pipe fitters	11.7	2.9	8.8	5.1	3.8	9.8
Printing press operators	15.8	10.1	5.7	1.8	3.9	12.9
Roofers and slaters	21.1	7.2	13.8	7.5	6.4	20.3
Sheet-metal workers, tinsmiths	13.0	4.6	8.3	5.6	2.8	11.1
Stationary engineers	13.8	8.3	5.5	2.3	3.2	11.9
Telephone installers, repairers	8.6	7.0	1.6	.4	1.2	8.2
Tool-and-die makers	10.7	4.4	6.3	1.7	4.6	6.0
<b>Operatives except transportation</b>	<b>24.0</b>	<b>9.7</b>	<b>14.4</b>	<b>7.1</b>	<b>7.3</b>	<b>20.9</b>
Assemblers	29.1	11.8	17.2	10.0	7.2	23.4
Checkers, examiners, except manufacturing	18.2	7.7	10.5	4.7	5.9	16.1
Clothing ironers and pressers	20.8	5.2	15.6	5.3	10.4	19.6
Cutting operatives, nec.	17.3	5.6	11.7	6.4	5.3	17.3
Dressmakers, except factory	33.2	3.4	29.8	2.6	27.2	16.0
Filers, polishers, sanders, buffers	25.0	10.1	14.9	9.3	5.6	21.6
Garage workers, gas station attendants	44.5	21.5	23.0	9.2	13.7	43.5
Laundry, dry cleaning operators, nec.	27.8	9.5	18.3	5.5	12.8	25.3
Meat cutters, butchers, except manufacturing	12.0	4.6	7.4	2.5	4.9	12.0
Mine operatives, nec.	21.1	13.5	7.6	5.2	2.4	21.1
Packers, wrappers, except meat and produce	26.3	11.0	15.3	6.7	8.6	26.3
Painters, articles	28.8	14.5	14.3	9.4	4.9	24.4
Grinding machine operatives	21.0	9.3	11.8	6.6	5.1	18.5
Lathe and milling machine operators	18.0	8.4	9.6	4.9	4.7	14.3
Punch, stamping press operators	30.0	14.9	15.2	10.6	4.6	24.4
Sawyers	27.8	13.3	14.5	6.9	7.6	19.5
Sewers and stitchers	22.4	5.2	17.3	6.0	11.2	20.9
Spinners, twisters, winders	28.7	12.9	15.8	7.1	8.7	13.8
Welders and flame cutters	18.7	6.7	12.1	8.8	3.3	14.8
<b>Transport equipment operatives</b>	<b>19.4</b>	<b>9.2</b>	<b>10.3</b>	<b>5.2</b>	<b>5.1</b>	<b>17.0</b>
Bus drivers	16.3	5.6	10.7	2.8	7.9	16.3
Delivery and route drivers	20.8	11.5	9.3	4.4	4.9	20.8
Forklift, tow vehicle operators	22.9	12.9	10.0	6.6	3.5	19.5
Taxicab drivers, chauffeurs	26.3	9.5	16.9	4.4	12.5	18.0
Truckdrivers	18.4	8.6	9.8	5.5	4.3	15.2



**Table 1. Continued—Separation rates, 1980–81, and replacement rates, 1980–90, for selected occupations with 100,000 employees or more**

Occupation	Separation rates, 1980–81 <sup>1</sup>					Replacement rates, 1980–90 <sup>2</sup>
	Total	Transfers to another occupation	Not working			
			Total	Unemployed	Not in the labor force	
<b>Nonfarm laborers</b> . . . . .	33.1	13.8	19.3	8.2	11.1	30.4
Construction laborers, except carpenter helpers . . . . .	37.6	14.3	23.2	13.0	10.3	31.6
Freight, material handlers . . . . .	29.7	14.2	15.5	8.3	7.2	29.7
Gardeners, groundskeepers, except farm . . . . .	35.0	12.2	22.8	6.9	15.9	35.0
Stockhandlers . . . . .	35.1	15.4	19.8	6.3	13.5	35.1
Vehicle washers, equipment cleaners . . . . .	35.4	16.0	19.4	10.3	9.1	35.4
Warehouse laborers, nec. . . . .	25.5	13.5	11.9	5.9	6.0	25.5
<b>Farmers and farm managers</b> . . . . .	12.4	2.1	10.2	.4	9.9	9.1
Farmers (owners and tenants) . . . . .	12.2	1.8	10.4	.3	10.1	9.1
<b>Farm laborers and supervisors</b> . . . . .	28.4	7.5	20.9	3.5	17.4	27.7
Farm laborers, wage workers . . . . .	26.5	9.6	16.9	4.6	12.4	26.5
<b>Service workers, except private household</b> . . . . .	27.5	10.7	16.8	3.9	12.8	27.5
Lodging cleaners . . . . .	30.7	8.7	22.0	5.3	16.7	30.7
Building interior cleaners, nec. . . . .	27.7	9.6	18.2	4.9	13.3	27.7
Janitors and sextons . . . . .	21.7	6.3	15.4	4.2	11.1	21.7
Bartenders . . . . .	33.1	17.6	15.4	5.3	10.2	31.0
Dining room attendants . . . . .	57.7	24.2	33.6	10.1	23.5	57.7
Cooks . . . . .	30.2	13.7	16.4	4.5	11.9	30.2
Dishwashers . . . . .	51.8	19.8	32.0	10.8	21.3	51.8
Food counter, fountain workers . . . . .	47.2	22.3	24.9	6.1	18.8	47.2
Waiters and waitresses . . . . .	40.2	18.7	21.6	4.9	16.6	39.8
Food service workers, nec. . . . .	26.8	8.6	18.2	4.2	14.0	26.8
Dental assistants . . . . .	23.6	8.5	15.2	3.6	11.6	23.6
Health aides, except nursing . . . . .	17.3	8.1	9.3	2.4	6.9	17.3
Nursing aides, orderlies . . . . .	25.5	10.1	15.4	3.1	12.3	25.5
Practical nurses . . . . .	13.9	2.4	11.6	1.5	10.1	13.9
Attendants, recreation and amusement . . . . .	43.0	18.2	24.8	6.1	18.7	43.0
Barbers . . . . .	6.8	1.0	5.8	.4	5.4	2.6
Child-care workers . . . . .	41.7	7.2	34.5	3.6	30.9	41.7
Hairdressers, cosmetologists . . . . .	12.8	3.4	9.4	1.6	7.8	12.8
Housekeepers . . . . .	18.9	5.9	13.0	2.0	11.1	18.9
Firefighters . . . . .	4.1	1.8	2.3	.3	2.1	4.1
Guards . . . . .	25.2	10.6	14.6	4.4	10.2	25.2
Police officers, detectives . . . . .	8.8	5.5	3.3	.7	2.6	7.1
<b>Private household workers</b> . . . . .	39.6	3.0	36.7	4.1	32.6	39.6
Child-care workers . . . . .	58.8	3.3	55.5	7.1	48.4	58.8
Servants . . . . .	27.4	2.4	25.0	2.1	22.9	24.2

<sup>1</sup>The occupational separation rate is the percentage of individuals previously employed in an occupation who are not employed in that same occupation a year later. Occupational transfers occur if individuals remain employed, but in a different occupation.

<sup>2</sup>Replacement rates exclude those resulting because of death.

NOTE: Due to rounding, sums of individual items may not equal totals.  
nec = not elsewhere classified.

fied as not in the labor force during the second survey, the matched data would indicate movement where none occurred. Although the net effect of the biases on the movements is not known, the impact of the various limitations are offsetting and significant distortions very likely do not exist.<sup>9</sup> The CPS sample size also limits the number of occupations for which reliable occupational separation data can be developed. The merged data in this report are for occupations having 100,000 or more workers in 1981.

The “merged data” procedure was developed primarily to improve the data on replacement needs which, in turn, is used to develop information on future job opportunities in the Bureau’s occupational outlook program. The use of the CPS merged data in the analysis of future job openings is hindered because the occupational classification of the CPS differs from that of the Occupational Employment Statistics (OES) surveys which is the source of data on occupational employment. For many occupations having the same

title, CPS and OES employment data are significantly different because of response and sampling variability and conceptual differences between the surveys.<sup>10</sup> These differences, however, do not preclude the use of CPS-based data in analyzing occupations for which the OES survey provides employment data—many occupations are conceptually comparable.<sup>11</sup>

### Occupational separations

Between 1980 and 1981, 20 percent of all employed persons left their occupation and transferred to another or stopped working for any reason except death. About 9 percent transferred to another occupation, while the remaining 11 percent became unemployed (3 percent) or dropped out of the labor force (8 percent).

Separation rates differed significantly among occupations.<sup>12</sup> (See table 1.) Occupations with high separation rates (33 percent or more) typically require little education and training and have a larger proportion of young workers.

Many of these jobs require only part-time workers and are filled by youth ages 16 to 19 who are still in school.<sup>13</sup>

In contrast, occupations with very low separation rates (under 9 percent), typically have extensive education requirements or a larger proportion of older male workers. For example, physicians, dentists, and lawyers are in this group. However, barbers and mail carriers also have low separation rates—these occupations do not require extensive education, but have relatively large proportions of workers over 45 years of age and are dominated by males.

The following shows occupations with high and low separations rates as measured by the percent of workers leaving their occupation over a 12-month period during 1980–81:

<i>Occupations with high rates:</i>	<i>Rate</i>
Child-care workers, private household .....	58.8
Dining room attendants .....	57.7
Dishwashers .....	51.7
Hucksters and peddlers .....	49.8
Food counter, fountain workers .....	47.2
Newspaper carriers and vendors .....	47.1
Garage workers, gas station attendants .....	44.5
Attendants, recreation and amusement .....	43.0
Child-care workers, except private household .....	41.7
Waiters and waitresses .....	40.2
File clerks .....	38.1
Construction laborers, except carpenter helpers .....	37.6
Decorators and window dressers .....	36.3
Vehicle washers, equipment cleaners .....	35.4
Stockhandlers .....	35.1
Gardeners, groundskeepers .....	35.0
Dressmakers, except factory .....	33.2
Bartenders .....	33.1
Cashiers .....	33.1
<i>Occupations with low rates:</i>	<i>Rate</i>
Dentists .....	1.2
Physicians .....	1.4
Firefighters .....	4.1
Electrical engineers .....	4.1
Chemists .....	4.2
Lawyers .....	4.9
Computer systems analysts .....	5.3
Mechanical engineers .....	6.2
Mail carriers/post office .....	6.4
Barbers .....	6.8
Civil engineers .....	6.9
Pharmacists .....	6.9
School administrators, elementary and secondary .....	7.1
Electric power line installers, repairs .....	7.5
Stock and bond sales agents .....	7.8
Psychologists .....	7.9
Accountants .....	8.2
Postal clerks .....	8.3
Clergy .....	8.4
Telephone installers, repairers .....	8.6

**Occupational transfers.** During the 1980–81 period, transfers to other occupations generally accounted for one-third of the separations for all workers except farmers, farm

laborers, and private household workers. Professional occupations which had a large proportion of female workers generally had lower transfer rates and higher labor force separation rates, reflecting the greater tendency of women to leave the labor force to care for young children. For example, registered nurses and elementary school teachers, occupational groups which require extensive training and have large proportions of female workers, had low transfer rates and fairly high labor force separation rates.

An occupation with a high transfer-out rate may identify an entry level or career ladder position. For example, bank tellers had a higher than average transfer-out rate (14 percent), but a lower than average proportion of persons who were not working a year later (7 percent). This pattern—transfers twice as high as total separations—indicates most bank tellers who leave the occupation move to other jobs.

**Not working group.** Of the persons who stopped working because they became unemployed or left the labor force, professional and managerial workers had the lowest separation rates (6 percent) and private household workers the highest (37 percent).

Movements into the not working category were a fairly constant proportion of total separations for most occupations. Movements into unemployment and out of the labor force were less consistent. The difference is attributable largely to the magnitude of the number who became unemployed.

Movement into unemployment ranged from 1 percent for professional workers to 13 percent for construction laborers, a reflection of the vulnerability of each occupation to economic conditions. Because professional workers usually are not directly involved in the production process, they are not released when product demand declines and, therefore, relatively few professional workers become unemployed. These workers, if they do become unemployed, usually are able to find a job relatively quickly. The opposite is true for laborers, who generally are young, have little specialized training, and are directly involved in producing goods or services. Craftworkers and operatives have more specialized training and experience than laborers, but they also are subject to layoffs resulting from reduced demand for products. Salesworkers, clerical workers, and service workers are less directly involved in goods production and are less likely to be immediately affected by variations in economic conditions.

### **Influencing factors**

Occupational separation rates reflect the interaction of the unique characteristics of the occupation with various factors associated with the characteristics of workers in the occupation. Sex, age, education, and race are among the variables which interrelate with occupational attachment.

**Age and sex.** The total separation rate over the period of

**Table 2. Occupational separation rates by sex, age, level of education, and race, 1980-81**

Characteristic	Total	Transfer to another occupation	Not working					
			Total	Unemployed	Not in labor force			
					Total	Household responsibilities	Going to school	Other reasons, including retirement
<b>All employed persons, total</b> .....	20.0	8.9	11.1	3.4	7.7	3.3	1.5	2.9
Men .....	17.3	8.5	8.7	3.7	5.1	.1	1.3	3.7
Women .....	23.7	9.4	14.3	3.0	11.3	7.8	1.7	1.8
<b>Age:</b>								
16 to 19 .....	48.3	22.2	26.1	8.0	18.1	1.2	13.1	3.8
Men .....	47.7	22.0	25.8	9.2	16.6	.1	12.4	4.1
Women .....	48.9	22.5	26.5	6.6	19.9	2.6	13.9	3.4
20 to 24 .....	32.1	17.0	15.1	6.2	8.9	3.8	3.2	2.0
Men .....	30.1	17.3	12.8	7.3	5.5	.1	3.2	2.2
Women .....	34.3	16.5	17.8	4.8	13.0	8.1	3.3	1.6
25 to 29 .....	21.0	10.9	10.0	4.2	5.8	4.2	.6	1.0
Men .....	17.3	10.9	6.5	4.8	1.7	.1	.6	1.0
Women .....	25.8	11.0	14.8	3.3	11.4	9.7	.7	1.0
30 to 34 .....	16.4	9.0	7.4	3.0	4.5	3.4	.2	.9
Men .....	12.8	8.7	4.2	3.1	1.0	.0	.1	.9
Women .....	21.6	9.4	12.2	2.7	9.5	8.2	.4	.9
35 to 44 .....	12.8	6.3	6.5	2.5	4.0	2.9	.2	.9
Men .....	9.8	6.0	3.8	2.6	1.2	.1	.1	1.0
Women .....	16.1	6.0	10.1	2.3	7.8	6.7	.3	.8
45 to 54 .....	10.6	3.9	6.7	2.3	4.4	2.7	.1	1.7
Men .....	7.9	3.5	4.5	2.5	2.0	.1	.0	1.9
Women .....	14.4	4.4	10.0	2.1	7.9	6.5	.1	1.3
55 to 64 .....	15.0	2.3	12.7	1.8	10.9	3.7	.0	7.2
Men .....	14.0	2.5	11.6	2.0	9.6	.1	.0	9.4
Women .....	16.6	2.0	14.6	1.6	13.0	9.3	.0	3.7
65 and over .....	29.1	1.1	28.0	1.0	27.0	7.4	.0	19.5
Men .....	28.2	.9	27.4	1.0	26.4	.3	.0	26.0
Women .....	30.6	1.4	29.2	1.2	28.0	19.5	.0	8.5
<b>Education:</b>								
High school graduate or less: .....	21.8	8.8	13.0	4.2	8.8	3.8	1.6	3.5
Men .....	19.5	8.6	10.9	4.7	6.2	.1	1.4	4.7
Women .....	24.7	9.0	15.7	3.4	12.3	8.6	1.8	2.0
Some college education: .....	20.8	10.8	10.0	2.8	7.2	2.8	2.2	1.2
Men .....	17.7	10.1	7.6	3.1	4.5	.1	1.9	2.6
Women .....	25.0	11.6	13.3	2.5	10.8	6.6	2.5	1.7
College graduate: .....	12.8	7.6	5.2	1.1	4.1	2.0	.5	1.6
Men .....	10.1	7.1	3.1	1.0	2.1	.0	.4	1.6
Women .....	17.6	8.5	9.1	1.3	7.8	5.6	.8	1.4
<b>Race:<sup>1</sup></b>								
White .....	19.8	9.1	10.7	3.1	7.6	3.3	1.5	2.8
Men .....	16.9	8.6	8.3	3.4	4.9	.1	1.3	3.6
Women .....	23.9	9.8	14.2	2.7	11.5	7.9	1.8	1.8
Black .....	21.7	7.2	14.5	5.9	8.6	3.4	1.5	3.7
Men .....	21.2	7.6	13.6	6.9	6.8	.1	1.5	5.1
Women .....	22.1	6.8	15.3	4.8	10.5	6.8	1.6	2.1

<sup>1</sup>Data for other races are not presented because of the limited sample size.

employed in an occupation who are not employed in that same occupation a year later. Occupational transfers occur if individuals remain employed but in a different occupation. Due to rounding, sums of individual items may not equal totals.

NOTE: The occupational separation rate is the percentage of individuals previously

a year during 1980 to 1981 declined for both men and women through the 45 to 54 age group, and then increased in the 55 to 64, and 65 and over age groups. (See table 2.) However, the transfer rate declined continuously, from 22 percent for the youngest men to 1 percent for the oldest. (Transfer rates were similar for men and women within each age group).

The proportion of separated workers who became unemployed declined consistently with age and was similar for men and women. Although labor force separation rates were higher for women than for men in every age group, a U-shaped pattern was evident for both sexes: rates were high for young persons, declined for the middle age groups, and rose as workers approached retirement age. This pattern

is more exaggerated for men than for women. This difference occurs because men are much less likely than women to leave an occupation during the prime working ages.

**Education.** The greater the investment in education and training, the lower the occupational separation rates. Rates ranged from 22 percent for those with a high school education to 13 percent for college graduates. (See table 2.) However, transfer rates were not so affected by education. They were only slightly lower for college graduates than for persons with a high school education or less, and were similar for men and women within each educational group.

The proportion of persons becoming unemployed after separation declined steadily as education increased. College

graduates became unemployed at a rate one-third less than that for persons with a high school education or less.

At all levels of education, men had lower labor force separation rates than women, again reflecting the tendency of women to move out of the labor force because of family responsibilities.

*Race.* Total occupational separation rates for whites was slightly lower than that for blacks, 20 percent versus 22 percent. (See table 2.) Data for other nonwhites are not shown because of the small sample size.

White men and women have higher transfer-out rates than blacks. However, blacks were more likely to stop working, although there are differences in the patterns for persons becoming unemployed and moving out of the labor force. Larger proportions of black men and women become unemployed, perhaps indicating that blacks may encounter greater difficulty in finding other jobs. Larger proportions of black than of white men also left the labor force.

### Replacement needs

Employment opportunities result from the need for additional workers and the need to replace workers who leave an occupation. Replacements are by far the more significant source of job opportunities. Information about expected replacement needs are crucial for describing future employment opportunities and for assessing supply/demand relationships. Therefore, BLS develops estimates of replacement needs whenever data are available.<sup>14</sup>

In developing estimates of replacement needs, the dis-

tinction between job separations and replacement needs cannot be overlooked. When employment in an occupation increases over a 1-year period, job openings are equal to growth and replacements. However, when employment declines, replacement needs trail separations. Employment declines indicate that some individuals leaving an occupation were not replaced.<sup>15</sup>

When the 64 occupations in table 1 which showed employment declines were adjusted to produce an estimated average annual replacement rate, the adjustment varied from 0 to -17 percent; the median was 2 percent. An additional 23 occupations had inordinate increases in the proportion of persons who became unemployed during 1980-81, compared with 1977-78, even though employment did not decline. Occupational transfer and labor force separation rates were about the same for both periods. The high rate of movement into unemployment indicated the occupations were sensitive to economic conditions. However, the economic conditions of the 1977-78 period are more typical of assumptions about the 1980-90 projected period. To estimate replacement rates, 1977-78 data about movement into unemployment were combined with 1980-81 transfer and labor force separation data. The resulting replacement rates varied by -1 to -7 percent, with a median of 3 percent.

Average annual replacement rates for occupations having 100,000 or more employees, 1980-90, are shown in table 1. Projected openings resulting from replacement needs were estimated by applying the projected average annual occupational replacement rate to employment at the midpoint of the projection period.<sup>17</sup> □

### FOOTNOTES

<sup>1</sup> *Tomorrow's Manpower Needs*, Vol. I, Bulletin 1606 (Bureau of Labor Statistics, 1969), p. 47.

<sup>2</sup> *Measuring Labor Force Movements: A New Approach*, Report 581 (Bureau of Labor Statistics, 1980) discusses the need and provides a conceptual framework for improved replacement needs data.

<sup>3</sup> For additional information about the survey, see *The Current Population Survey: Design and Methodology*, Technical Paper 40 (Bureau of the Census, 1978).

<sup>4</sup> A change of occupation involves movement between any of the detailed 3-digit occupations in the *1970 Census of Population Classified Index of Industries and Occupations* (Bureau of the Census, 1971).

<sup>5</sup> Cande L. Collins, "Comparison of Month-to-Month Changes in Industry and Occupation Codes with Respondents Report of Change: cps Jobs Mobility Study," Response Research Staff Report No. 75-5 (unpublished, Bureau of the Census, May 15, 1975), table C, p. 7.

<sup>6</sup> Nancy Rytina, "Occupational changes and tenure, 1981" *Monthly Labor Review*, September 1982, pp. 29-33, presents additional information on occupational mobility data collected in the January 1981 cps.

<sup>7</sup> See *Occupational Projections and Training Data*, 1982 edition, Bulletin 2202 (Bureau of Labor Statistics, 1982), pp. 67-69, for a more comprehensive discussion of the methodology.

<sup>8</sup> The occupational separations data in this article exclude deaths because the data are not available. This exclusion biases the estimates of separations downward .4 to .7 percent. See *Occupational Projections*, p. 74.

<sup>9</sup> Alan Eck, "Estimating Occupational Movements: A Comparison of

Longitudinal Data from the Current Population Survey," memorandum, Bureau of Labor Statistics, May 16, 1981. January 1977 to January 1978 cps matched longitudinal data and cps retrospective data for the same persons were examined. The matched data indicated 86.9 percent of individuals employed in January 1978 were employed in January 1977; the retrospective data indicated 87.9 percent.

<sup>10</sup> *Occupational Projections*, pp. 65-66.

<sup>11</sup> The *Occupational Projection and Training Data, 1984 Edition*, Bulletin 2206 (Bureau of Labor Statistics, forthcoming) presents OES-based employment data and cps data about the characteristics of workers for occupations appearing in the *Occupational Outlook Handbook, 1983-84 Edition* and judged to be comparable.

<sup>12</sup> An occupational separation rate is the percentage of persons previously employed in a 3-digit 1970 Census of Population occupation who are not employed in that same occupation a year later. The occupational transfer rate is the percentage employed in a different 3-digit occupation a year later.

<sup>13</sup> Anne Kahl, "Characteristics of Job Entrants in 1980-81," *Occupational Outlook Quarterly*, Spring 1983, pp. 22.

<sup>14</sup> *Occupational Projections*, chap. 4.

<sup>15</sup> *Occupational Projections*, pp. 70-71, provides more information about the distinction.

<sup>16</sup> Employment change as measured by the merged cps data.

<sup>17</sup> *Occupational Projections*, chap. 4, presents projected replacement needs for 55 occupations.

# Occupational reclassification and changes in distribution by gender

*During the 1970's, the most important shift in the distribution of the sexes by occupation was the larger female representation among managers; the proportion of specific occupations which were male-dominated declined, but the share which were 'female-intensive' remained the same*

NANCY F. RYTINA AND SUZANNE M. BIANCHI

It is well known that women are concentrated in different occupations than men. Because this concentration plays a crucial role in accounting for male-female earnings differentials, it is important to know the degree to which women have been moving into jobs that have traditionally been held by men.<sup>1</sup>

The decennial censuses provide very detailed occupational data and serve as the most important benchmarks for assessing long-term changes in the distribution of the sexes by occupation. The Current Population Survey (CPS), conducted monthly for the Bureau of Labor Statistics by the Bureau of the Census, also uses the Census occupational classification system which was developed to facilitate comparability in occupational data produced by the Federal Government agencies. The CPS is particularly useful for providing information on year-to-year changes in occupational employment in the years between decennial censuses.<sup>2</sup>

The extensive reclassification of occupations accompanying the 1980 census, however, complicates the analysis of changes over time in sex composition. The Census Bureau's new classification system is consistent with the 1980 Standard Occupational Classification (SOC) system issued

by the Office of Federal Statistical Policy and Standards.<sup>3</sup> Changes in occupational categories in previous censuses have always posed problems for historical comparisons, but the changes between the 1970 and 1980 censuses were more far-reaching.<sup>4</sup> The 1970 classification had 441 occupational categories within 12 major groups compared with 503 categories, divided among 13 major groups, in 1980. Detailed 1970 occupational codes are now split among several 1980 codes and this splitting crosses major group boundaries.<sup>5</sup> This means that if 1970 data based on the 1970 classification were compared with 1980 data based on the 1980 classification, it would be impossible to distinguish actual changes in employment in a given occupation from changes resulting from reclassification. These comparisons may be made, however, using CPS data, as that survey did not switch to the new classification system until January 1983. However, CPS data for the 1970's are based on the 1970 classification system and, unless revised, will not be comparable with data from 1983 or later.<sup>6</sup>

With regard to occupational statistics from the decennial census, the gap between the old and new classification systems can be bridged with the help of a sample of about 120,000 records from the 1970 census in which persons in the experienced civilian labor force were assigned both a 1970 and 1980 occupational code ("double coded"). The data available from this double-coded sample consist of a

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cross-classification of 1970 and 1980 detailed occupational codes disaggregated by sex only.

This article uses data from the 1970 double-coded sample as well as published 1970 and 1980 census detailed occupational data by sex. We examine the effects of reclassification and actual changes in employment by sex between 1970 and 1980 using the new classification system. We analyze the distribution of major occupational groups by sex, the percent female in detailed occupations, and the 25 occupations employing the largest numbers of men and women.

### Data and method

From the double-coded sample of 1970 census data, we use a matrix that shows a mapping of the male and female labor force in each 1970 detailed occupational code into the 1980 codes. The matrix shows, for example, that the 1970 occupation of accountant (001), which is in the 1970 professional and technical major group, branches out into five 1980 codes: financial managers (007); accountants and auditors (023); other financial auditors (025); inspectors and compliance officers, except construction (036); and bookkeepers, accounting, and auditing clerks (337). This matrix is used to reorder the published 1970 occupational distribution by sex into 1980 occupational categories.

The reordered 1970 data are compared with 1980 census data to assess changes in the sex composition in major and detailed occupations.<sup>7</sup> By contrast, the effects of reclassification are also assessed by comparing 1970 data coded to the 1970 scheme with 1970 data coded to the 1980 scheme.

Because this analysis relies principally on a subsample of 1970 data coded into the 1980 occupational classification scheme, the reliability of the double-coded data is of some concern. Errors in coding affect the quality of the data to an unknown extent. And even though the sample of 120,000 is large, sampling variability becomes a problem when dealing with several hundred occupations. Our examination of the double-coded data for completeness shows that more than 90 percent of the 1970 and 1980 occupational codes are represented.<sup>8</sup>

Another important consideration was the *reliability* of the double-coded data when disaggregated by sex and detailed occupations. We tested this by comparing the percent female in the double-coded data with the percent female in each occupation derived from published 1970 census data.<sup>9</sup> If the percent female deviated by less than 5 percentage points, we regarded the double-coded data as reliable and representative of that occupation's sex composition. In 312 of the 1970 occupations—accounting for 87 percent of the labor force in 1970—the percent female deviated by less than 5 percentage points between the double-coded and published data. The reliability of the proportion of those in the occupation who were female in the double-coded data was lowest among those occupations employing *small* numbers of men and women. When examining sex composition in

detailed categories, the analysis is restricted to this subset of 312 occupational codes in 1970 and the 457 corresponding codes in 1980.<sup>10</sup>

We view the findings presented below as preliminary. Other research, relying on complex statistical techniques, is underway to evaluate comparability between the 1970 and 1980 occupational classifications.<sup>11</sup>

### Reclassification effects on major occupations

As shown in table 1, most major group categories underwent title changes between 1970 and 1980. For example, the 1970 major occupational group "clerical workers" coincides most closely with the 1980 title "administrative support, including clerical." However, the group known in 1970 as "professional, technical, and kindred workers" is split into two groups in 1980: "professional specialty occupations" and "technicians and related support occupations." Agricultural occupations were expanded in the 1980 scheme to include related off-farm activities, such as animal caretaking and gardening, and, to reflect this, the major group title was changed to "farming, forestry, and fishing occupations." Among service workers, "protective service workers" became a major group in 1980.

In the 1980 coding scheme, the "executive, administrative, and managerial" major group was expanded to include management-related occupations, such as accountants and auditors and personnel, training, and labor relations specialists, which were classified as professions in 1970. However, this expansion was more than offset by the movement of proprietors and other sales managers into the sales category and of precision production managers into the major group, "precision production, craft, and repair." That is, under the 1980 system, managers who perform some of the same duties as the persons they supervise are classified under the same major group as the persons they manage. Overall, reclassification results in fewer managers under the 1980 coding scheme than under that of 1970.

Several changes affected the major groups which were formerly referred to as blue-collar workers. Certain groups classified as operatives in 1970, such as butchers and meatcutters, dressmakers, and drywall installers, were moved to the "precision production, craft, and repair" major group in 1980. Under the 1980 classification system, those who set up machines for others are classified as machine operators rather than craftworkers. The 1980 "transportation and material moving occupations" also contain several former craft occupations. Finally, a number of operatives in 1970 were moved to the "handlers, equipment cleaners, helpers, and laborers" major group in 1980. Most of these transfers came out of the large 1970 residual categories, that is, "not elsewhere classified."<sup>12</sup>

How did reclassification affect the distribution of employment across major occupational groups? Distributions of 1970 data coded into both 1970 and 1980 major groups, shown in table 1, provide a rough indication. The first shows

the data sorted by 1970 major groups with "professional and technical" and "service" workers subdivided to conform more closely to the 1980 coding scheme. The second shows the distribution by 1980 major groups. The differences between these two columns can be viewed as a general reflection of classification changes affecting major groups.<sup>13</sup>

The results show that the two distributions are similar and suggest that census data for 1970 can be regrouped to be moderately comparable with the 1980 major categories. (The same holds true for the white-collar, blue-collar, service, and farm categories.) The regrouping of 1970 into 1980 major occupational categories obviously lacks complete precision. Reclassification shifted persons from managerial, professional, clerical, and operative major categories into technical, sales, farming, transportation, and handler (laborer) categories.<sup>14</sup> However, the aggregate movements are considerably larger than the net results and therefore the characteristics of persons in the major occupational categories have changed.

### Changes in major occupational groups by sex

The percent of the experienced civilian labor force who were women increased from 38 to 43 percent between 1970 and 1980. Still higher was the percent female among the net additions to the work force: 57 percent of the workers added in the 1970's were women.

Given the increase in female workers, were there significant changes in the distribution of the sexes in major categories during the 1970's? Before such a question can be answered, the effect, if any, of reclassification on the proportion of women within major occupational groups must be removed. The first two columns of table 2 show 1970 data classified into the 1970 major groups and into comparable 1980 major groups (or proportions thereof as out-

lined in table 1). By comparing the 1970 data under the two coding schemes, we obtain an indication of the ways in which the reclassification affected the female percentage in major occupational categories.

The technical major occupational group was affected the most by the reclassification, which increased the percent female from 24 to 34 percent. Almost all of the 240,000 practical nurses, most of whom are women, were reclassified from the service group to technicians under the 1980 system. This largely accounts for the rise in the proportion of women in the major category of technician.

The only other occupation in which reclassification changes the female percentage by more than 2 or 3 points is among handlers and laborers. Reclassification increases the women's proportion from 8 to 18 percent. One factor was the movement of 92 percent of packers and wrappers—63 percent of whom were women in 1970—from the operative category to the handler (laborer) category.

By comparing 1970 data, coded into the 1980 scheme, with 1980 data (columns 2 and 3 of table 2), actual changes in the percent female within major groups can be examined for the 1970's.<sup>15</sup> Relative to the overall increase in the female proportion in the labor force, there was very little change in this proportion within three of the major occupational groups with very high proportions of male workers—handlers (laborers), transportation workers, and precision production (craft) workers. Likewise, among major groups that are largely composed of women—administrative support (clerical) and private household workers—there was little change in the female proportion during the decade. Increases in this percentage were slightly more substantial than overall increases in the labor force in "farming, forestry, and fishing" and "protective service" occupations, both of which are predominantly male. In major groups in

**Table 1. Effects of reclassification on the distribution of employment across major occupational groups**

1970 major occupational group	1970 data (1970 code)	1980 major occupational group	1970 data (1980 code)
Total	100.0	Total	100.0
Managers and administrators, excluding farm (201-245)	8.1	Executive, administrative, and managerial (003-307)	7.5
Part of professional and technical workers (001-076, 086-145, 174-195)	12.9	Professional specialty (043-199)	11.0
Part of professional and technical workers (080-085, 150-173)	1.6	Technicians and related support (203-235)	2.3
Salesworkers (260-285)	7.1	Sales occupations (243-285)	10.1
Clerical workers (301-395)	17.8	Administrative support, including clerical (303-389)	16.6
Private household (980-984)	1.5	Private household (403-407)	1.5
Part of service workers (960-965)	1.3	Protective service (413-427)	1.3
Part of service workers (901-954)	10.0	Service, excluding private household (433-469)	9.9
Farmers and farm managers, farm laborers and farm foremen (801, 802, 821-824)	3.1	Farming, forestry, and fishing occupations (473-499)	3.8
Craftworkers (401-575)	13.9	Precision production, craft, and repair (503-699)	14.1
Operatives, excluding transport (601-695)	14.1	Machine operators, assemblers, and inspectors (703-799)	11.2
Transport equipment operatives (701-715)	3.9	Transportation and material moving occupations (803-859)	4.9
Laborers, excluding farm (740-785)	4.7	Handlers, equipment cleaners, helpers, and laborers (863-889)	5.7

which the female component in 1970 hovered around the overall female proportion in the labor force, that is, professional specialties, technicians, and salesworkers, increases in female percentages were as great or slightly larger than average. Although these major occupational groups appear rather sex-neutral, a great degree of sex concentration exists within detailed occupations within each major group. Nearly one-half of female professionals are nurses or noncollege teachers.<sup>16</sup>

The one large change for women during the decade of the 1970's was their increased representation among the "executive, administrative, and managerial" major group. Whereas in 1970, only about 18 percent of managers were women, a rise in the female percentage twice that for the overall labor force occurred during the decade. By 1980, women were still underrepresented in the managerial category by comparison with their overall representation in the labor force but the female share among managers had risen to 31 percent.

**Women in detailed occupations**

The data in table 3 provide summary evidence both of the effects of occupational reclassification and of actual changes in the proportion of women in detailed occupations during the 1970's. The table has three panels showing the distribution of occupations, male employment, and female employment. Within each panel are three columns. The first two distributions are calculated from the double-coded data, restricted to the 312 occupations in which the difference in the female share in an occupation between the double-coded and published 1970 data does not exceed 5 percentage points. The third comes from the published 1980 data.

For purposes of discussion, occupations were classified as male-intensive, female-intensive, and neutral. Such categories have typically been defined arbitrarily by using a 5-, 10-, or 20-percentage point spread around the female proportion of the total work force.<sup>17</sup> We use the conservative 20-percentage point spread to define "male-intensive" and

**Table 3. Percent of women in deciles by number of occupations, male and female employment, 1970, 1980**

Percent female in occupation	Total employment		
	1970 data (1970 code)	1970 data (1980 code)	1980 data (1980 code)
Total . . . . .	100.0	100.0	100.0
Percent female:			
0—10	47.4	48.4	34.8
11—20	11.2	10.1	13.3
21—30	9.0	9.2	10.3
31—40	5.8	6.6	9.6
41—50	3.2	5.9	7.9
51—60	2.2	1.8	5.2
61—70	3.8	3.3	4.2
71—80	4.2	4.2	5.5
81—90	4.8	4.2	4.6
91—100	8.3	6.6	4.6
	Male employment		
	1970 data (1970 code)	1970 data (1980 code)	1980 data (1980 code)
Total . . . . .	100.0	100.0	100.0
Percent female:			
0—10	52.6	55.5	37.0
11—20	20.4	19.6	16.2
21—30	7.6	8.7	18.4
31—40	7.2	4.0	9.1
41—50	2.1	4.2	6.4
51—60	2.2	.9	4.6
61—70	4.1	2.2	2.0
71—80	1.0	1.6	2.9
81—90	2.2	2.6	2.6
91—100	.6	.6	.7
	Female employment		
	1970 data (1970 code)	1970 data (1980 code)	1980 data (1980 code)
Total . . . . .	100.0	100.0	100.0
Percent female:			
0—10	3.2	3.5	2.1
11—20	5.2	5.5	4.0
21—30	4.4	4.9	8.6
31—40	5.8	3.6	6.6
41—50	3.1	6.2	7.5
51—60	4.0	1.5	7.9
61—70	12.9	6.9	5.1
71—80	5.1	7.9	11.9
81—90	21.9	26.1	21.6
91—100	34.2	33.7	24.7

**Table 2. Percent of women in major occupational groups, 1970, 1980**

Major occupational group	1970 data (1970 code)	1970 data (1980 code)	1980 data (1980 code)
Executive, administrative, managerial . . . . .	16.7	18.5	30.5
Professional speciality . . . . .	42.3	44.3	49.1
Technicians . . . . .	23.8	34.4	43.8
Sales . . . . .	40.0	41.3	48.7
Administrative support, including clerical . . . . .	73.6	73.2	77.1
Private household . . . . .	96.8	96.3	95.3
Protective service . . . . .	6.2	6.6	11.8
Other service . . . . .	62.2	61.2	57.2
Farming, forestry, fishing . . . . .	10.0	9.1	14.9
Precision production, including craft . . . . .	5.0	7.3	7.8
Machine operators . . . . .	39.2	39.7	40.7
Transportation . . . . .	4.4	4.2	7.8
Handlers, laborers . . . . .	8.3	17.5	19.8
Total . . . . .	38.0	38.0	42.5

"female-intensive" occupations and select 40 percent as the base because the work force was 37 percent female in 1970, and 42 percent female in 1980. Male-intensive, or male-dominated, occupations are those in which 20 percent or less of the work force was female in 1980; female-intensive, or female-dominated, occupations are those in which 60 percent or more of the workers were female in 1980; and the remaining occupations in which 21 to 59 percent of the workers were female in 1980 are considered neutral occupations.

As shown in columns 1 and 2 of each panel of table 3, reclassification had little effect on the distribution of detailed occupations grouped by their female percentage. Under the 1970 coding scheme, 59 percent of all occupations were male-intensive, 21 percent were female-intensive, and 20 percent were neutral. The only difference exhibited by the 1980 coding scheme is a slightly higher proportion of neutral occupations and a slightly smaller proportion of female-intensive occupations. The number of male-intensive oc-



occupations as a fraction of the total remains the same under both schemes.

Similarly, employment shares by the female proportion in occupations were hardly affected by the occupational reclassification. Among women, there was no change. Using either the 1970 or 1980 codes, one finds about 75 percent of women in female-intensive occupations, 16 percent in neutral occupations, and 9 percent in male-intensive occupations in 1970. Among men, the degree of occupational segregation is increased slightly by the 1980 coding scheme. In shifting from the 1970 to 1980 scheme, the proportion of men employed rises slightly in male-intensive occupations, drops by the identical magnitude in neutral occupations, and remains the same in female-intensive occupations.

Actual changes in the female proportion in occupations during the decade are indicated by comparisons between columns 2 and 3 in each panel of table 3. The degree of sex segregation declined.<sup>18</sup> This was brought about by a substantial drop in the proportion of all occupations which were male-intensive, a modest rise in neutral occupations, and no change in the fraction of female-intensive occupations. In terms of employment, the most notable change was an increase in the proportion of both sexes employed in neutral occupations—up by about 20 percentage points between 1970 and 1980. For men, the shift into neutral occupations coincided with a decline in employment in male-intensive occupations. For example, in 1970 more than half of all men worked in occupations that had 10 percent or fewer women; by 1980, that fraction was down to 37 percent. Similarly, among women, movement into neutral occupations paralleled a decline in their employment in female-intensive occupations.

## Large occupational categories

Tables 4 and 5 show how the percent female changed during the decade in the 25 largest occupations for men and women in terms of 1980 employment. The largest occupations for men accounted for 42 percent of the male work force in 1980. (See table 4.) Fifteen of these occupations had less than 20 percent women in 1980. The female share rose most among accountants and auditors, an increase of 13 percentage points from 25 to 38 percent between 1970 and 1980. The female proportion changed less than 5 percentage points in 12 of the occupations, increased in seven, and decreased in two by more than 5 percentage points.

The 25 largest occupations for women employed 57 percent of the female work force in 1980. (See table 5.) Eighteen of these occupations were female-intensive in 1980, and in 15 of these the percent female changed less than 5 percentage points from 1970 to 1980. While the percent female increased 5 percentage points or more in six occupations, it declined 5 percentage points or more in three others.

Seven of the occupations overlap in tables 4 and 5 and are among the largest employers of both men and women. One of these occupations is managers, not elsewhere classified. It was the largest detailed occupation for men, the sixth largest for women, and one which grew to 27 percent female by 1980. However, this occupation has limited utility in making comparisons among demographic groups. It includes persons in quite diverse work settings inasmuch as it accounted for more than half of all executives, administrators, and managers (as did its 1970 counterpart, managers and administrators, not elsewhere classified, in relation to the major group, managers and administrators, except

**Table 4. Female percentage and 1970–80 change in that percent in the 25 occupations with the largest numbers of men in 1980**

Detailed 1980 occupational title and code	Number of men	Women's proportion in 1980	Women's proportion in 1970	1970–80 change in female percentage
Managers, n.e.c. (019)	3,824,609	26.9	15.3	11.6
Truckdrivers, heavy (804)	1,852,443	2.3	1.5	0.8
Janitors and cleaners (453)	1,631,534	23.4	13.1	10.3
Supervisors, production (633)	1,605,489	15.0	9.9	5.1
Carpenters (567)	1,275,666	1.6	1.1	0.5
Supervisors, sales (243)	1,137,045	28.2	17.0	11.2
Laborers (889)	1,128,789	19.4	16.5	2.9
Sales representatives (259)	1,070,206	14.9	7.0	7.9
Farmers (473)	1,032,759	9.8	4.7	5.1
Auto mechanics (505)	948,358	1.3	1.4	-0.1
Machine operators (779)	933,201	33.5	35.6	-2.1
Assemblers (785)	858,542	49.5	45.7	3.8
Construction laborers (869)	833,937	3.2	1.9	1.3
Welders and cutters (783)	744,585	5.9	6.2	-0.3
Farmworkers (479)	694,666	21.7	14.9	6.8
Supervisors, n.e.c. (558)	672,477	1.8	1.2	0.6
Accountants, auditors (023)	626,558	38.2	24.6	13.6
Electricians (575)	594,781	2.0	2.0	0.0
Cooks (436)	578,320	57.2	67.2	-10.0
Teachers, elementary (156)	569,823	75.4	83.9	-8.5
Managers, marketing (013)	567,362	17.6	7.9	9.7
Stock handlers, baggers (877)	560,360	21.0	12.5	8.5
Truckdrivers, light (805)	512,671	6.8	4.7	2.1
Machinists (637)	500,294	4.9	3.0	1.9
Guards, excluding public (426)	499,152	13.5	4.0	9.5

n.e.c. = not elsewhere classified.

**Table 5. Female percentage and 1970-80 changes in that percent in the 25 occupations with the largest number of women in 1980**

Detailed 1980 occupational title and code	Number of women	Women's proportion in 1980	Women's proportion in 1970	1970-80 change in female percentage
Secretaries (313)	3,949,973	98.8	97.8	1.0
Teachers, elementary school (156)	1,749,547	75.4	83.9	-8.5
Bookkeepers (337)	1,700,843	89.7	80.9	8.8
Cashiers (276)	1,565,502	83.5	84.2	-0.7
Office clerks (379)	1,425,083	82.1	75.3	6.8
Managers, n.e.c. (019)	1,407,898	26.9	15.3	11.6
Waitresses (435)	1,325,928	88.0	90.8	-2.8
Salesworkers (274)	1,234,929	72.7	70.4	2.3
Registered nurses (095)	1,232,544	95.9	97.3	-1.4
Nursing aides (447)	1,209,757	87.8	87.0	0.8
Sewing machine operators (744)	860,848	94.1	94.9	-0.8
Assemblers (785)	841,158	49.5	45.7	3.8
Cooks (436)	771,878	57.2	67.2	-10.0
Typists (315)	716,449	96.8	94.8	2.0
Child-care workers (468)	570,794	93.2	92.5	0.7
Receptionists (319)	525,290	95.8	95.3	0.5
Maids and housemen (449)	510,277	75.8	94.3	-18.5
Janitors and cleaners (453)	498,623	23.4	13.1	10.3
Hairdressers (458)	490,785	87.8	90.0	-2.2
Teachers, secondary school (157)	486,603	56.5	49.6	6.9
Machine operators (779)	471,011	33.5	30.2	3.3
Bank tellers (383)	464,139	91.1	86.9	4.2
Supervisors, sales (243)	445,492	28.2	17.0	11.2
Practical nurses (207)	420,412	96.6	96.1	0.5
Hand packagers (888)	415,925	66.8	67.0	-0.2

n.e.c. = not elsewhere classified.

farm). Further disaggregation might reveal considerably more variability in the degree of sex concentration than is shown by this one occupational category.<sup>19</sup>

Among the other six occupations which employed large numbers of men and women, elementary school teachers and cooks saw declines in the proportion of women. Assemblers and machine operators changed less than 5 percentage points, and sales supervisors and janitors and cleaners increased 10 percentage points or more during the 1970's.

**Reclassification and change**

In this article, the effect of reclassification on the sex composition of major and detailed occupational groups was examined. The 1980 classification system was used to assess changes in the sex composition of occupations during the 1970's.

The major findings were:

- Reclassification increased the female proportion in the major groups of "technicians and related support occupations" and among "handlers, equipment cleaners, and laborers." It did not alter the proportion of detailed occupations which were either male-intensive or female-

intensive; nor did reclassification have much effect on the share of the male and female labor force in sex-neutral versus sex-segregated detailed occupations.

- In terms of actual changes in employment during the 1970's, the most significant change in the distribution of the sexes among major groups was that there were many more female managers. The proportion of detailed occupations which were dominated by men declined but the share that were female-intensive remained the same.
- Occupational segregation in employment declined during the 1970's, largely because the proportion of both men and women in sex-neutral occupations increased. Men were no more apt to be employed in female-intensive occupations in 1980 than in 1970, but fewer of them were in occupations which were less than 20 percent female. The proportion of women employed in male-intensive occupations did not change during the decade but there were large increases in the female share of a few professional and managerial occupations and the proportion of the female labor force in female-intensive occupations declined. □

—FOOTNOTES—

<sup>1</sup>Mary Corcoran, Greg J. Duncan, and Michael Ponza, "Work Experience, Job Segregation and Wages," revised version of paper prepared for the National Academy of Sciences Conference on Job Segregation by Sex, May 1982; Paula England, "The Failure of Human Capital Theory to Explain Occupational Sex Segregation," *Journal of Human Resources*, Summer 1982, pp. 358-70; Andrea H. Beller, "Occupation segregation by Sex: Determinants and Changes," *Journal of Human Resources*, Sum-

mer 1982, pp. 371-91; Nancy F. Rytina, "Occupational Segregation and earnings differences by sex," *Monthly Labor Review*, January 1981, pp. 49-53; Steven D. McLaughlin, "Occupational Sex Identification and the Assessment of Male and Female Earnings Inequality," *American Sociological Review*, December 1978, pp. 909-21; and Donald J. Treiman and Heidi I. Hartmann, eds., *Women, Work, and Wages: Equal Pay for Jobs of Equal Value* (Washington, National Academy Press, 1981).

<sup>2</sup>For detailed occupational data available in published tabulations of annual averages from the Current Population Survey (CPS) 1972–82, see *Labor Force Statistics Derived from the Current Population Survey: A Databook, Volume I* (Bureau of Labor Statistics, 1982), table B-20; and *Employment and Earnings*, January 1983, table 23. For an analysis of 1972–80 change in occupations based on CPS data see Carol Boyd Leon, "Occupational winners and losers; who they were during 1972–80," *Monthly Labor Review*, June 1982, pp. 18–28.

<sup>3</sup>The Office of Federal Statistical Policy and Standards is now in the Office of Management and Budget and was formerly in the Department of Commerce.

<sup>4</sup>Social Science Research Council, "Alternative Methods for Effecting the Comparability of Occupation Measurement over Time," Report of the Subcommittee on Comparability of Occupation Measurement to the Social Science Research Council Advisory and Planning Committee on Social Indicators and the Bureau of the Census, July 1983.

<sup>5</sup>John A. Priebe, "Occupational Classification in the 1980's," paper presented at the Annual Meeting of the Southern Sociological Association, 1980. Also see U.S. Department of Commerce, Office of Federal Statistical Policy and Standards, *Standard Occupational Classification Manual: 1980*. Twelve principles were followed in developing the Standard Occupational Classification, the most important of which were that the classification system should realistically reflect the current occupational structure of the United States, and that an occupation should be classified on the basis of the work performed. The size of occupational categories was not a crucial determinant; large size was not sufficient reason for separate identification of a group, nor did small size necessarily preclude it.

<sup>6</sup>To aid comparability between the 1982 and 1983 Current Population Survey (CPS) occupational data, 20 percent of the sample in 6 months of 1981 and 1982 were double coded into both 1970 and 1980 codes, and revisions of annual average data using the 1980 codes for the 1970's are underway. However, the double-coded CPS data are not considered reliable at the detailed level when disaggregated by sex. For further discussion of the effect of the new occupational classification system on the CPS, see John E. Bregger, "Labor force data from the CPS to undergo revision in January 1983," *Monthly Labor Review*, November 1982, pp. 3–6; and Gloria Peterson Green, Khan tan Dinh, John A. Priebe, and Ronald R. Tucker, "Revisions in the Current Population Survey beginning in 1983," *Employment and Earnings*, February 1983, pp. 7–15.

<sup>7</sup>A tabulation of 503 detailed occupations by sex from the 1980 census can be found in: *Detailed Occupation and Years of Schooling Completed by Age for the Civilian Labor Force by Sex, Race and Spanish Origin: 1980*, Supplementary Report PC 80-S1-8 (Bureau of the Census, 1983), table 1. A tabulation of the 441 detailed occupations by sex from the 1970 Census can be found in: *Characteristics of the Population: U.S. Summary*, PC (1)-D (Bureau of the Census, 1973), table 221.

<sup>8</sup>Of the 441 detailed 1970 occupational codes, 407—representing 94 percent of the 1970 work force—appear in the double-coded data. The 1970 codes excluded from the double-coded data were mostly apprentice occupations or three-digit allocation codes for the major occupational groups. In the double-coding operation, persons who had been given an allocation code in the 1970 census were reassigned a three-digit code. Reassignment was proportional to the relative size of detailed occupations within major

groups. Most apprentices were assigned the code for the trade. Excluded from the double-coded file were persons with 1970 codes of armed forces, unemployed, or last worked in 1959 or earlier.

The 407 codes map into 495 1980 codes. The 1980 codes which did not appear in the double-coded data represented occupations which, combined, employed less than 1 percent of the 1980 work force. These codes included: chief executives and administrators; public administration; agricultural engineers; physicians' assistants; communications equipment operators, not elsewhere classified; marine life cultivation workers; inspectors, agricultural products; miscellaneous precision woodworkers; and marine engineers.

<sup>9</sup>Standard errors for the double-coded data are not available.

<sup>10</sup>The 28 1980 codes eliminated (495–457) consisted of occupations with very few workers because the remaining 457 codes represent 99 percent of the 1980 work force.

<sup>11</sup>For example, experimentation is currently underway in which the use of logistic regression to impute 1980 occupational values is compared with the traditional double-coding method. See Social Science Research Council, "Alternative Methods."

We also evaluated the degree of correspondence between the 1970 and 1980 codes. Using the double-coded matrix sorted by the 495 1980 codes and 407 1970 codes (see footnote 8), we found that the 1980 codes traced back into one 1970 code in about one-third of the 1980 codes. The extent of noncomparability is much less when considered in terms of employment flows. Defining correspondence as shifts where 80 percent or more of the workers with a given 1980 code trace back to one 1970 code, we found this the pattern of movement for seven-tenths of the 1970 work force. In this respect the degree of correspondence is lowest among "executives, administrators, and managers" and "operators, assemblers, and inspectors."

<sup>12</sup>Priebe, "Occupational Classification."

<sup>13</sup>We used the double-coded data because the 1970 employment distributions by major groups in the double-coded and published 1970 data are close but not identical. The differences are all less than 1 percent with the exception of operators (2.6 percent greater in the double-coded than in the published distribution).

<sup>14</sup>Green and others, "Revisions in the Current Population Survey."

<sup>15</sup>The double-coded data were used as the base to compute actual change because the percent female among major groups generally differs by less than 1 percent between the double-coded and published 1970 data.

<sup>16</sup>Nancy F. Rytina, "Earnings differences between men and women: a look at specific occupations," *Monthly Labor Review*, April 1982, pp. 25–31.

<sup>17</sup>See for example, Carol Jusenius, "Occupational Change, 1967–71," ch. 2 in *Dual Careers: Longitudinal Study of Labor Market Experience of Women, Volume 3* (Columbus, Ohio, Center for Human Resource Research, 1975); and McLaughlin, "Occupational Sex Identification."

<sup>18</sup>These results are consistent with an analysis based on May 1971 and March 1981 Current Population Survey data (using the 1970 occupational classification) by Jerry Jacobs, "Changes in Sex Segregation in the 1970's" (Cambridge, Mass., Harvard University, Department of Sociology).

<sup>19</sup>See Jacobs, "Changes in Sex Segregation."

# Japan's low unemployment: an in-depth analysis

*A BLS analysis of Japan's labor force data concludes, in contrast to a private study, that Japanese unemployment rates are only slightly understated relative to U.S. concepts*

CONSTANCE SORRENTINO

Japan's unemployment rates have long been among the lowest in the world. From 1960 through 1974, joblessness in Japan averaged 1.3 percent and never exceeded 1.7 percent, according to the Japanese labor force survey. Among the major industrial countries, only Germany had a better labor market performance. Japan's employment situation worsened after the 1973 world oil crisis and, since 1975, Japanese unemployment has been more than 2 percent, currently 2.6 percent. By contrast, unemployment rates in most Western industrial nations are now 3 to 5 times as high.

These relatively low Japanese unemployment rates, even in times of recession, suggest that the rates may be understated as compared with Western countries because of definitional or conceptual differences. Some recent articles or studies have come to this conclusion.

For example, a thoughtful article by Koji Taira in the July 1983 *Review* presented a timely analysis of Japan's low unemployment rate. Using data from Japan's special March labor force surveys and U.S. definitions of unemployment, Taira adjusted official Japanese rates to approximate U.S. concepts. He concluded that the Japanese jobless rate would be "nearly double the official unemployment rate" if U.S. concepts were used.<sup>1</sup>

The BLS does not agree with Taira's conclusion. We argue that he does not give weight to the fact that March is a very unusual month for the Japanese labor market. March is the

end of the fiscal year, when firms there traditionally hire new workers, and the end of the school year, when graduates flood the labor market.

Taira's major adjustment to the Japanese unemployed is the addition of March school graduates who are waiting to start jobs within 30 days. Although he is aware that promises of employment to graduates in Japan are almost never withdrawn, Taira proceeds to abstract from this economic and cultural effect and treat the graduates waiting to start jobs as if they were in the United States where employment offers are nowhere near as firm. Moreover, normally no such large body of persons would be waiting to begin jobs in 30 days; hence, it is more realistic not to count them as part of the unemployed. Taking this and some other more minor differences with Taira into account, we find that Japanese unemployment rates are only slightly understated in relation to U.S. concepts.

Although we challenge Taira's conclusion that Japanese unemployment is considerably understated, we agree that the Japanese labor market is, in many ways, unique. Institutions, attitudes, and economic and social structures are certainly different in Japan than they are in the United States. Indeed, it is in these differences, rather than in statistical methods and definitions, where we find the real reasons for the low unemployment rates in Japan. These differences tend to push Japanese labor slack into underemployment and hidden unemployment. After a detailed analysis of Taira's work, this article presents expanded unemployment rates—incorporating several forms of labor underutilization—which

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draw the Japanese rate somewhat closer to U.S. levels. These expanded rates include several of Taira's adjustments according to what we believe is the more appropriate context.

### Current BLS method

Since the early 1960's, the Bureau of Labor Statistics has prepared and published adjusted unemployment rates approximating U.S. concepts for major industrial countries, including Japan.<sup>2</sup> Table 1 shows the annual figures for 1970-82 as reported by Japan and as adjusted by BLS to approximate U.S. concepts.

The method of adjustment is explained in detail in a 1978 bulletin, *International Comparisons of Unemployment*.<sup>3</sup> The bulletin outlines several differences between U.S. and Japanese unemployment concepts, but the Bureau made no adjustments because relevant data were not then available. It noted that Japan's method of computing unemployment "results in a slight understatement of Japanese unemployment under U.S. concepts."<sup>4</sup>

Since that bulletin was published, data from Japan's 1977-1980 special March surveys have become available, making it possible, to some extent, to quantify the differences between Japanese and U.S. unemployment concepts. However, the March survey results have not been incorporated into the BLS adjustment method. There are several reasons for this. First, the data are ambiguous in many respects and, therefore, subject to different interpretations. Second, the fact that they are for an atypical month of the year requires caution in their use. Third, the relevant data are available only for the period 1977 through 1980. Special March surveys were conducted before 1977 and after 1980, but these surveys used somewhat different questionnaires and the information required for adjustments was not collected. And finally, because the BLS analysis of the March surveys for 1977-80 shows that the Japanese unemployment rate is, at most, understated by only 0.1 to 0.4 percentage point, it

was decided that the official Japanese unemployment figures provided a good enough basis for international comparisons. The following tabulation shows the official Japanese unemployment rates as published by Japan and as adjusted by Taira and BLS to approximate U.S. concepts and rates for the United States, March 1977-80, including Armed Forces (the data are not seasonally adjusted):

Year	Official rates	Taira method	BLS method	United States
1977	2.4	4.2	2.8	7.8
1978	2.6	4.7	3.0	6.5
1979	2.5	4.5	2.7	6.0
1980	2.2	3.8	2.3	6.5

Whether the Japanese rate is 2.4 or 2.8 percent, it is still far lower than in most of the other industrial countries.

BLS makes two adjustments in the official Japanese labor force to put it on a U.S. basis: (1) unpaid family workers<sup>5</sup> who worked fewer than 15 hours (about 500,000) are subtracted because such workers are excluded from the U.S. labor force; and (2) for comparisons of civilian unemployment rates, the National Defense Force (about 240,000) is subtracted from the Japanese labor force. These adjustments have very little effect, raising the official unemployment rate by only 0.1 percentage point in a few years.

### U.S. and Japanese surveys compared

Until 1967, the Japanese survey closely paralleled the U.S. Current Population Survey. That year, the CPS was revised so that more specific questions on labor force status were asked, and a 4-week time period was specified for jobseeking activity on the part of unemployed persons.<sup>6</sup> No such questions have been added to the regular Japanese survey.

In the United States, an enumerator visits a home during the survey week, asks a series of questions, and fills out the survey form. In contrast, the enumerator in Japan visits the sample household prior to the survey week and leaves the survey form for the respondent to complete. At the end of the survey week, the enumerator visits the household again and collects the questionnaire, checking over the entries at that time.

*Unemployment.* The unemployed in the monthly Japanese survey are defined as all persons 15 years of age or over who did not work at all in the reference week and who were seeking work or awaiting the results of previous employment applications.

The Japanese questionnaire lists the following answers to the question "Was this person engaged in work at all during the survey week?"

1. Engaged mainly in work
2. Engaged partly in work besides attending school
3. Engaged partly in work besides home duties, etc.
4. Had a job but did not work

**Table 1. Japanese unemployment rates, official and adjusted by BLS to approximate U.S. concepts, 1970-82**

[In percent]

Year	Official rates	Adjusted rates, based on	
		Total labor force	Civilian labor force
1970	1.1	1.2	1.2
1971	1.2	1.2	1.3
1972	1.4	1.4	1.4
1973	1.3	1.3	1.3
1974	1.4	1.4	1.4
1975	1.9	1.9	1.9
1976	2.0	2.0	2.0
1977	2.0	2.0	2.0
1978	2.2	2.3	2.3
1979	2.1	2.1	2.1
1980	2.0	2.0	2.0
1981	2.2	2.2	2.2
1982	2.4	2.4	2.4

NOTE: Official rates are on a total labor force basis (including Armed Forces).

5. Had no job but seeking one
6. Attending school
7. Engaged in home duties
8. Other

Persons checking response number 5—"had no job but seeking one"—are classified as unemployed. This response is defined in the survey explanatory notes: "Refers to the person who had no job but was actually seeking work by answering advertisements in the newspaper, applying at the Public Employment Security Office, etc. Also refers to the person who is waiting for an answer to an application and is able to take up a job immediately after he finds one."

The Japanese definition of unemployment appears to be more restrictive than the U.S. definition. Excluded from the unemployed in Japan, but included in the United States, are:

- Persons on layoff who were waiting to return to their jobs
- Temporarily ill jobseekers who were not in a condition to begin work immediately
- Persons who were actively seeking work in the past 4 weeks, but who took no active steps in the survey week and were not awaiting the results of a previous job application
- Persons without a job and waiting to report to a new job within 30 days. (In the United States, there is no direct question on this point, but those who volunteer the information that they are waiting to start a new job in 30 days are classified as unemployed).

However, there are persons classified as unemployed in Japan who would be considered "not in the labor force" in the United States. The Japanese definition does not require active workseeking within the past 4 weeks for classification as unemployed. Such active workseeking is required in the U.S. survey, except for persons on layoff who are awaiting recall and persons waiting to begin a new job. Because these latter two groups are not within the Japanese concept of unemployment, all of the reported Japanese unemployed would be subject to the "workseeking in the past 4 weeks" criterion for comparability with U.S. concepts.

*Labor force.* There are several differences between U.S. and Japanese concepts of the labor force. The Japanese labor force consists of all persons age 15 and over who worked, had a job but did not work, or were seeking work in the reference week. As noted, Japan includes and the United States excludes unpaid family workers who worked less than 15 hours in the survey week. The number of such persons is regularly reported in the Japanese survey. Persons with a paid job but not at work during the survey week are in the U.S. labor force whether or not they receive pay for the time off; in Japan, these workers must have received pay to be considered in the labor force (however, we do not adjust for this because Japanese employees normally receive pay when absent from work).

The Armed Forces are included in the U.S. definition of the labor force, effective beginning in January 1983. The Japanese labor force also includes military personnel. Japan includes and the United States excludes inmates of institutions in the survey universe. However, Japan classifies nearly all inmates as not in the labor force. Again, no adjustment is necessary. A number of unemployed persons officially classified as "not in the labor force"—such as those waiting to start a new job—should also be added to the Japanese labor force for comparability with U.S. concepts. However, some of the officially unemployed should be subtracted. The special March surveys provide these data.

### The special March surveys

To supplement the regular monthly labor force survey, the Japanese conduct special surveys each March which probe deeper into the labor force status of the population than do the regular monthly surveys. These special surveys provide much greater detail concerning the conditions of unemployment and underemployment, reasons for unemployment, jobseeking activities, and time of last job search. Employed persons are questioned on their desire to change jobs, and short-time workers are asked about their desire for more work. The special surveys also delve into the job desires of persons classified as "not in the labor force."

Reference periods and definitions are identical in both the special surveys and the regular surveys. Both are self-enumerations. The sample size of the March surveys was half that of the regular surveys until 1980 when the size was increased to about seven-eighths that of the regular survey. The surveys refer to the week ending March 31.

Results of the special surveys for 1977 through 1980 can be used to analyze the magnitude of the differences between U.S. and Japanese unemployment concepts. However, the results do not allow for a complete and unambiguous adjustment of Japanese unemployment to U.S. concepts.

*March: a most unusual month.* March is a time of extensive churning in an ordinarily calm labor market. The Japanese fiscal year begins on April 1. New hiring of permanent staff by Japanese firms traditionally occurs in the month or two prior to the beginning of the fiscal year, to be effective April 1.<sup>7</sup> In addition, graduation from junior and senior high schools and colleges occurs in the late February to early March period. The new school graduates receive and accept job offers several months before leaving school.<sup>8</sup> This practice of job prearrangement is one of the reasons Japan maintains very low levels of youth unemployment compared with other countries where youth often do not prearrange their job before leaving school (when they would not be classified as unemployed because they are not currently available for work). With graduation generally occurring in early March, there is a period of a few weeks when the school graduates are waiting to begin their new jobs. This explains why the March surveys report a very large number of persons waiting

to begin new jobs—they are mainly new school graduates. The March figures also include other persons who have been hired to report at the beginning of the fiscal year. In no other month but March would a similar situation occur.

Labor turnover data by month for 1977 through 1980 show that both accessions and separations are at yearly highs in April—the accession rate is more than 3 times as high as the annual average; the separation rate is nearly twice as high. (See table 2.) Clearly, April is the month in which labor turnover peaks and March is the month when the number of persons waiting to begin a new job is the highest.

Also, Japanese monthly unemployment rates for 1977 through 1980 show March as the high month for unemployment. (See table 3.) Seasonal adjustment lowers the March figures by 0.3 to 0.4 percentage point—a larger seasonal adjustment than for any other month.

Because of the extensive hiring which occurs in March, the special surveys most likely record larger than usual numbers of persons who are classified as “not in the labor force” but who tested the job market that month. These persons report in the March surveys that they had looked for work earlier in the month, although not in the survey week (the week ending March 31), and that they are available for work. Many of them become discouraged and give up jobseeking by the time of the survey week. Because they sought work during the month and were available for work, they would be classified as unemployed under U.S. concepts. However, their numbers are probably at a seasonal high in March. They are attracted into the labor force by the prospect of hiring for the beginning of the fiscal year. In other months, when hiring falls to more normal levels, the number of such jobseekers would also fall.

**Table 2. Labor turnover in Japan by month, annual averages, 1977–80**

[Per 100 employees]

Month	1977		1978		1979		1980	
	Accessions	Separations	Accessions	Separations	Accessions	Separations	Accessions	Separations
January	1.0	1.8	1.0	1.7	.9	1.6	.9	1.7
February	1.2	1.5	1.1	1.5	1.0	1.4	1.3	1.4
March	1.9	1.8	1.7	1.8	1.7	1.7	1.8	1.8
April	5.4	3.0	5.1	3.0	5.1	2.8	5.7	3.1
May	1.4	1.7	1.3	1.7	1.6	1.7	1.5	1.7
June	1.2	1.4	1.1	1.3	1.3	1.4	1.2	1.3
July	1.1	1.4	1.1	1.3	1.2	1.4	1.2	1.3
August	1.0	1.5	.9	1.3	1.1	1.5	1.1	1.4
September	1.2	1.5	1.1	1.4	1.3	1.4	1.2	1.4
October	1.3	1.5	1.2	1.4	1.4	1.5	1.3	1.4
November	1.1	1.2	1.1	1.1	1.3	1.1	1.2	1.1
December	.9	1.3	.9	1.1	.9	1.2	.9	1.3
Annual average	1.6	1.6	1.5	1.6	1.6	1.6	1.6	1.6
April as percent of annual average	338	188	340	188	319	175	356	194

NOTE: Data are for establishments with 30 employees or more in the industrial and service sectors.

SOURCE: Japanese Ministry of Labour, *Yearbook of Labour Statistics*, 1977 through 1980 editions.

**Table 3. Original and seasonally adjusted unemployment rates in Japan, annual averages, 1977–80**

[In percent]

Month	1977		1978		1979		1980	
	Original	Seasonally adjusted	Original	Seasonally adjusted	Original	Seasonally adjusted	Original	Seasonally adjusted
January	2.2	1.9	2.4	2.1	2.3	2.1	2.1	1.9
February	2.3	2.0	2.5	2.2	2.2	2.0	2.0	1.9
March	2.4	2.0	2.6	2.2	2.5	2.1	2.2	1.9
April	1.9	1.9	2.2	2.2	2.2	2.2	2.1	2.0
May	2.0	2.1	2.2	2.3	2.0	2.0	1.9	2.0
June	2.0	2.1	2.2	2.3	1.9	2.1	1.8	2.0
July	1.9	2.1	2.1	2.2	2.0	2.2	1.9	2.1
August	1.9	2.0	2.2	2.3	2.1	2.1	2.0	2.1
September	1.9	2.0	2.2	2.4	1.9	2.0	1.9	2.0
October	1.8	1.9	2.1	2.2	2.0	2.1	2.0	2.1
November	1.9	2.0	2.1	2.2	2.0	2.1	2.1	2.2
December	2.1	2.1	2.1	2.2	1.9	2.0	2.1	2.2
Annual average	2.0	—	2.2	—	2.1	—	2.0	—

SOURCE: Prime Minister's Office, Statistics Bureau, *Annual Report on the Labour Force Survey*, 1980, p. 189.

It is difficult to draw conclusions from Japanese labor force data which are available only for March. (Unfortunately, the special surveys have not been conducted at any other time of the year.)<sup>9</sup> Only inferences can be made about what the March special surveys would show in a more typical month or on an annual average basis. In the following section, BLS takes into account the timing of the special surveys and makes some estimates which put the results on a more typical basis. In several instances, however, results are presented as “upper limits” because relevant data are not available on a typical basis.

### Adjustment to U.S. concepts

The BLS method of adjusting the special March surveys to U.S. concepts is compared with the Taira method in table 4. There are four adjustments with regard to Japanese unemployment. The first, “inactive jobseekers” (Taira calls them “non-unemployed”), are subtracted from the Japanese unemployed count by both BLS and Taira, but the BLS adjustment is larger. The second and third, “jobseekers not in the labor force” (termed “job search in March and currently available for work” by Taira) and “persons waiting to begin new jobs,” are added to the unemployed under both methods, but the BLS adjustments are smaller. The fourth adjustment, persons on temporary layoff (termed “layoffs, employed but closed down” by Taira) are added to the Japanese unemployed by Taira but not by BLS.

Both the BLS and Taira adjustments are presented on a “total labor force” basis which includes the Armed Forces. (The adjusted rates on a civilian basis are virtually the same as the rates using the total labor force concept because the Japanese National Defense Force is relatively small.)

Both BLS and Taira exclude unpaid family workers who worked less than 15 hours. However, the figures differ somewhat because BLS's figures are based on “actual sta-

tus," while Taira's are based on "usual status." The "actual status" figures were used because they conform to the U.S. concept of employment. Furthermore, they are generally closer to the annual average number of unpaid family workers working less than 15 hours than the "usual status" figures. The size of the labor force is also affected by how many persons "not in the labor force" are reclassified as unemployed and how many unemployed are reclassified as "not in the labor force." (See table 4.)

**Inactive jobseekers.** These are persons who are reported as unemployed in Japan but who did not actively seek work during the month.

In the March special surveys, unemployed persons in Japan were asked the following question: "When did you last request or apply?" Accompanying this question are the instructions "include inquiring or demanding the result." There are three possible responses: (1) within this week; (2) in March; and (3) February or earlier. Thus, it is possible to determine the number of persons reported as unemployed in March whose last active search for work was prior to that month. There are a large number of such persons, amounting to more than 40 percent of the reported number of unemployed each March.

The explanation for the large number of inactive workseekers in Japan is that the survey questionnaire contains the instruction that unemployed persons may include those

awaiting answers to applications for employment. Thus, persons who made their last request or application for work over 1 month ago but are still awaiting the answer (and did not inquire about it) may count themselves as unemployed.

According to the March special surveys, nearly 30 percent of the "inactive workseekers" listed their major job search method as applying to the Public Employment Service. Another 30 percent applied to employers or made requests with schools or acquaintances. Taira and BLS agree that these two groups—accounting for 60 percent of the "inactive jobseekers"—should be excluded from the Japanese unemployment count on the grounds that they did not take active steps to find work in March. However, Taira does not exclude the remaining persons who responded that their main search method was to (1) study want ads or consult with acquaintances; (2) prepare to start a business; or (3) other.

BLS disagrees with Taira's inclusion of these remaining groups in the unemployed. These persons neither took an active step to find work nor checked on any previous applications during the month. U.S. concepts require *specific* jobseeking activity within the past 4 weeks. Studying want ads in the newspaper is not sufficient; the actual placement or answering of an ad is required to be counted as unemployed. Checking with friends or relatives is considered as active jobseeking in the U.S. survey if such checking was done in the past 4 weeks. Those Japanese who "consulted with acquaintances" should also be held to the "past 4

**Table 4. Adjustments of Japanese unemployment and labor force data to approximate U.S. concepts, March 1977-80**

(Numbers in thousands)

Category	1977		1978		1979		1980	
	Taira	BLS	Taira	BLS	Taira	BLS	Taira	BLS
Reported unemployed	1,270	1,270	1,410	1,410	1,350	1,350	1,240	1,240
Less inactive jobseekers <sup>1</sup>	330	520	420	640	370	600	310	540
Plus jobseekers not in labor force who intended to start work immediately <sup>2</sup>	510	510	560	560	490	490	430	430
Less those not available due to housework or school	—	50	—	60	—	70	—	80
Plus persons waiting to begin a new job within 1 month	740	740	880	880	880	880	740	740
Less new school graduates	—	3440	—	520	—	560	—	550
Adjusted unemployed I	—	1,510	—	1,630	—	1,490	2,100	1,240
Plus layoffs <sup>4</sup>	100	100	140	140	140	140	(5)	(5)
Adjusted unemployed II	2,290	1,610	2,570	1,770	2,490	1,630	(5)	(5)
Reported labor force	53,430	53,430	54,240	54,240	54,770	54,770	55,370	55,370
Less family workers working less than 15 hours <sup>6</sup>	400	510	580	480	490	480	760	570
Less inactive jobseekers	330	520	420	640	370	600	310	540
Plus unemployed classified "not in labor force" <sup>7</sup>	1,250	760	1,440	860	1,370	740	1,170	540
Adjusted labor force	53,950	53,160	54,680	53,980	55,280	54,430	55,470	54,800
Unemployment rates:								
Reported	2.4	2.4	2.6	2.6	2.5	2.5	2.2	2.2
Adjustment I	—	2.8	—	3.0	—	2.7	3.79	2.3
Adjustment II (including layoffs)	4.24	3.0	4.70	3.3	4.50	3.0	(5)	(5)

<sup>1</sup>Taira terms them "non-unemployed."

<sup>2</sup>Or "jobsearch in March and currently available."

<sup>3</sup>Estimated by BLS based on March 1978 proportions.

<sup>4</sup>Or "layoffs, employed but closed down."

<sup>5</sup>Not available.

<sup>6</sup>Taira's data are "usual status;" BLS's data are "actual status."

<sup>7</sup>Sum of jobseekers not in labor force and persons waiting to begin a new job (BLS figures are net).

NOTE: Dashes indicate no adjustment.

SOURCE: Professor Taira's data appeared in Koji Taira, "Japan's low unemployment: economic miracle or statistical artifact?", *Monthly Labor Review*, July 1983, p. 6.



weeks" test.

Thus, the BLS adjustment to exclude "inactive work-seekers" is higher than Taira's: 540,000 in March 1980, compared with Taira's 310,000.

*Jobseekers not in the labor force.* These are persons reported as "not in the labor force" who after further questioning reveal that they have sought work in the past 4 weeks and intend to begin work immediately. The BLS adjustment for these jobseekers is smaller than Taira's because BLS excludes persons who said they intended to begin work immediately but who were not available during the survey week because of housekeeping or school.

In the March special surveys, persons not in the labor force are asked the following probing questions:

- a. Do you wish to do any work? (Question 8)
- b. Do you intend to take up a job immediately if you find one? (Question 8a)
- c. Why are you not now seeking a job despite your intention of taking up one? (Question 8b)
- d. Have you been to the Public Employment Security Office, applied to other organizations, or consulted with acquaintances for a job this month? (Question 8c)

Responses to these questions show that a substantial number of persons classified as "not in the labor force" were actively seeking work during the month and currently available for work. The reason for this is the wording of the survey questionnaire. Persons who regard themselves as mainly keeping house, going to school, or retired may check such responses rather than "seeking a job," even though they have also actively looked for work. This possibility is even more likely if the workseeking occurred earlier in the month rather than in the survey week, because the original question specifies "the survey week."

This entire section of the special survey is ambiguous. The ambiguities involve subtleties of translation as well as interpretation by respondents. Among those who said they "intend to take up a job immediately" in answer to item *b* are a number who respond that they are "unable to take up a job due to housekeeping or school" in answer to item *c*. The apparent explanation is that these persons would like to take up a job even though they cannot do so in the survey week.<sup>10</sup>

For an adjustment to U.S. concepts, it appears that some persons classified as "not in the labor force" should be added to the Japanese unemployment count. Taira adds all of those who said they looked for work in the month and intended to take it up immediately. At the least, BLS believes that those who were "unable to take up a job due to housework or school" should be subtracted from this adjustment because they were not currently available during the survey week. Hence, BLS's adjustment for this category is lower than Taira's, but even this reduced figure may be overstated. Because March is the traditional hiring period for Japanese

firms, it is likely that a number of persons tested the job market in March and withdrew the following month after they found that there was no work available "near home" or "meeting their ability," and so forth. Thus, although these people were unemployed under U.S. concepts in March, they are probably not representative of the average number of such persons over the course of the year. Some further downward adjustment seems warranted, but none is made in table 4 because of the lack of relevant data.

*Persons waiting to begin a new job.* These are persons classified as "not in the labor force" who, after further questioning, say they expect to start work within 1 month. Taira adds all of these persons to the unemployed; BLS adds only a portion of them, adjusting for the overstatement which results from the end of Japan's school year.

Under Taira's adjustment, the number of persons waiting to begin a new job accounts for 35 percent of his adjusted unemployed. In relation to results for other countries, this proportion is unusually high. In the United States, Canada, and France such persons make up only about 2 to 5 percent of the unemployed.<sup>11</sup>

In the U.S. survey, persons waiting to begin a new job within 30 days are classified as unemployed if they are available to begin work immediately. The reasoning behind this is that, in many cases, the anticipated job does not materialize, and the waiting period actually represents the beginning or continuation of a period of unemployment.

In the regular Japanese monthly survey, no mention is made of the labor force classification of persons waiting to begin a new job. They are most likely enumerated as not in the labor force.

The special surveys elicit information on such persons in the question "Do you wish to do any work?" which is asked of all persons classified as not in the labor force. The possible responses to this question are as follows:

- Yes, if there is any
- Yes, if conditions are favorable
- A job is already available
  - to start within one month:
  - after graduation in March
  - other
  - to start after one month

The March surveys record a substantial number of persons who respond that a job was available within 1 month. The great majority are young persons who check "after graduation in March." There is nothing in the survey to indicate that these school graduates wanted to begin work or were even available to begin work earlier than April 1. In general, new graduates are not interested in beginning work any sooner than April 1. They generally travel during their last school vacation. Although graduation ceremonies are over, they are formally registered as students at school until March 31. Moreover, it is highly unlikely that there would be any

of these school graduates in the "waiting to start a new job" category during any other month of the year.

The U.S. rationale for counting such persons as unemployed seems inapplicable to Japan, where, as Taira points out, job promises to school graduates are very firm, and cancellation of such promises is rare. Data on placement activities by Japanese employment offices indicate that in March 1977 through March 1980, there were virtually two job openings for every school-leaver applicant, and more than 99 percent of them were placed in jobs.<sup>12</sup>

Thus, it appears reasonable to omit the school graduates from the upward adjustment of the unemployed for three reasons: (1) they are probably not available for work prior to April 1; (2) they would not be included in the count in any month but March; and (3) there is hardly any chance that the jobs they are waiting to start will disappear.

Of the 740,000 persons "waiting to begin a new job within 1 month" in March 1980, 550,000 were school graduates. BLS has omitted the school graduates from the upward adjustment of Japanese unemployment. This leaves 190,000 persons who were not school leavers in March who were also waiting to begin new jobs. Such persons are probably slightly more open to the risk of their prospective jobs being canceled, although the risk would still be rather low. If included in the Japanese adjusted unemployed, they make up 15 to 20 percent of the total. As mentioned previously, such persons typically account for only 2 percent of U.S. unemployment.

The number of nonschool-leavers who are waiting to begin a new job in March is most likely inflated in terms of an annual average because April is the traditional hiring month in Japan. BLS includes all of them in the adjustment shown in table 4, with the reservation that they represent an upper limit for this adjustment.

*Persons on layoff.* Taira makes an adjustment to include persons on layoff in the Japanese unemployment count on the grounds that such persons are included in the U.S. concept of unemployment. Persons without work and awaiting recall to their former jobs are included in the U.S. unemployed, whether or not they were actively seeking work. However, the two countries' concepts and practices of "layoff" are so different that BLS believes no adjustment is warranted.<sup>13</sup> The reason for this is the overriding difference in job attachment. Persons awaiting recall are appropriately counted as unemployed in the United States because they are "jobless"—they are no longer on the firm's payroll, many are actively seeking work, and most are collecting unemployment benefits. By contrast, in Japan persons on layoff have work contracts or otherwise strong informal commitments from their employers and continue to receive their pay (partly subsidized through government payments to the firm), they do not seek other work, and they answer surveys to the effect that they have a job.

The BLS exclusion of persons on layoff from the Japanese

unemployed is in accord with the recommendations of the International Labour Organization's 1982 Conference of Labour Statisticians.<sup>14</sup> In its revised standard definitions of employment and unemployment, the ILO takes into consideration the question of formal job attachment. Under the ILO standards, persons on temporary layoff are classified as employed if they have a formal job attachment (as determined by receipt of wages or salary or other factors). Persons on layoff with no formal job attachment are classified as unemployed.

BLS recognizes that persons on layoff represent a form of labor underutilization in all countries, whether they are classified as employed or unemployed. To enhance international comparisons of how labor markets are functioning, it would be desirable to measure and compare total labor slack—that is, unemployment, workers on layoff, workers on part time for economic reasons, and discouraged workers.

The special labor force surveys for March 1977 through March 1979 provide data on the number of Japanese classified as "employed, with a job but not at work" who were on temporary layoff. The category was dropped from the special surveys in 1980 on the grounds that it was inapplicable to the Japanese situation. Taira adds the persons on layoff to the Japanese unemployed count. Although BLS believes they should not be added, an alternative adjustment (II) is constructed in table 4 which includes these persons in the unemployed.

*The outcome.* The BLS adjusted rates are considerably lower than Taira's rates.<sup>15</sup> The largest adjustments are for 1977 and 1978, when the published Japanese jobless rates are increased by 0.4 percentage point by BLS. In 1979, the increase is 0.2 and in 1980, 0.1. It should be emphasized that these include "upper limit" adjustments in two cases—persons waiting to begin a new job and jobseekers "not in the labor force." Inclusion of persons on layoff raises the Japanese rate by another 0.2 to 0.3 percentage point.

The BLS estimates are considerably below the levels estimated by Taira even if persons on layoff are included. This is mainly because BLS has made adjustments to put the March surveys on a more typical basis by excluding the new school graduates who were waiting to take up their jobs. Taira's method has the effect of using the March surveys as representative of the Japanese labor market over the course of the year. Such an approach would be similar to using unadjusted data from a seasonally high unemployment month for the United States—such as June when students flood the labor market—and presenting them as our typical labor market situation for comparison with average annual activities in other countries.

### **Unemployment rate double for women**

Although the overall Japanese unemployment rate is changed only slightly in our view when the March survey

data are adjusted to U.S. concepts, there is a marked difference in the adjusted unemployment rates for men and women. The conventional Japanese data by sex show virtually no difference between the unemployment rates for men and women. According to the BLS method, the male-female differential is about the same as that obtained by Taira: the female rates are about double the male rates. The following tabulation shows unemployment rates for men and women, March 1977-80 (based on the civilian labor force, excluding layoffs):

Period	As published		Approximating U.S. concepts	
	Men	Women	Men	Women
1977	2.4	2.3	2.0	4.3
1978	2.7	2.4	2.2	4.3
1979	2.5	2.4	1.9	4.1
1980	2.2	2.3	1.7	3.3

Thus, the Japanese situation appears more like Western countries where women usually have higher unemployment rates than men.

The reason for the wide male-female differential for Japan after the adjustment is made is that women account for the great majority of jobseekers classified as not in the labor force, while men account for most of the reported unemployed who did not actively seek work in the month of the survey.

### Why is Japanese unemployment low?

Japanese unemployment rates are very low whether U.S. or Japanese concepts are used. The low Japanese jobless rates reflect, in part, the fundamental differences between the Japanese economic system and culture and those of the industrialized Western nations. Difference in labor force mix are also significant.

*Lifetime employment system.* Under Japan's "lifetime employment system," regular, full-time workers (mostly men) are shielded from unemployment. During periods of economic difficulties, companies refrain as much as possible from laying off or dismissing their regular workers. For example, during the 1974-75 recession and the slow-growth years of the 1980's, hundreds of thousands of unneeded workers were kept on company payrolls, with subsidies provided by the government. These workers were often moved into jobs in different plants within the same firm or even lent to other firms.<sup>16</sup>

Japanese corporations, labor, and the government cooperate to an unusual degree. This cooperation is partly attributable to the broad social role assumed by Japanese corporations which provide a wide range of social services, including housing or financial help with mortgage payments, recreational facilities, and even wedding halls in which employees are married. Labor often accedes to wage and other

**Table 5. Expanded unemployment measures for the United States and Japan, 1980**

(Numbers in thousands)

Category	United States (1980)	Japan (March 1980)
<b>Unemployed</b>		
Total, U.S. standard definition	7,637	1,240
Full-time jobseekers	6,269	1,740
Part-time jobseekers	1,369	1,500
Half	685	250
Part-time for economic reasons	4,321	1,920
Reduced hours	4,321	21,790
Half	2,161	900
Zero hours <sup>(3)</sup>		4130
U-6 numerator <sup>5</sup>	9,115	2,020
Plus discouraged workers	994	1,100
U-7 numerator	10,109	3,120
<b>Civilian labor force</b>		
Total, U.S. standard definition	106,940	54,560
Full-time labor force	91,296	46,740
Part-time labor force	15,644	7,820
Half	7,822	3,910
U-6 denominator <sup>6</sup>	99,118	50,650
U-7 denominator <sup>7</sup>	100,112	51,750
<b>Unemployment rates (percent)</b>		
U-5: U.S. standard definition	7.1	2.3
U-6: Total full-time jobseekers plus 1/2 part-time jobseekers plus 1/2 total on part-time for economic reasons <sup>8</sup> as a percent of the civilian labor force less 1/2 of the part-time labor force	9.2	4.0
U-7: U-6 plus discouraged workers in numerator and denominator	10.1	6.0

<sup>1</sup>Breakdown into full-time and part-time jobseekers partially estimated.

<sup>2</sup>Includes reported number of persons usually working part time who want more work (1,530,000) plus estimated number of persons usually working full-time who were on reduced (but not zero) hours (260,000).

<sup>3</sup>Included in U.S. standard definition.

<sup>4</sup>Not reported in March 1980 survey. Figure shown is estimated based on March 1979 proportion.

<sup>5</sup>All full-time jobseekers plus one-half part-time jobseekers plus one-half on reduced hours for economic reasons plus all on zero hours for economic reasons.

<sup>6</sup>Civilian labor force less one-half the part-time labor force.

<sup>7</sup>U-6 denominator plus discouraged workers.

<sup>8</sup>Japanese workers on "zero hours" are given full weight.

concessions during economic difficulties. In this social context, the Japanese responses to recession can be understood.

*Nonregular workers.* But what happens to employees who are not regular workers? There is a large segment of part-time, temporary, and seasonal workers—mostly women and "retired" older workers—who tend to bear the brunt of downturns because they do not come under "lifetime employment." These workers provide a degree of flexibility for Japanese firms, allowing them to accord more permanent status to their regular employees. As Taira points out, these "nonregular" workers tend to bypass unemployment status, moving from employment to "not in the labor force" when the economy slackens, and then back to employment when the economy improves. While they are out of the labor force, they are usually supported by their families. However, many do show up as unemployed—the jobseekers not in the labor force in the more probing March survey.

There is indirect evidence of this "hidden" type of em-

ployment in Japan's labor force data. For example, participation rates for women fell off sharply in 1974-75, but their unemployment rates rose only slightly. In the more recent slow growth period, however, female participation stabilized and even moved upward, as women joined the labor force to supplement family income (among other reasons).<sup>17</sup> This was more in line with the U.S. situation, where women continue to flow into the labor market during recessions.

*Labor force mix.* Besides the social and cultural factors, other elements in Japan promote low unemployment rates *vis-a-vis* the United States. For instance, the higher proportion of workers in the agricultural sector in Japan means that a larger segment of the Japanese labor force is practically immune to unemployment. Agricultural workers may be underemployed but they are not as subject to unemployment as are industrial workers because they usually spend some hours at work each week. Also, the higher share of self-employed and unpaid family workers in the Japanese labor force has a similar effect. Furthermore, the share of youth in the labor force is much smaller in Japan than in the United States. (In all developed countries, including Japan, youth under the age of 25 have higher unemployment rates than adults.) Moreover, young workers in the United States tend to change jobs much more often than their Japanese counterparts, further increasing the unemployment differential between the two countries.

### An expanded unemployment concept

International comparisons of conventionally defined unemployment rates should be understood for what they measure—they compare the proportion of the labor force in each country which is without work, available for work, and actively seeking work. As such, they measure an important part of labor market health. But they do not show the entire picture.

Is the efficiency of the Japanese labor market really 3 to 5 times better than that of the Western nations? A strict comparison of unemployment rates would arrive at that misleading conclusion. However, we have noted that a substantial part of Japan's labor underutilization falls into the realm of underemployment (workers on reduced hours, "temporary layoffs") and discouragement, or labor force withdrawal. These forms of labor slack do not show up in the conventional unemployment rate.

A useful international comparison to supplement comparisons of conventionally defined unemployment could be made if the unemployment concept were expanded to encompass these other types of labor underutilization. In the United States, such measures exist within the unemployment measures designated U-1 to U-7.<sup>18</sup> These monthly measures include the official unemployment rate U-5. While U-1 to U-4 represent narrower measures of unemployment, U-6 and U-7 represent expanded concepts. U-6 incorporates persons

on part-time schedules for economic reasons and U-7 brings in discouraged workers as well.

Table 5 shows a comparison of U-6 and U-7 for the United States and Japan. Data from the March 1980 special survey are used for Japan; annual 1980 data are shown for the United States. The Japanese figures should be viewed as only approximate indicators of U-6 and U-7 because they are partly estimated. One problem is that the March survey does not give a comprehensive count of persons on part time for economic reasons. The survey reports that of all persons usually working fewer than 35 hours, 1.53 million wished to work more hours. This is a good indicator of the number of persons on part time for economic reasons who usually work part time. However, the number of persons usually working full time who were on part time for economic reasons is not fully available. The number on "zero hours," or with no work at all during the week is reported in the March 1977 through 1979 surveys, but not in the March 1980 survey. We can estimate the March 1980 figure at 130,000, based on the March 1979 proportion. There must be a considerable number of other normally full-time workers on reduced hours, but they are not enumerated in the survey. For purposes of this comparison, we have doubled the number on "zero hours," to 260,000 persons.<sup>19</sup>

In the March 1980 survey, respondents not in the labor force who desired work and were available, but who did not look for work during the month, were asked why they were not seeking jobs now. Those responding "not likely to find work" are close to the U.S. concept of discouraged workers. Also within this concept are the "inactive job-seekers" who were excluded from the Japanese unemployed under U.S. concepts. This group has been added to U-7.

A comparison of the U-6 and U-7 rates in relation to the conventionally defined rates shows that the Japanese "expanded concept" rates are increased to a greater degree than the U.S. U-6 and U-7 rates. In other words, there is a convergence in the "unemployment rates" for the two countries when the definition is broadened. Under the conventional definition, the U.S. rate is triple the Japanese rate. Expanding the concept to U-6, the U.S. rate is around 2.3 times the Japanese rate. Defining unemployment even more broadly to encompass discouraged workers (U-7), the U.S. rate falls to 1.7 times the Japanese rate similarly defined.

### Miracle or artifact?

The answer to Taira's question—is Japan's low unemployment an economic miracle or a statistical artifact?—is that it is neither. Although the Japanese definition of unemployment is somewhat more restrictive than the U.S. definition, the regular monthly survey gives a close approximation of the rate of unemployment under U.S. concepts. Since the monthly survey understates some groups and overstates others, the differences tend to cancel out, with a slight upward adjustment remaining. However, the Japanese labor force survey is misleading when it comes to

measuring women's unemployment. Based on the March surveys, there is a wide differential between men's and women's unemployment which is not apparent from the regular monthly survey. But Japanese unemployment rates are still extremely low by Western standards, both for men and for women.

Then, are these low Japanese rates an economic miracle? The answer here is also "no." Jobless rates must be un-

derstood for what they are—only partial measures of total labor slack. Expanding the unemployment concept to include other elements of labor slack—economic part-time and discouraged workers—draws the Japanese rate closer to U.S. levels. The explanations for the remaining differential lie in such differences as the composition of the labor force, levels of frictional unemployment, and economic growth rates. □

—FOOTNOTES—

<sup>1</sup>Koji Taira, "Japan's low unemployment: economic miracle or statistical artifact?" *Monthly Labor Review*, July 1983, pp. 3–10. See also Henry Scott Stokes, "Jobless Rate Reaches a High for Japan," *New York Times*, March 9, 1983, p. D-9; Jon Woronoff, "There is Unemployment in Japan," *The Oriental Economist*, November 1981, pp. 40–43. See also Woronoff's book *Japan's Wasted Workers* (Totowa, N.J., Allenheld, Os-  
mun and Co., 1983).

<sup>2</sup>For example, see Joyanna Moy, "Recent labor market developments in the U.S. and 9 other countries," *Monthly Labor Review*, January 1984, pp. 44–51.

<sup>3</sup>*International Comparisons of Unemployment*, Bulletin 1979 (Bureau of Labor Statistics, 1978), pp. 80–85.

<sup>4</sup>*International Comparisons of Unemployment*, p. 85.

<sup>5</sup>In the Japanese survey definition of "family workers," the term "unpaid" was dropped in 1981. Now "family workers" are defined as "persons who work in an unincorporated enterprise operated by a member of the family." Because of Japanese tax laws which allow a family business or farm more favorable tax treatment if they report wages or salaries of family workers, most are reported as "paid" for tax purposes. However, Japanese statisticians believe that there is no significant difference between paid and unpaid family workers and no such distinction is made in the survey statistics. The tax deductions do not necessarily mean that compensation was in fact paid.

<sup>6</sup>See Robert L. Stein, "New Definitions for Employment and Unemployment," *Employment and Earnings*, February 1967, pp. 3–13.

<sup>7</sup>Based on a communication with the U.S. Embassy in Tokyo, February 1979.

<sup>8</sup>*Youth Unemployment: An International Perspective*, Bulletin 2098 (Bureau of Labor Statistics, September 1981), p. 24.

<sup>9</sup>Employment Status Surveys are conducted every 2 or 3 years in October, but they are not helpful here in that they show "usual status" rather than "actual status" and they obtain no information on persons without a job and desiring work.

<sup>10</sup>Based on consultations with Japanese statisticians, the analysis of the U.S. Embassy in Tokyo concluded that the whole series of questions noted as items "a" through "d" in the text, suffers from some ambiguity with respect to the words "wish" and "intend." "Intent" is perceived within the overall context of a wish. Thus, if conditions consistent with a person's wish arise (as to time, place, type of employment, and so forth), he or she could respond "I intend to take up a job immediately if I can find the appropriate job; since I don't see anything consistent with my wish, I am now not seeking a job in spite of my intention."

<sup>11</sup>There is no direct question on waiting to begin a new job in 30 days in the U.S. survey. This information must be volunteered by the respon-

dent, which could result in some undercount of the number of persons in this category. Canada instituted a question on this point in 1976 and found the number of persons reporting that they were waiting to start a new job increased to about 5 percent of the unemployed, from around 2 percent previously.

<sup>12</sup>Japanese Ministry of Labour, *Yearbook of Labour Statistics*, 1977 through 1980 editions.

<sup>13</sup>In an earlier article, BLS described in detail the international differences in the treatment of layoffs. See Joyanna Moy and Constance Sorrentino, "Unemployment, labor force trends, and layoff practices in 10 countries," *Monthly Labor Review*, December 1981, pp. 8–11.

<sup>14</sup>International Labour Organization, Thirteenth International Conference of Labour Statisticians, *Report of the Conference*, Geneva, 18–29 October 1982.

<sup>15</sup>In a recent article, Eiji Shiraishi of the Japanese Ministry of Labor analyzed Japanese unemployment rates on a U.S. concepts basis, using the special March surveys of 1978 and 1980. He adjusted Japanese unemployment rates to U.S. concepts, arriving at 3.1 percent in March 1978 and 2.4 percent in March 1980. Both of these figures were just 0.1 percentage point above the figures obtained in the foregoing BLS analysis. Like BLS, Shiraishi did not make an adjustment for layoffs because "there is no such practice in Japan." He also was in accord with the BLS exclusion of new school graduates from the adjustment for persons waiting to begin a new job. See Eiji Shiraishi, "International Comparison of Unemployment Concepts," *Monthly Labour Statistics and Research Bulletin*, March 1982, pp. 13–20. (English translation available from BLS).

<sup>16</sup>For examples of Japanese employment practices see Haruo Shimada, *The Japanese Employment System*, Japanese Industrial Relations Series 6 (Tokyo, the Japan Institute of Labour, 1980); T. Shirai and others, *Contemporary Industrial Relations In Japan*, Japanese Industrial Relations Series 7 (Tokyo, the Japan Institute of Labour, 1980); Fujio John Tanaka, "Lifetime Employment in Japan," *Challenge*, July–August 1981; and Don Oberdorfer, "Japanese Soft Touch on Layoffs," *The Washington Post*, March 9, 1975, p. G-1.

<sup>17</sup>See Constance Sorrentino, "International comparisons of labor force participation," *Monthly Labor Review*, February 1983, pp. 27–28.

<sup>18</sup>See Julius Shiskin, "Employment and unemployment: the doughnut or the hole," *Monthly Labor Review*, February 1976, pp. 3–10.

<sup>19</sup>This is somewhat higher than a comparable ratio for the United States. Using the 1980 U.S. ratio of persons on layoff to persons who usually work full time but who are on reduced hours, the Japanese figure would be estimated as 160,000 rather than the 260,000 used here. The Japanese figure has been increased because hours reductions for economic reasons are used more frequently in Japan than in the United States, where workers are more likely to be laid off.

# Helping labor and management set up a quality-of-worklife program

*A consultant reports on his role in assisting American Telephone & Telegraph Co. and the Communications Workers of America establish a quality-of-worklife program designed to continue after divestiture*

MICHAEL MACCOBY

**EDITOR'S NOTE:** *During the past 3 years, the American Telephone and Telegraph Co. (AT&T) and the Communications Workers of America have cooperated in a quality-of-worklife program unique in scope and intensity. The program is based on a memorandum of agreement covering half a million workers in 21 Bell System companies, including operating telephone companies, Western Electric, and Bell Laboratories. About 40,000 Bell System employees have participated in the program, which survived a 1983 strike and in which the parties agreed to continue after divestiture of AT&T. A subsequent survey indicated that more than 80 percent of the employees would volunteer to participate in the program.*

*The Monthly Labor Review asked Michael Maccoby, who has served as consultant to both the company and the union, to report on the origin and development of this unusual example of labor-management cooperation. This is his first-person account.*

My involvement in this project began in 1977 when the management of American Telephone and Telegraph Co. invited me to lecture on quality-of-worklife programs at a corporate policy seminar. I was asked to talk about the Bolivar project, a quality-of-worklife experiment in an auto

parts factory in Tennessee, which was the first successful American union-management experiment to improve the quality of working life.<sup>1</sup>

However, most Bell System managers were not interested in the Bolivar experiment. They wanted to hear about my studies of managerial character.<sup>2</sup> As company men/craftsmen, they felt threatened by the gamesmen-marketeers newly recruited to the company, and wanted advice on how to deal with them. However, a few recognized that the traditional Bell System managerial character was too cautious and inflexible for a fast-arriving competitive market.

Among the latter was Rex Reed, Bell System's vice president of industrial relations. He saw the quality-of-worklife experiment at Bolivar and at the GM assembly plant in Tarrytown, N.Y., as promising models for the Bell System. He had surveyed Bell employees over a 5-year period and found disturbing trends. Although satisfied with pay and benefits and motivated to work productively, both workers and supervisors were dissatisfied with technology and perceived too much supervisory control. They believed they were mismanaged, pushed around, not listened to, and that the spirit of service was being eroded by the drive to increase profit.

## **Persuading managers**

In January 1978, Reed met with Bell System regional presidents to present new approaches to raising morale and improving service. He cited examples from Ohio and Pacific Northwest Bell, and asked me to describe how employee involvement had increased both satisfaction and productivity

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in other companies.

I stressed to the Bell presidents the importance of cooperation with the union. Those present agreed they should moderate the rigid bureaucratic system, but there was no consensus about how to do so. Their concern at this point, before competition and divestiture had forced a new outlook on management, was as much humane as economic. They mentioned their own work history, how some had started as linesmen or clerks and had moved up with the help of friends. "Working for the Bell System has been more than making a buck," one said. "We have the obligation to make it a good place to work for others. Everyone should feel important, respected, needed."

This meeting, together with support from Charles L. Brown, the Bell System's new chief executive officer, reinforced experimentation in participative management in some of the Bell companies, but most of the experiments were without union involvement. In fact, some middle managers reacted with anger at the idea of cooperating with the union.

Relations between Communications Workers of America (CWA) and AT&T had been stormy in some companies and always complex. Strikes had caused violence and bitter feelings in certain areas. The processing of grievances had become a sizable business. Although relationships at the top, between AT&T vice president of industrial relations Rex Reed and CWA President Glenn Watts, were cordial and respectful, at lower levels there was considerable distrust.

As in many American companies, management tended to view the union as a symptom of failure to create a good workplace. Bell System managers were proud of their achievement—building a great company, providing effective universal service, and creating new technology. In the view of executives, management was identified with science and productivity, while the union represented unproductive politics. This sense of superiority seemed to divide union and management, obscure shared values, and impede productive cooperation.

In the spring of 1978, Robert Gaynor, vice president of Long Lines in Kansas City, began a change project with his managers. Gaynor was a leader in shifting AT&T to a more market-oriented business. He believed this could not be achieved by decree, that managers had to analyze the new competitive demands together, combine knowledge, and agree on goals. Through interviews with their peers, a research team of managers defined problem areas, including the need for innovative leadership; the need to maintain a spirit of service; the need to make measurements and control systems more flexible; and the need to improve the planning process which, like most large companies at that time, was mainly a matter of extrapolation.

Most managers believed change was essential, but were concerned that AT&T's positive values—caring about people, the spirit of service, high standards and integrity, and technical excellence—be preserved. How to begin this process of change became the subject for task forces, and I

was asked to help create more open and participative management, starting with Gaynor's team. By January 1980, we had improved management teamwork and addressed interdepartmental problems, but the process had not reached the worker level and did not include the union.

### **CWA becomes interested**

In January 1980, Ronnie J. Straw, director of research at CWA, asked if I was interested in studying the various forms of union participation in management, with recommendation for the union on how it should approach AT&T. The CWA was interested in a range of possibilities, from membership on the board to shop floor participation. Was I interested?

Very much so. The CWA was an exceptionally forward-looking union. Its members were affected by changing technology and were asking the leadership to do something about job stress. The union had a good research department and creative leadership. I believed that a strong informed CWA would both further the interests of its members and put pressure on the Bell System to improve its management, and that both union and management would benefit from the project I was being asked to undertake.

But there was a problem: I had been an AT&T consultant. CWA President Watts would have to decide whether this made a difference. Also, I would not take the job unless it was approved by Rex Reed. There were two reasons for this: first, I would be bringing knowledge of Bell System management to the union; and second, I wanted to keep alive the chance to work with both.

### **Defining quality of worklife**

Quality of worklife grew out of the collective bargaining process. It is a commitment of management and union to support localized activities and experiments to increase employee participation in determining how to improve work. This process is guided by union-management committees and facilitators, and requires education about the goals of work and training in group process.

In the Bell company and AT&T, I see quality of worklife as a means to move from the bureaucratic-industrial model of scientific management with its fragmentation of jobs and hierarchical control, to a flexible, broadly skilled, participative team. This is a more effective way of managing market-driven technoservice work while protecting the rights and dignity of employees.

The new automated workplace requires decentralization, responsiveness to customers, and ability of workers to solve problems where they occur without waiting for hierarchical approval. Quality of worklife develops the flexibility essential for effectiveness and at the same time strengthens the union.—MM

Watts liked the idea that I was familiar with the Bell System; it would save time. Furthermore, John Carroll, CWA executive vice president, had attended the AT&T corporate policy seminar at which I urged management to cooperate with the union. Reed had no objections. In fact, he agreed that a stronger, more knowledgeable union would push management to improve, while a weaker, more reactive union would be less able to understand and support change.

To develop a strategy for CWA, I proposed that Straw and I together interview CWA leadership on its views of what changes were needed. Previous recommendations to the union had not been acted on, largely because those who had to make use of the findings were not involved in the study process. All proposals for change are a likely threat to those who are adapted to the status quo. I wanted CWA to own the study and the strategy, which meant that it had to participate from the start.

Straw and I, assisted by others, interviewed the union executive board and more than 100 local officers from all over the country. We asked AT&T for examples of participative management projects, and asked the local union leaders for comments.

A consensus emerged: the union leaders believed that in recent years, management had tightened to prepare for deregulated competition; workers believed they could give better service if there was less monitoring, both technological and supervisory.

The union noted a number of attempts to improve morale through increased participation, but they were often short-lived. A few of the attempts tried to involve the union, and some had become the cause of grievances, as "participation" resulted in actions considered in violation of the contract. (An example was one which encouraged employees to criticize those who were less productive.)

The local presidents we interviewed did not favor participation on the board and were skeptical of joint committees which in the past had done little. They liked the idea of a quality-of-worklife program in offices and garages, based on the Bolivar or Tarrytown models. In fact, the most enthusiastic union leaders were those currently taking part in joint initiatives of this sort.

### **Joint committee developed**

When I reported these findings to the union executive board in July 1980, Watts asked me to draft an article for the contracts he was then negotiating with Reed. I recommended joint sponsorship of participative experiments, including a National Committee on Joint Working Conditions and Service Quality Improvements with the following function:

1. Developing and recommending principles and objectives relative to working conditions and service quality improvement which will guide experiments or projects such as quality circles, problem-solving teams, and the like, in

various work situations. These should be designed to encourage teamwork, to make work more satisfying, and to improve the work operation.

2. Reviewing and evaluating programs and projects which involve improving the quality of the work environment.

3. Arranging for any outside consultants which it feels are necessary or desirable to assist it, the expenses thereof to be shared equally by the company and the union.

The national committee first met in the fall of 1980. It agreed on a set of principles but had trouble developing a strategy. Some management members wanted to take a relatively passive role, basically supporting whatever local companies initiated. They viewed quality-of-worklife programs as a means toward healthy decentralization, and were sensitive to playing the traditional controlling role. The union distrusted this approach: it believed that Bell companies interpreted quality-of-worklife projects as participative management without union involvement, and union officials were getting messages from local leaders that such programs were causing problems. If the national committee was not to direct the quality-of-worklife programs, CWA members wanted it to at least control the quality of the programs and set minimum standards. The union proposed that I be retained as consultant to the committee. Management resisted the idea.

The debate was not so much about me as about the committee's role. When management agreed to hire me, it meant a decision had been made to experiment with a more active strategy. I organized a series of meetings with union leaders, district vice presidents and their assistants, and company counterparts, including personnel vice presidents and their labor relations assistants. I described the quality-of-worklife project to them, its potential benefits and risks, and the development in skills and relationships necessary for both management and union to make it work. I emphasized that management had to share power, to treat the union as a partner, and that the union had to learn more about the business, to learn to work cooperatively, and to agree that ongoing quality-of-worklife projects would not be held hostage during unrelated conflicts. Quality-of-worklife projects should not be a substitute for collective bargaining, but a development of bargaining into issues of mutual interest.

Union and management groups then met separately to discuss what they wanted from quality-of-worklife projects, and what they thought the other side wanted. Then they shared their deliberations. There were high levels of trust in some companies, especially in companies in which top management invited union leaders to discuss changes and ways of decreasing grievances. In other companies, there was little trust or communication. Even in instances where top leaders had created a good relationship, lower levels might view each other warily. The fault might be in either side or both. Managers might be insecure and inflexible, overcontrolling, or paternalistic; union leaders might want



to make all the deals themselves, and fear giving more power to members who might criticize them or discover they do not need either managerial or union bosses.

We established quality-of-worklife committees in each company, with union and management coordinators who would communicate with the national committee. The strategy was to educate and train facilitators from both sides so there would be no need to hire outside consultants. This strategy avoided having to deal with approaches which might distort the shared goals and principles. It strengthened internal skills, gave a sense of ownership to both union and management, and created a group of dedicated proponents.

The national committee developed a quality-of-worklife training package, designed by CWA District 5 and Mountain Bell. It included four modules which described quality-of-worklife, its implementation, how a group would identify and solve problems, and how to deal with interpersonal relations within the group. This became the basic training required for all levels, from workers to the problem-solving team.

The strategy announced by the national committee was to start with voluntary leadership from both sides. The first stage was to create successful models which could be copied by others.

The committee planned a series of meetings to stimulate union and management to consider quality-of-worklife projects in relation to an organizational vision. The participants were chief operating and personnel vice presidents from each Bell company with the corresponding union vice presidents. Professor Richard Walton of the Harvard Business School and I conducted the seminars, using Harvard Business School cases to describe a range of visions, from Japanese paternalism to European work councils. We persuaded management that the union was not seeking control of their decisions, and persuaded the union that management respected their role as representing workers' needs for security, fair rewards, and a chance to develop skills. This was the first time some of the operating officers had ever met union leaders; they testified that these traditional adversaries were responsible and intelligent about business needs, and were potential allies in the task of making the Bell companies more competitive in a deregulated environment.

By the summer of 1982, the national committee had achieved its first goals—designing a cooperative structure and training for teams and facilitators—and were organizing a meeting to showcase its success.

For the next stage, we invited leaders from both sides for discussions. They concluded that good models existed, but required initiative and involvement from management, and only a few innovative leaders were willing to take the risk. Support from the top was needed, including rewards for risk-takers, and a roadmap showing how to manage the process. To encourage support, the national committee planned meetings with the top management of the new regional companies. To develop a roadmap, union and man-

agement staff interviewed exemplary leaders, representing levels from company president and regional vice president to district manager and local union presidents.

Both management and union leaders believe that quality-of-worklife projects are meant to strengthen their organizations, and that a quality-of-worklife project requires teamwork, trust, and coordinating committees that manage the process, but not the content (which must come from the workers). All the leaders interviewed had invested liberally in training and used internal consultants. They stayed with the process, holding frequent meetings, in contrast to some managers who give their blessing and then withdraw.

Union leaders reported the quality-of-worklife projects require them to gain new skills and knowledge. They also commented that intra-union struggles over turf impede the process. It is clear that quality-of-worklife projects deteriorate unless union leadership maintains an active, informed role.

The strike of August 1983 slowed down the momentum, but quality-of-worklife programs emerged intact. Watts is convinced the strike would have been longer and more violent without them. Local presidents I have interviewed agree. They say members recognized the difference between areas which demand cooperation, and those, such as wages and benefits, which are areas of disagreements. In one Bell company where such projects have widespread support, the company president talked to picketing workers and congratulated them for their loyalty to the union. Since the strike, that company has made rapid strides to extend quality-of-worklife programs.

### **Will divestiture affect commitment?**

Both union and management leaders in the divested Bell companies have declared their commitment to quality-of-worklife projects. Internally, the union has used the process to improve its own management at headquarters and in the district teams. But further development depends on the willingness of management to work cooperatively with the union on all factors that influence the quality of working life, and the willingness of the union to understand the new problems of a competitive market. Quality-of-worklife projects must include the design of technology and the organization of work. As management builds more efficient systems, it must consider from the start whether such changes create good jobs. Will workers be "deskilled?" Will work be organized to allow broad learning, including problem-solving skills that are not made obsolete by change? In a monopoly that has been able to maintain high levels of job security, how will management deal with downturns and technological unemployment?

The growth of quality-of-worklife projects requires a developing relationship between management and union built on mutual respect for institutional interests and values. CWA leaders have seen that quality-of-worklife can strengthen the union's ability to serve all its members, not just those with

grievances. Indeed, such projects make the union more attractive to educated service workers. But no union can operate if management threatens its existence. If the new Bell companies pursue a strategy of cutting costs by becoming nonunion, quality-of-worklife projects will wither. If man-

agement sees the union as a potential ally to be brought into strategy, quality-of-worklife projects can guarantee the new companies a highly motivated, flexible, and productive work force. □

—FOOTNOTES—

<sup>1</sup>In 1972, Irving Bluestone, then vice president of the United Automobile Workers, and Sidney Harman, Bolivar chief executive officer, had asked me to help them design and direct that project which pioneered many of the practices subsequently used by GM, Ford, and AT&T. This included a union-management plant-level committee and department-level teams trained to analyze problems and to propose solutions. Bolivar went farther than most subsequent programs in supporting general education and arts and

crafts, as well as technical training. The project was effective not only in terms of work satisfaction, but also in union-management cooperation to gain new business, cut costs, and achieve mutually beneficial early bargaining.

<sup>2</sup>See Michael Maccoby, *The Gamesman* (New York, Simon & Schuster, 1976).

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### A note on communications

The *Monthly Labor Review* welcomes communications that supplement, challenge, or expand on research published in its pages. To be considered for publication, communications should be factual and analytical, not polemical in tone. Communications should be addressed to the Editor-in-Chief, *Monthly Labor Review*, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C. 20212.

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# Productivity growth in the switchgear industry slows after 1973

*During 1963–73, the industry experienced a period of high growth, but from 1973 to 1982 its rate of productivity increase fell sharply in response to cyclical downturns in output, the energy crisis, and an overall falloff in demand for switchgear*

ARTHUR S. HERMAN and PHYLLIS F. OTTO

Productivity, as measured by output per employee hour, in the switchgear industry grew at an average rate of 2.0 percent per year between 1963 and 1982.<sup>1</sup> This gain is below the corresponding 2.4-percent rate for all manufacturing. Productivity growth was aided by the introduction of new design and manufacturing technology, but moderated by the impact of cyclical downturns in output and an overall falloff in demand for the industry's products beginning in 1973.

This industry manufactures such products as high capacity switching units and circuit breakers. These are utilized by electric utilities as part of their transmission systems and by industry as components of control systems for much of the manufacturing equipment being used. In addition, switchgear, generally in the form of low-voltage circuit breakers and panelboards, is used in the construction of new buildings. There also is a replacement market for switchgear, mainly from electric utilities and industry, and to a lesser extent, from building renovation.

Demand for switchgear is closely tied to changes in power usage, particularly increases in demand for electric power, which in turn lead to expansion of the power generating and transmission network. New building construction requires additional switchgear. New subdivisions are particularly important sources of demand for switchgear, because they require new switchgear installed by electric power utilities as well as the equipment installed in individual new homes.

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Demand is also tied to growth in the installation of new capital equipment, because switchgear is installed along with most new manufacturing, mining, and other fixed equipment.

## **Output and productivity affected by energy crisis**

Because of its energy-related markets, the switchgear industry was particularly affected by the slowdown in demand for electricity, which began with the oil embargo of 1973–74. Because of sharply rising energy prices (the Consumer Price Index for electricity almost tripled between 1972 and 1982), the growth in electric power production slowed dramatically after 1973. Demand for electricity, which had been growing at the very high rate of 8.0 percent per year from 1958 to 1973 increased at less than half this rate, 3.1 percent, from 1973 to 1982. During the latter period, there were additional factors affecting demand for switchgear—economic slowdowns and a sharp drop in homebuilding caused by high mortgage interest rates toward the end of the period. As a consequence of this decrease in demand, both output and productivity growth can be divided into two distinct periods. (See table 1.)

*A period of high growth, 1963–73.* Fueled by the continuing expansion of electric utility systems and growth in new plant and equipment investment, as well as technological changes in key products, output in the switchgear industry grew at a rate of 6.1 percent per year, well above the all-manufacturing average over this period. The industry's 3.5-

percent rate of productivity advance also was significantly above the all-manufacturing rate of 2.6 percent per year. Despite 2 years of productivity decline, including the recession year of 1970, annual productivity gains in this period tended to be much above those occurring in the post-1973 period. For example, productivity grew 8.6 percent in 1969, 7.1 percent in 1971, and 8.0 percent in 1972, but gains did not exceed 5 percent in any year after 1973.

*Slower growth, 1973–82.* From 1973 to 1982, industry output growth fell sharply, averaging zero. The productivity trend paralleled the slowdown in output, increasing at the low rate of 0.3 percent per year. The long recession of 1974–75, in association with the rapid expansion in energy prices, resulted in two consecutive, steep declines in industry output. In 1974, output decreased 7.3 percent, then plummeted an additional 18.2 percent in 1975. In turn, productivity recorded the largest decline over the period, falling 4.3 percent in 1974, and dropping an additional 3.8 percent in 1975. At the end of the period, both output and productivity posted 3 more consecutive declining years, reflecting the energy crisis in 1979, the 1980 recession, and the economic slowdown beginning in 1981. Output fell 5.3 percent in 1980, 6.2 percent in 1981, and an additional 10.2 percent in 1982. Productivity dropped 0.1 percent in 1980, 4.1 percent in 1981, and 1.3 percent in 1982.

## Employment and hours

Employee hours in the switchgear industry grew 0.8 percent per year from 1963 to 1982. Changes in employee hours reflect both changes in the number of employees and in the average annual hours per employee. Employment grew 1.1 percent per year while annual hours per employee fell 0.3 percent per year.

The employment growth was similar for production workers and nonproduction workers, so that the proportion of production workers to total employment remained about the same, 70 percent, over the period measured. However, the average hours for the two groups of workers moved at different rates—for production workers, they fell 0.5 percent per year while for nonproduction workers, they rose 0.1 percent per year. Therefore, the slower growth in total hours as compared with employment can be traced to declines in the annual hours of production workers.

In this industry, year-to-year changes in employee hours and output tend to move in the same direction. However, the changes in employee hours are generally not as great as the changes in output, resulting in productivity changes. For example, in every year that output recorded a decline, employee hours fell also. With the exception of one year, the declines in employee hours did not match the drops in output, and productivity recorded declines. Conversely, in every year that output grew, except one, employee hours increased also. However, the gains in employee hours never were as great as the increases in output, and productivity posted gains.

This ability of the industry to adjust its employee hours fairly rapidly to shifts in demand can be attributed to the occupational makeup of the work force, which has a high percentage of operatives. For example, operatives tend to be more susceptible to layoffs, shortened workweeks, and other staff reductions than craftworkers, who tend to be retained when output slows because of the problem of replacing their higher skill levels.

Occupational data exactly matching this industry are not available. However, data on occupations are available at a somewhat broader level of aggregation for electric transmission and distribution equipment, which includes transformer as well as switchgear manufacturing.<sup>2</sup> These aggregate data should be representative of the switchgear industry which is similar to the broader category in many respects.

Operatives make up a large proportion of total employment in this group, accounting for 51 percent of total employment in 1980, compared with 43 percent for all manufacturing. The comparison is even more striking for assemblers, who make up 27 percent of employment in electric transmission and distribution, compared with only 8 percent for the all-manufacturing average. Although the proportion of engineers in these two industries is higher than the all-manufacturing average, craftworkers, at about 15 percent, are a somewhat smaller proportion than the 19-percent average for all manufacturing.

**Table 1. Output per employee hour and related indexes in the switchgear industry, 1963–82**

[1977 = 100]

Year	Output per hour			Output	Employee hours		
	All employees	Production workers	Nonproduction workers		All employees	Production workers	Nonproduction workers
1963	70.9	71.3	69.8	54.9	77.4	77.0	78.6
1964	70.2	72.4	64.8	57.5	81.9	79.4	88.8
1965	74.4	74.3	74.5	62.1	83.5	83.6	83.4
1966	78.7	76.8	84.5	74.4	94.5	96.9	88.0
1967	79.1	77.3	84.1	77.8	98.4	100.6	92.5
1968	79.1	78.8	79.7	73.7	93.2	93.5	92.5
1969	85.9	85.2	88.3	83.8	97.5	98.4	94.9
1970	83.3	84.1	81.0	80.6	96.8	95.8	99.5
1971	89.2	90.7	85.6	83.8	93.9	92.4	97.9
1972	96.3	97.1	94.4	94.4	98.0	97.2	100.0
1973	101.5	100.7	103.5	108.0	106.4	107.2	104.3
1974	97.1	96.2	99.8	100.1	103.1	104.1	100.3
1975	93.4	99.2	80.8	81.9	87.7	82.6	101.3
1976	95.3	99.1	86.5	84.9	89.1	85.7	98.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	102.4	102.6	101.8	107.0	104.5	104.3	105.1
1979	102.7	104.2	98.9	109.8	106.9	105.4	111.0
1980	102.6	107.1	92.2	104.0	101.4	97.1	112.8
1981	98.4	102.2	89.5	97.6	99.2	95.5	109.1
1982	97.1	103.9	82.7	87.6	90.2	84.3	105.9
	<b>Average annual percent change<sup>1</sup></b>						
1963–82	2.0	2.3	1.4	2.9	0.8	0.6	1.5
1963–73	3.5	3.5	3.6	6.1	2.5	2.5	2.4
1973–82	0.3	0.8	-1.0	( <sup>2</sup> )	-0.3	-0.8	1.0

<sup>1</sup>Based on the least squares trend of the logarithms of the index numbers.

<sup>2</sup>Less than 0.05 percent.

## Capital expenditures tend to be low

The level of capital expenditures in the switchgear industry over the study period has been low. New capital expenditures per employee rarely exceeded half the average for all manufacturing industries from 1963 to 1981. While expenditures for new plant and equipment in this industry have grown over time, they fell off sharply after 1973 as demand for switchgear slumped. For example, while average capital expenditures per employee for all manufacturing industries increased in every year during 1973–81, expenditures in switchgear manufacturing posted a significant drop from 1974 to 1975. During that time, capital expenditures per employee fell to a level less than a quarter of the all-manufacturing average, and remained at less than 40 percent of that average through 1977. However, in recent years, capital expenditures in the industry began to expand somewhat more rapidly.

## Industry structure dominated by large firms

Many establishments in this industry are owned by companies that manufacture many lines of electrical equipment. The proportion of shipments accounted for by the four largest companies remained at about 50 percent from 1963 to 1977.<sup>3</sup> Despite a recent trend to new facilities, many plants in the industry tend to be old. In some cases, they are housed in multistory buildings which have been refurbished by the addition of new manufacturing equipment. While there are a significant number of small establishments in the industry, on the whole, plants are large. The average number of employees per establishment in 1977 was 108, more than double the average for all manufacturing industries. In recent years, a number of foreign manufacturers have formed joint ventures with American firms or have purchased existing facilities and are producing switchgear in the United States. Plants in the industry tend to be concentrated along the eastern seaboard and in the Midwest. However, there are a significant number of plants located on the west coast, and California has the largest number of establishments in the United States.

## Technology changes

*Variety of products.* Technological change in the switchgear industry is affected by the diverse variety of products manufactured. The small, simple items, such as panelboards and low-voltage circuit breakers, can be made in long runs and are amenable to assembly line equipment for manufacture. The larger units, such as transmission line circuit breakers and power and industrial switchgear, tend to require semi-custom production techniques. Generally, these units are designed to fit specific needs and are built to order. For example, a switchgear unit can contain such components as gauges, relays, capacitors, fuses, transformers, and switches all enclosed in a cabinet, which is generally made of steel and can be as large as a room.<sup>4</sup> Therefore, the production

facilities for these larger units are set up to accommodate short runs of large, heavy, complicated units requiring a significant amount of manual assembly work.

*Computer-assisted design.* A key technological advance affecting the production of most of the larger types of switchgear is computer-assisted design. A large amount of design and engineering work is required to match the switchgear units to the customer's needs. Computer-assisted design cuts design and engineering effort drastically. A contract proposal, including engineering drawings and circuit diagrams, can be completed in minutes using computer-assisted design, compared with weeks without it. Therefore, this technique has greatly increased engineering and drafting productivity. It also has assisted overall manufacturing operations by making production scheduling more flexible.<sup>5</sup>

*Numerical control.* An innovation that has been widespread in the industry for some time is numerical control of machine tools. This technology was widely adapted because of the large number of complicated parts that must be built in order to assemble switchgear units. Many of these parts require a large amount of machining and are made in discrete batches adaptable to numerical control.

*New plants.* In recent years, a shift from old multistory plants to new single-story facilities has been underway. This has aided in the manufacture of larger-size units. Single-story plants result in much better workflow, cut materials handling greatly, and provide better work layouts. The new plants have also accelerated the impetus to install new, modernized production equipment.

*Shift to sulphur hexafluoride.* A significant change in one of the industry's major products has aided manufacturing techniques. Since the mid-1960's, there has been a shift from oil-type, air-blast circuit breakers for power transmission use to units using sulphur hexafluoride as the extinguishing medium. The new units are safer and much quieter and because they are significantly smaller in size and weight, they are easier to transport and install.<sup>6</sup> For example, some of the older, oil-based circuit breakers could be so large that they had to be shipped one to a flatbed freight car, but the new units are small enough to be shipped by truck. The smaller circuit breakers are also easier to manufacture, because they can be built by moving them from station to station on an assembly line rather than having them assembled largely in a single location, with workers and parts brought to them. Moreover, sulphur hexafluoride circuit breakers are being improved. In recent years, they have become even smaller and more modular. One plant, for example, is producing sulphur hexafluoride puffer circuit breakers, the capacity of which can be changed by the addition of breaker modules. Based on this design, the plant

is being completely revamped to introduce more automatic manufacturing equipment. For the first time in this plant, the circuit breaker modules will be built on a slowly moving assembly line using conveyerization, rather than being assembled at stationary locations and moved by forklift truck between work stations.<sup>7</sup>

*Automatic computerized testing.* An innovation that is becoming more widespread in the industry is automatic computerized testing, which is particularly important in the production of the large switchgear units and circuit breaker assemblies. Because switchgear is designed for protection or control of expensive equipment or large electric transmission systems, its failure could cause drastic problems. In addition, the larger types of switchgear tend to be very expensive. Therefore, they are extensively tested to meet specifications and operating conditions prior to shipment. In recent years, much of the manually operated electronic testing equipment has been replaced by automatic computerized testing, significantly reducing the number of inspectors and testers needed.

*Productivity hindered.* A factor retarding productivity is

the industry's requirements for providing replacement parts for in-service units. In many cases, these parts are built to order, rather than kept in inventory. Currently, this is a relatively inefficient use of manufacturing capacity because a complicated machine tool may have to be set up to work on just a single item. Conversely, because switchgear units have long lives and have changed in design, it is difficult and expensive for producing firms to keep an adequate inventory of replacement parts on hand.

THE OUTLOOK FOR PRODUCTIVITY is unclear. In recent years, the industry has experienced very poor demand, and, as a result, output is currently at a level significantly below its peak in 1973. Although demand from the construction market is expected to pick up in the next few years from its current very low level, demand by utilities will probably remain low. While the shift to new, more efficient manufacturing facilities, computer-assisted design, advanced automatic equipment, and easier to manufacture products provides a basis for the industry to increase productivity, in the near future, changes in productivity are expected to be greatly affected by changes in demand, which are uncertain. □

—FOOTNOTES—

<sup>1</sup> Average annual rates of change are based on the linear least squares trends of the logarithms of the index numbers. The switchgear industry is designated as industry 3613 in the *Standard Industrial Classification Manual, 1972*, issued by the U.S. Office of Management and Budget. The industry is made up of establishments primarily engaged in manufacturing switchgear and switchboard apparatus. A technical note describing the indexes is available from the Office of Productivity and Technology, Bureau of Labor Statistics, Washington, D.C. 20212. The indexes for this industry will be updated and included in the Bureau of Labor Statistics annual bulletin, *Productivity Measures for Selected Industries*.

<sup>2</sup> "National Industry-Occupational Employment Matrix," 1980, Bureau

of Labor Statistics, unpublished.

<sup>3</sup> *Concentration Ratios in Manufacturing, 1977 Census of Manufactures*, MC77-SR-1, 1981, p. 9-50.

<sup>4</sup> *Power Centers Including Type DS Switchgear*, Descriptive Bulletin 38-850 (Pittsburgh, Pa., Westinghouse Electric Corporation, 1978), pp. 1-55.

<sup>5</sup> Based on discussions with industry experts.

<sup>6</sup> *U.S. Industrial Outlook, 1973* (U.S. Department of Commerce, 1973), p. 273.

<sup>7</sup> Based on discussions with industry experts.

### APPENDIX: Measurement techniques and limitations

Indexes of output per employee hour measure changes in the relation between the output of an industry and employee hours expended on that output. An index of output per employee hour is derived by dividing an index of output by an index of industry employee hours.

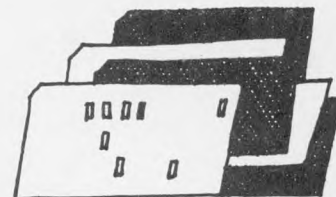
The preferred output index for manufacturing industries would be obtained from data on quantities of the various goods produced by the industry, each weighted (multiplied) by the employee hours required to produce one unit of each good in some specified base period. Thus, those goods which require more labor time to produce are given more importance in the index.

In the absence of physical quantity data, the output index for the industry which produces switchgear was constructed using a deflated value technique. The value of shipments of the various product classes were adjusted for price changes by appropriate Producer Price Indexes to derive real output

measures. These, in turn, were combined with employee hour weights to derive the overall output measure. These procedures result in a final output index that is conceptually close to the preferred output measure.

Employment and employee hour indexes were derived from data from the Bureau of the Census. Employees and employee hours are each considered homogeneous and additive, and thus do not reflect changes in the qualitative aspects of labor such as skill and experience.

The indexes of output per employee hour relate total output to one input—labor time. The indexes do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effect of factors such as changes in technology, capital investment, capacity utilization, plant design and layout, skill and effort of the work force, managerial ability, and labor-management relations.



## Response variation in the CPS: caveats for the unemployment analyst

JAMES M. POTERBA AND LAWRENCE H. SUMMERS

The Current Population Survey (CPS), conducted by the Census Bureau for the Bureau of Labor Statistics, is one of the principal sources of data on U.S. labor markets. It has been used in numerous investigations of unemployment, because it provides descriptive information about the characteristics of jobless workers and about their unemployment experience. Data on the duration of unemployment spells and on the factors affecting reported unemployment spell lengths have been subject to particularly intensive study to determine how public policies can affect the amount of time that workers spend in unemployment, and how the reason for an individual's entry into unemployment influences his or her subsequent labor market activity.

Relatively little is known about the frequency of response errors in CPS survey data and their implications for empirical research. The Census Bureau's CPS Reinterview Survey Program provides some indication of response variation by helping to determine whether respondents answer questions consistently within a particular survey month. However, the Reinterview Survey does not indicate whether individuals provide logically consistent survey responses from month to month. The recent advent of panel data sets containing information on survey participants for several consecutive months makes it particularly important to determine if individuals answer similar questions in similar ways in different survey months. If reported durations of and reasons for joblessness are logically inconsistent over time, analyses that focus on changes in individual behavior are likely to be flawed by spurious changes due to reporting error.

This article draws upon a potentially rich source of information for evaluating survey answers, a 3-month matched

sample of respondents, to gauge the problem of response variability in the CPS. Our analysis is divided into four parts. The first section reviews evidence from the Reinterview Survey on individuals' reported labor market status. In the second section, we examine the consistency across time of reported unemployment durations and consider the salience of the unemployment/not-in-the-labor-force (NILF) distinction. The third section presents evidence on the consistency over time of individuals' reported reasons for unemployment. And the final section considers the implications of our results for empirical research in labor economics, using both the CPS and other data sets.

### Unemployment status misreporting

Reporting errors are a substantial problem in the CPS. The incidence of errors due to response and coding mistakes is well documented by the Reinterview Surveys, during which a subsample of the households included in each month's CPS are recontacted.<sup>1</sup> These secondary interviews, which usually occur about a week after the original survey, ask respondents to describe their activities in the preceding week. In some cases—those included in the "nonreconciled" component of the Reinterview Survey—no attempt is made to determine which, if either, of two different responses on the original and reinterview surveys is correct. However, for the "reconciled" subgroup of the Reinterview Survey, which typically constitutes about one-third of the reinterviewed households, the second interviewer compares the responses from the first survey with the reinterview answers before leaving the household, and attempts to resolve any conflicts.<sup>2</sup>

The reconciled Reinterview Surveys permit analysis of employment status coding errors. For May 1976, table 1 shows the fraction of individuals in each labor market category after reconciliation, by category as reported in the initial survey. Most (99.1 percent) of the employed CPS respondents had been correctly classified in the regular CPS, as had most of those who were truly out of the labor force (99.2 percent). However, a substantial fraction of unemployed individuals had initially been reported in other categories. Ten percent of the truly unemployed had been classified as not in the labor force (NILF) and an additional 3.6 percent had been recorded as employed. There is some evidence that the mismeasurement problem was greater for

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women than for men.

The finding that some unemployed individuals are misclassified is important for studies of unemployment dynamics. If nearly 15 percent of unemployed individuals are incorrectly classified in a given month, then the effect on month-to-month transitions between labor force states must be considered. Studies of labor market behavior based on gross flows or panel data from the CPS may be adversely affected.<sup>3</sup>

In particular, the data in table 1 suggest that there is some confusion between the states of "unemployment" and "not in the labor force." As we will show later, many unemployed persons who drop out of the labor force at some point before again becoming unemployed report themselves as experiencing one *ongoing* spell of unemployment. According to the Reinterview Survey, only 0.25 percent of individuals initially classified as NILF are actually unemployed, because many individuals in the population are genuinely not in the labor force and are rather unlikely to be experiencing an unemployment spell. However, conditional upon an individual's having been unemployed the month before, the measurement error rates for the NILF category may be large—far larger than those in the table.<sup>4</sup>

Christopher Flinn and James Heckman have argued that the states of unemployment and NILF are well-defined and distinct.<sup>5</sup> They draw evidence from models showing clear differences between persons who are unemployed and those who are not in the labor force in the probability of becoming employed. However, this evidence is not relevant to understanding whether a large fraction of those who are unemployed drift in and out of the NILF category with little or no change in behavior. Again, the explanation of Heckman's and Flinn's finding is that there are a large number of individuals classified as NILF who are not casual entrants to

the labor force. These persons—whether disabled, retired, or otherwise unable or unfit to work—are conceptually distinct from the unemployed, who are searching for work. Thus, a small fraction of all NILF respondents, but a substantial portion of those NILF respondents who were unemployed in the preceding month, may actually be searching for work and ready to accept a job in a given current month. These are the miscategorized workers on whom we focus.<sup>6</sup>

### Reported spell durations

The Current Population Survey interviews individuals in several consecutive months, and CPS "match files" contain data on all interviews with a group of survey participants. These data may be used to examine month-to-month changes in individuals' reported unemployment spell durations. Survey respondents who report that they are unemployed are asked how many weeks they have been "without a job and looking for work." If individuals who are unemployed in 2 consecutive months accurately describe their labor market experience, the reported unemployment spell duration in the second CPS monthly interview should exceed the first-month reported duration by 4 or 5 weeks.<sup>7</sup>

We obtained data on survey participants who were unemployed in May 1976 and were interviewed again in June 1976. These data were used to compute the *difference* between each individual's reported unemployment spell durations in May and June:

$$DIFF = DUR_{June} - DUR_{May}$$

The measurement of *DIFF* is complicated by several factors. First, some survey participants who are unemployed on both survey dates may report a much lower spell duration in the second interview because at some point between surveys they either found a job or stopped searching. Because there is no way of determining whether inconsistent reports with second-interview durations of less than 5 weeks are spurious, we report results which both include and exclude this group from the calculations. Second, some respondents may appear to make inconsistent responses because they have been unemployed for so long that the duration values for both months are coded "99." Duration is recorded in a two-digit data field, so that spells of more than 99 weeks cannot be reported. However, this problem did not appear to be substantial in our data set. Only 1.7 percent of the respondents whose spell durations did not change from month to month had reported "99" on the May survey, and a negligible fraction had had May durations of between 96 and 98 weeks.

Summary statistics for *DIFF* are displayed in table 2. The top panel of the table shows the results of calculations which excluded all individuals for whom *DUR<sub>June</sub>* was less than 5, while the results in the lower panel include these respondents. Only one-third (31.8 percent) of the individuals in the match sample reported spell durations which differed by 3 to 5 weeks between the two surveys. Nearly three-quarters

**Table 1. Probabilities of reporting labor force status as employed, unemployed, or NILF in the regular cps, by "true" status as determined by the Reinterview Survey, May 1976**

"True" status	Status as reported in the regular cps		
	Employed	Unemployed	NILF
Total: <sup>1</sup>			
Employed	.9905	.0016	.0079
Unemployed	.0356	.8602	.1041
NILF	.0053	.0025	.9923
Men: <sup>2</sup>			
Employed	.9922	.0013	.0065
Unemployed	.0474	.8720	.0806
NILF	.0062	.0048	.9890
Women: <sup>3</sup>			
Employed	.9892	.0019	.0089
Unemployed	.0194	.8442	.1363
NILF	.0049	.0015	.9936

<sup>1</sup>Sample size = 7,079.

<sup>2</sup>Sample size = 3,329.

<sup>3</sup>Sample size = 3,750.

SOURCE: Tables were computed from "General Labor Force Status in the cps Reinterview by Labor Force Status in the Original Interview, Both Sexes, Total, After Reconciliation," May 1976, Bureau of the Census (unpublished).



**Table 2. Month-to-month differences in reported unemployment spell durations, May-June 1976**

[In percent]

Month-to-month difference in reported spell duration	Workers reporting unemployment of at least 5 weeks in June <sup>1</sup>		
	Total	Reported May duration greater than 20 weeks	Reported May duration less than 20 weeks
Less than 0 weeks	14.26	25.55	7.63
0 weeks	7.41	12.34	4.52
1 to 2 weeks	9.86	7.48	11.25
3 to 5 weeks	31.78	24.67	35.96
6 to 9 weeks	15.97	11.68	18.50
10 to 15 weeks	7.74	7.71	7.76
16 to 24 weeks	4.65	3.53	5.30
25 weeks or more	8.31	7.05	9.06
<b>All workers unemployed in June, regardless of spell duration<sup>2</sup></b>			
Less than 0 weeks	19.62	29.29	14.60
0 weeks	9.19	11.72	7.97
1 to 2 weeks	12.09	7.11	14.60
3 to 5 weeks	27.99	23.45	30.33
6 to 9 weeks	13.55	11.09	14.80
10 to 15 weeks	6.57	7.32	6.21
16 to 24 weeks	3.94	3.76	4.24
25 weeks or more	7.00	6.28	7.25

<sup>1</sup>Calculations based on May 1976 cps questionnaire participants who were classified as unemployed, who were more than 16 years of age, and who reported May unemployment durations of more than 4 weeks. The subsequent duration numbers are based on reported responses to the June 1976 survey. A total of 1,227 individuals who were recorded as unemployed in May were reinterviewed, and found to be unemployed again in June.

<sup>2</sup>Calculations based on May 1976 cps questionnaire participants who were classified as unemployed, and were more than 16 years of age. A total of 1,447 such individuals were available on the May-June match.

of the respondents made inconsistent claims about their unemployment experience, and more than 20 percent reported no increase, or a decrease, in their spell durations. Thirty-seven percent of the sample reported unemployment spell durations in June which exceeded their May durations by more than 5 weeks, and many reported much longer spells; more than 10 percent of our sample reported that the length of their unemployment spells had increased by *more than 4 months*.

Workers who have experienced long spells of unemployment are particularly unreliable in reporting spell durations. We discovered this by dividing the sample into two groups. Individuals in the first group had reported being unemployed for at least 20 weeks in May, while those in the second group had been unemployed for fewer than 20 weeks. The duration-difference calculations for these subgroups are also shown in table 2. Twelve percent of the long-spell individuals reported the same duration in both months. Only 25 percent added between 3 and 5 weeks to their initial reported spell lengths, and more than one-quarter of the first respondent group claimed shorter spell durations in June than in May. These findings indicate substantial variation in the reported unemployment durations of survey participants experiencing ongoing unemployment spells.

Regression models can be used to determine those factors which are related to substantial aberrations in the reported

spell durations. Table 3 reports estimates from regressions of duration differences on individuals' demographic characteristics and reasons for unemployment. Results for the model without outlier adjustment were estimated using reported duration differences as the dependent variable. Those for the model with outlier adjustments were based on data for which the outlying values of *DIFF* were "trimmed." Observations for which *DIFF* exceeded 25 weeks were replaced with 25, and those for which *DIFF* was less than -5 were replaced with -5.

Similar results obtain for both sets of data. According to the "trimmed" regression, the average values of the duration differences (regression constant + coefficient of the independent variable) by reasons for unemployment are: job losers, 6.24 weeks; job leavers, 5.64 weeks; workers on layoff, 4.69 weeks; and reentrants and new entrants, 7.74 weeks. All of these values are larger than the 4.43 weeks which actually separated the May and June surveys. There is little evidence that demographic factors change reported

**Table 3. Regression estimates of reported unemployment spell duration differences on selected demographic characteristics and reasons for unemployment, May-June 1976**

[In weeks]

Independent variable <sup>1</sup>	Without outlier adjustment <sup>2</sup>	With outlier adjustment <sup>2</sup>
Constant	9.12 (1.66)	7.74 (.81)
Sex and age:		
Men:		
Age 16 to 19	-.18 (1.86)	-.83 (.91)
Age 20 to 24	-1.28 (1.67)	-.43 (.82)
Age 25 to 59	.68 (1.37)	.38 (.67)
Age 60 and over	1.57 (2.75)	.53 (1.34)
Women:		
Age 16 to 19	-7.29 (2.64)	-2.93 (1.28)
Age 20 to 24	-.31 (2.13)	.40 (1.04)
Age 60 and over	-2.90 (3.50)	-1.39 (1.71)
Race (nonwhite = 1)	-1.62 (1.61)	.22 (.78)
Reason for unemployment:		
Job loser	-2.18 (1.18)	-1.50 (.58)
Job leaver	-4.47 (1.62)	-2.10 (.78)
Layoff	-4.51 (1.54)	-3.05 (.75)
R <sup>2</sup>	.022	.022
Number of observations	1,227	1,227

<sup>1</sup>The dependent variable in the equation was  $DUR_{June} - DUR_{May}$ . As indicated in text footnote 8, the specification of the equation also included control variables for the respondents' rotation group in the cps. These variables never proved statistically significant, and are not reported here.

<sup>2</sup>Estimates with outlier adjustments are based on "trimmed" data; that is, observations for which reported differences exceeded 25 weeks were replaced with "25," and those for which differences were less than -5 were replaced with "-5."

NOTE: Standard error of the estimate indicated in parentheses.

duration differences, the one exception being teenage women, who appear to systematically underreport their duration increment. The reason for unemployment is a strong predictor of duration differences. Workers who were on layoff reported differences which were up to 2 weeks less than those for other unemployed individuals, while reentrants and new entrants have the greatest tendency to overstate duration differences.<sup>8</sup>

Beyond being interested in the average bias in reporting increments to the unemployment duration, we might be concerned about the absolute size of reporting errors. To address this issue, table 4 reports the results of four regression specifications explaining the absolute value of (DUR<sub>June</sub> - (DUR<sub>May</sub> + 4)). We analyze the absolute value of (DIFF-4) to prevent positive and negative errors in the duration increment from cancelling each other, as they would if we studied only the average duration increment.

The reported cause of unemployment affects the error in reported durations in a significant and important way. Job losers are about 2.5 weeks more accurate than the "control" group of reentrants and new entrants. Job leavers are 2 weeks more accurate than the controls, on average, and persons on layoff have still smaller response errors. For individuals on layoff, errors are on average between 3 and 6 weeks less than the control, and as many as 3 weeks less than those of either losers or leavers. The salary that the individual earned at his last job also has a statistically significant but economically small impact. A \$10-per-week rise in wages reduces an individual's predicted inconsistency by about one-tenth of a week.<sup>9</sup>

The most important finding is that the duration of the

unemployment spell affects the consistency of the individual's responses. An additional month of unemployment increases the absolute value of the difference between the reported duration difference and "truth" (4.43 weeks) by about 5 days. However, the effect of duration is more complicated than this simple model suggests. We included three linear segments in specification III to capture the possibly different duration effects of short and long spells. These linear segments are designed to allow the marginal effect of longer duration to differ as duration changes. The three variables we used, and their values for some representative initial durations, are shown below:

Variable	Value of variable if		
	DUR <sub>May</sub> = 6	DUR <sub>May</sub> = 16	DUR <sub>May</sub> = 26
DUR <sub>May</sub> .....	6	16	26
DUR <sub>May</sub> - 12			
if DUR <sub>May</sub> > 12 .....	0	4	14
DUR <sub>May</sub> - 24			
if DUR <sub>May</sub> > 24 .....	0	0	2

To compute the effect of spell duration on absolute error, using the regression coefficients reported in column III of table 4, we evaluated each of these duration variables and multiplied them by their respective coefficients. For an individual who had been unemployed for 30 weeks in May, the calculation yields an absolute error contribution of:

$$.17(30) - .18(30 - 12) + .18(30 - 24) = 2.94 \text{ weeks}$$

This value, and the duration-related "errors" for other spell lengths, are presented below.

**Table 4. Regression estimates of the magnitude of spell duration reporting error on selected characteristics, May-June 1976**

[In weeks]

Independent variable	Without outlier adjustment <sup>2</sup>				With outlier adjustment <sup>2</sup>			
	Model specification				Model specification			
	I	II	III	IV	I	II	III	IV
Constant .....	10.84 (1.43)	7.81 (1.47)	7.77 (1.71)	10.61 (2.03)	6.80 (.62)	6.17 (.64)	5.10 (.75)	6.42 (.91)
Race (nonwhite = 1) .....	2.57 (1.38)	2.44 (1.35)	2.42 (1.35)	2.80 (1.47)	.32 (.59)	.29 (.59)	.31 (.59)	.56 (.66)
Reason for unemployment:								
Job loser .....	-2.63 (1.02)	-3.27 (1.00)	-3.10 (1.01)	-3.35 (1.08)	-1.52 (.44)	-1.66 (.44)	-1.80 (.45)	-1.93 (.48)
Job leaver .....	-3.20 (1.36)	-3.19 (1.39)	-3.17 (1.39)	-3.68 (1.41)	-2.17 (.60)	-2.17 (.60)	-2.18 (.60)	-2.39 (.62)
Layoff .....	-6.71 (1.32)	-6.57 (1.30)	-6.35 (1.31)	-6.72 (1.41)	-3.46 (.57)	-3.43 (.57)	-3.46 (.58)	-3.46 (.62)
Spell duration reported in May (DUR <sub>May</sub> ) .....	—	.13 (.02)	.17 (.15)	.19 (.15)	—	.027 (.008)	.19 (.06)	.19 (.07)
DUR <sub>MAY</sub> -12, if DUR <sub>MAY</sub> > 12 .....	—	—	-.18 (.25)	-.22 (.25)	—	—	-.21 (.11)	-.21 (.11)
DUR <sub>MAY</sub> -24, if DUR <sub>MAY</sub> > 24 .....	—	—	.18 (.14)	.19 (.14)	—	—	.03 (.06)	.14 (.06)
Hourly earnings .....	—	—	—	-.13 (.004)	—	—	—	-.007 (.002)
R <sup>2</sup> .....	.028	.065	.066	.071	.035	.043	.049	.060
Number of observations .....	1,227	1,227	1,227	1,098	1,227	1,227	1,227	1,098

<sup>1</sup>The dependent variable in the equations was the absolute value of (DUR<sub>June</sub> - DUR<sub>May</sub> - 4). All equations also included demographic variables and rotation group dummies, as in table 3.

<sup>2</sup>See footnote 2, table 3.

NOTE: Standard error of the estimate indicated in parentheses.

Duration ( $DUR_{May}$ )	Contribution of $DUR_{May}$ to $ DIFF-4 $
0 weeks	0
6 weeks	1.02
12 weeks	2.04
20 weeks	1.96
30 weeks	2.94
50 weeks	6.34

Additional weeks of unemployment spell duration are particularly poorly reflected in responses of individuals who have been unemployed for very long periods. For spells which had lasted more than a year, the predicted absolute value of the response error was over 6 weeks.

Further evidence on the reported spell durations of "new entrants" to unemployment can be obtained by studying the individuals who were categorized as employed or NILF in May and who became unemployed in June. Of those experiencing employment-to-unemployment transitions, 76 percent reported June spell durations of not more than 4 weeks. About 8 percent of this newly unemployed group, however, reported durations of more than 25 weeks after not more than 4 weeks of unemployment. Findings for the NILF-to-unemployment transitors were similar. Seventy-one percent reported spells of less than 5 weeks, but 7 percent reported very long spells (more than 25 weeks). This latter category may include individuals who were misclassified as NILF in May.

### Distinguishing unemployment from NILF

A third, but closely related, problem of response error concerns the reported unemployment spell durations of individuals making labor market transitions. Forty-four percent of unemployment spells end when jobseekers choose to leave the labor force.<sup>10</sup> However, there are frequent transitions between the states of unemployment (U) and not in the labor force. Of the individuals who were unemployed in May 1976 and for whom three consecutive CPS questionnaires were available, 3 percent were reported as NILF in June and unemployed again in July. By comparison, 21 percent of the May unemployed sample were reported as unemployed for 3 consecutive months.

An individual who leaves the labor force is technically considered to have completed his spell of unemployment. If, at some later date, he chooses to reenter the pool of the unemployed to search for work, he begins a second unemployment spell. If survey respondents adhered to this convention, individuals who were out of the labor force in June would not report July spell durations which exceeded 4 weeks. As the lower panel of table 5 demonstrates, however, only 26 percent of the U-NILF-U survey respondents considered themselves to have begun new spells. One-third of the U-NILF-U group reported lower spell durations in the second survey, but this is not appreciably different from the fraction of shorter spells discovered in the 1-month match reported in table 2. However, it would also be incorrect to characterize the data as suggesting that time out of the labor

**Table 5. Unemployment spell durations reported by transitors from unemployment to not in the labor force and back to unemployment, May-July 1976**

Item	All U-NILF-U transitors <sup>1</sup>	
	Number of respondents	Percent of total
<b>Difference in reported spell durations, May-June</b>		
Total	81	100.0
Less than 0 weeks	28	34.6
0 weeks	10	12.3
1 to 6 weeks	20	24.7
7 to 9 weeks	7	8.6
10 to 15 weeks	9	11.1
More than 15 weeks	7	8.6
<b>Reported duration in July</b>		
Total	81	100.0
1 to 4 weeks	21	25.9
5 to 12 weeks	31	38.3
13 to 24 weeks	12	14.8
25 to 48 weeks	10	12.3
49 weeks or more	7	8.6
<b>Transitors reporting durations of at least 5 weeks in July</b>		
<b>Difference in reported spell durations, May-June</b>		
Total	60	100.0
Less than 0 weeks	15	25.0
0 weeks	6	10.0
1 to 6 weeks	16	26.7
7 to 9 weeks	7	11.7
10 to 15 weeks	9	15.0
More than 15 weeks	7	11.7

<sup>1</sup>All calculations based on the May-June-July 1976 CPS match file. A total of 81 individuals were classified as unemployed (U) in May, not in the labor force (NILF) in June, and were "unemployed" again on the July questionnaire. The reported statistics are based on these individuals' responses in May and July to questions about the length of their present unemployment spell.

force is treated by respondents as the equivalent of time spent unemployed. Fewer than 30 percent of the group added a full 8 weeks to their reported May unemployment spell duration. And among those individuals who did not report spells of less than 5 weeks in July, the share of responses for which  $DUR_{July} - DUR_{May}$  is between 7 and 9 weeks is only 12 percent.

The fact that about two-thirds of the unemployed individuals who are classified as experiencing U-NILF-U transitions appear to view themselves as in the midst of an ongoing unemployment spell implies that there is a substantial amount of "hidden unemployment" in the U.S. economy and that, for many U-NILF-U transitors, the state of "not in the labor force" is functionally equivalent to unemployment. This emphasizes the ambiguity of current measures of labor market status, and helps to explain the strongly procyclical behavior of labor force participation.

### Reasons for unemployment

The CPS match files also afford an opportunity to make intermonth comparisons of respondents' stated reasons for entering unemployment. Using the May-June 1976 match

**Table 6. Reason for unemployment reported in June by reason reported in May, 1976**

Reason reported in May	Reason reported in June <sup>1</sup> (percent of May respondents) <sup>2</sup>				
	Job loser	Job leaver	Layoff	New entrant	Reentrant
Job loser .....	82.1	5.2	6.0	0.7	6.3
Job leaver .....	25.1	56.6	1.7	1.7	14.8
Layoff .....	30.6	1.9	63.6	0.0	4.3
New entrant .....	.6	1.8	.6	79.9	17.2
Reentrant .....	17.5	9.5	.9	6.2	66.0

<sup>1</sup>Reported unemployment in June by reason was: job loser, 44.5 percent; job leaver, 11.3 percent; layoff, 11.8 percent; new entrant, 10.9 percent; and reentrant, 21.5 percent.

<sup>2</sup>Calculations were performed using the 1,497 records on the May-June 1976 CPS match tape for which the respondent was unemployed in both May and June. The calculations show, for example, that the percentage of May job losers who also reported themselves as job losers in June was 82.1 percent.

file, we cross-tabulated respondents' May "reasons" with their June "reasons."<sup>11</sup> Table 6 shows that only about 70 percent of the respondents cited the same reason for unemployment in both May and June. The correlation between the two responses is lowest for those originally reported as job leavers; only 56 percent of the May job leavers reported themselves as leavers again in June. Of those who changed classification, 58 percent moved to the category of job loser and 34 percent became reentrants. The groups with the highest intermonth correlations were job losers and new entrants; roughly 80 percent of the May respondents in these groups provided similar responses in the June survey. The largest intercategory movement was from layoff to job loser: Thirty percent of those reported to be on temporary or permanent layoff in May reported themselves as job losers in June. There also appears to be a surprisingly large amount of movement between the categories of reentrant and job loser.

The large incidence of reported changes from the layoff to the job loser category is of particular significance. Although the economic importance of temporary layoff unemployment has been proclaimed by several analysts, the evidence here suggests that its significance may well have been overstated. A natural interpretation of the frequent changes in the responses of persons initially on layoff is that, at some point, these individuals realize that they cannot return to their original employers. If this interpretation is correct, it implies that the reported amount of unemployment attributable to layoffs in May substantially overstated the proportion of the unemployed who would ultimately be able to return to their original employers.

## Conclusions

Our findings call into question some of the individual responses to fundamental parts of the monthly CPS questionnaire. They buttress the evidence from Reinterview Surveys which suggests that misreporting or misrecording takes place. While information of the type presented here cannot be used to evaluate the bias in CPS responses, it does imply

that measures of behavioral change may be overstated because of response error.

Our analysis also sheds light more generally on the problem of response error in survey research. For a number of reasons, the CPS is likely to generate more accurate and consistent responses than other sample surveys. For example, the CPS questions ask only about recent behavior, rather than behavior over the course of a year or a longer interval. More safeguards are used to ensure reliability than in most other studies of labor market behavior. And, to a greater extent, CPS questions probe objective behavior rather than subjective intent. Our focus on the CPS was motivated solely by its widespread use by researchers and policymakers, and by the availability of data necessary for consistency checks.

We believe that our findings suggesting the need for caution in performing statistical analysis of these data are applicable to other surveys of labor market behavior, although more research on this question would be valuable. Especially when investigations focus on period-to-period changes, errors in variables problems are likely to be serious. Unfortunately, most of the methods currently used to examine aspects of dynamic labor supply behavior are not at all robust with respect to errors in variables. Future research should examine more thoroughly the causes of misreporting and alternative techniques for developing consistent data. In the meantime, statistical techniques for adjusting data, and for constructing estimates in the presence of errors in variables, should be improved. □

## FOOTNOTES

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<sup>1</sup>See Dorcas W. Graham, "Estimation, Interpretation, and Use of Response Error Measurements" (Washington, U.S. Department of Commerce, 1974); Henry Woltman and Irv Schreiner, "Possible Effects of Response Variance on the Gross Changes Data," Memo, Bureau of the Census, May 11, 1979; and *The Current Population Survey Reinterview Program: January 1961 through December 1966*, Technical Paper 19 (Washington, U.S. Bureau of the Census, 1968).

<sup>2</sup>This procedure fails to detect those individuals who report consistent, but incorrect, responses in both months.

<sup>3</sup>See J. M. Poterba and L. H. Summers, "Spurious Transitions and the Gross Flows Data," mimeo, 1983, for a discussion of methods for adjusting BLS gross flows data based on estimated response error probabilities.

<sup>4</sup>See J. M. Poterba and L. H. Summers, "A Multinomial Logit Model with Errors in Classification," mimeo, 1983, for a description of analytical procedures for studying labor market transitions when some responses are measured with error.

<sup>5</sup>Christopher J. Flinn and James J. Heckman, *Are Unemployment and Out-of-the-Labor Force Behaviorally Distinct States?* Working Paper 979 (Cambridge, Mass., National Bureau of Economic Research, 1982).

<sup>6</sup>After completing this paper, we became aware of closely related research by Norman Bowers and Francis Horvath. See "Keeping Time: An Analysis of Errors in the Measurement of Unemployment Duration," unpublished.

<sup>7</sup>Between the May and June Surveys which are the focus of our work, 4.43 weeks elapsed.

<sup>8</sup>We also experimented by adding the individuals' reported May du-

ration to the regression models. This had a substantial negative effect on the reported duration difference. However, it is difficult to determine whether this is genuinely the result of the longer-duration unemployed responding with smaller differences. An alternative explanation is that the finding is purely a statistical artifact. Conditional on a high reported May duration, the difference between the June and May durations is likely to be less than if the value of  $DUR_{May}$  is low. This means that in a regression model for  $DIFF$ ,  $DUR_{May}$  will have a negative coefficient. This hypothesis also predicts that, by similar reasoning,  $DUR_{June}$  should have a positive coefficient. Some support for this view was provided when we substituted  $DUR_{June}$  for  $DUR_{May}$  and observed a significant positive coefficient. Therefore, because the results appear spurious, we have not reported equations which include duration variables.

<sup>9</sup>Our equations also include control variables for the respondents' rotation groups in the CPS. Rotation Group I indicates individuals who participated in the survey in May, June, July, and August; Rotation Group II denotes those who participated only in May, June, and July. The omitted dummy variable is for those who participated only in the May and June surveys. These variables, not reported in the tables, never proved statistically significant.

<sup>10</sup>This was calculated as:

$$\frac{\text{Prob}(\text{transition from unemployment to NILF})}{\text{Prob}(\text{transition from unemployment to employment or NILF})}$$

For further discussion of labor market dynamics in this framework, see Kim B. Clark and Lawrence H. Summers, "Labor Market Dynamics and Unemployment: A Reconsideration," *Brookings Papers on Economic Activity*, Vol. 1, 1979, pp. 13-60.

<sup>11</sup>Job losers and leavers were categorized on the basis of the "why did . . . start looking for work?" question. Workers who explained that they were on permanent or temporary layoff in response to the question "why was . . . absent from work last week?" were classified as on layoff. New entrants were those nonleavers and nonlosers who claimed either that (i) they had never worked at all, or (ii) they had never worked full time for more than 2 consecutive weeks. Any workers who did not fall into any of these four categories were classified as reentrants.

## BLS' 1982 survey of work-related deaths

JANET MACON

The number of work-related deaths in private sector establishments with 11 employees or more was 4,090 in 1982, compared with 4,370 in 1981.<sup>1</sup> The corresponding fatality rate was 7.4 deaths per 100,000 full-time workers in 1982, and 7.6 in 1981. (See table 1.)

Employers participating in the Bureau of Labor Statistics' Annual Survey of Occupational Injuries and Illnesses were asked to supply specific information about deaths caused by hazards in the work environment, that is, the object or event most closely associated with the circumstances of the fatality. Estimates of the percentage of fatalities by cause represent the average for the 1981 and 1982 surveys. Percentages were calculated for the 2 years combined because large sampling errors at the industry division level preclude precise comparisons based on year-to-year changes.

The 4,090 fatalities in 1982 represent all reported deaths

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resulting from a job-related injury or illness in 1982, regardless of the time between the injury or onset of illness and death. About 340 of these fatalities were related to illness.

Among industry divisions, fatality rates ranged from 44.3 per 100,000 full-time workers in mining industries to 2.5 in finance, insurance, and real estate industries. Between 1981 and 1982, rates decreased in 5 of the 8 industry divisions, and increased by more than 15 percent in agriculture, forestry, and fishing; transportation and public utilities; and services.

Transportation and public utilities industries reported the largest number of fatalities. The percentage of total fatalities increased in three of the industry divisions, decreased in three, and remained unchanged in two. Although the number of fatalities decreased in construction and mining, the percentage of the total remained unchanged.

### Analysis by cause

More than half of all fatalities were caused by over-the-road motor vehicles, falls, heart attacks, or industrial vehicles or equipment. (See table 2.) About 1 of every 4 fatalities involved over-the-road motor vehicles. Falls, heart attacks, and industrial vehicles combined contributed 32 percent of total fatalities; falls, 12 percent; heart attacks, 10 percent; and industrial vehicles or equipment, 10 percent.

Over-the-road motor vehicles were the major cause of death in 5 of the 8 industry divisions. About 1 of every 3 of these fatalities occurred in transportation and public utilities industries, which had only 7 percent of total employment. (See table 3.)

Twelve percent of all fatalities involved falls. The construction and manufacturing industries together accounted for about 2 of every 3 falls.

About 10 percent of all fatalities were due to heart attacks. Heart attacks occurred at a slightly higher frequency in construction and transportation and public utilities, based on employment percentages.

Industrial vehicles or equipment were involved in 10 percent of all fatalities. More than half of these cases occurred in construction and manufacturing industries. Another 14 percent occurred in oil and gas extraction, which accounts for only 1 percent of total employment.

The "all other" category accounted for 3 percent of total fatalities. This category includes, for example, contact with radiation or toxic substances, drowning, train accidents, and death from various occupational illnesses.

### Analysis by industry

*Agriculture, forestry, and fishing.* Industrial vehicles or equipment were involved in 27 percent of the fatalities, while over-the-road motor vehicles contributed 18 percent of the cases. Electrocutation accounted for 16 percent and falls, 12 percent.

**Table 1. Employment, occupational injury and illness fatalities, and fatality incidence rates for employers with 11 employees or more, by industry division, 1981-82**

Industry division	Employment <sup>1</sup>				Fatalities				Fatality incidence rate <sup>2</sup>	
	1981		1982		1981		1982		1981	1982
	Number (thousands)	Percent	Number (thousands)	Percent	Number	Percent	Number	Percent		
Private sector . . . . .	62,895	100	62,629	100	4,370	100	4,090	100	7.6	7.4
Agriculture, forestry, and fishing . . . . .	698	1	729	1	130	3	180	4	21.2	28.4
Mining . . . . .	1,054	2	1,070	2	500	11	440	11	46.6	44.3
Construction . . . . .	2,990	5	2,898	5	800	18	720	18	29.2	28.7
Manufacturing . . . . .	19,504	31	18,267	29	990	23	770	19	5.3	4.5
Transportation and public utilities . . . . .	4,685	7	4,629	7	750	17	970	24	16.5	21.9
Wholesale and retail trade . . . . .	15,472	25	15,603	25	730	17	490	12	5.6	3.8
Finance, insurance, and real estate . . . . .	4,180	7	4,252	7	120	3	100	2	3.1	2.5
Services . . . . .	14,312	23	15,181	24	350	8	420	10	3.0	3.5

<sup>1</sup>Employment is expressed as an annual average and is derived primarily from the BLS-State Employment and Earnings Survey. Annual average employment for the agriculture, forestry, and fishing division is a composite of employment data for agricultural production (sic 01 and 02) from the Annual Survey of Occupational Injuries and Illnesses and employment data for agricultural services (sic 07); forestry (sic 08); and fishing, hunting, and trapping (sic 09) from State unemployment insurance programs. Employment estimates for nonagricultural industries have been adjusted based on County Business Patterns to exclude establishments with fewer than 11 employees. Adjustments were made to agricultural industries based on data provided by the Annual Survey of Occupational Injuries and Illnesses.

<sup>2</sup>The incidence rates represent the number of fatalities per 100,000 full-time workers and were calculated as

$$(N/EH) \times 200,000,000,$$

where N is the number of fatalities; EH is the total hours worked by all employees during calendar year; and 200,000,000 is the base for 100,000 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

NOTE: Because of rounding, components may not add to totals.

*Mining, oil and gas extraction only.* Accidents involving over-the-road motor vehicles and industrial vehicles or equipment were the cause of death in nearly half of the cases. Falls and employees being struck by objects other than vehicles or equipment each accounted for 9 percent of all cases.

*Construction.* Falls from elevation or the same level continued to be the major cause of death, accounting for nearly 1 of every 3 cases. Over-the-road motor vehicles and industrial vehicles or equipment combined contributed an ad-

ditional one-third of the cases. Electrocutions caused 11 percent of the fatalities.

*Manufacturing.* Fatalities resulting from over-the-road motor vehicles, falls, heart attacks, and plant machinery operations combined were the cause of death in 50 percent of the cases; 20 percent were due to over-the-road motor vehicles. Falls, heart attacks, and plant machinery operations each contributed 10 percent of the total for the industry.

*Transportation and public utilities.* As in previous years,

**Table 2. Distribution of occupational fatalities in establishments in the private sector with 11 employees or more, by cause, 1981-82 average**

[In percent]

Cause <sup>1</sup>	Total, all industries <sup>2</sup>	Agriculture, forestry, and fishing	Mining, oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities <sup>3</sup>	Wholesale and retail trade	Finance, insurance, and real estate	Services
Total, all causes . . . . .	100	100	100	100	100	100	100	100	100
Over-the-road motor vehicles . . . . .	27	18	26	15	20	52	20	35	29
Falls . . . . .	12	12	9	31	10	6	5	9	10
Heart attacks . . . . .	10	6	8	8	10	6	12	23	16
Industrial vehicles or equipment . . . . .	10	27	21	17	9	3	4	0	9
Nonaccidental injuries . . . . .	7	3	( <sup>4</sup> )	( <sup>4</sup> )	2	2	30	8	15
Struck by objects other than vehicles or equipment . . . . .	6	1	9	5	8	3	12	0	2
Electrocutions . . . . .	6	16	4	11	5	6	1	0	5
Caught in, under, or between objects other than vehicles or equipment . . . . .	6	1	3	4	5	9	8	17	2
Aircraft crashes . . . . .	4	2	5	1	3	6	1	7	7
Fires . . . . .	3	8	7	1	6	2	( <sup>4</sup> )	1	( <sup>4</sup> )
Plant machinery operations . . . . .	3	1	1	2	10	( <sup>4</sup> )	1	0	( <sup>4</sup> )
Explosions . . . . .	2	0	2	2	4	2	1	0	1
Gas inhalations . . . . .	2	1	3	1	4	1	1	0	1
All other . . . . .	3	4	3	3	4	2	3	( <sup>4</sup> )	3

<sup>1</sup>Cause is defined as the object or event associated with the fatality.

<sup>4</sup>Less than 1 percent.

<sup>2</sup>Excludes coal, metal and nonmetal mining, and railroads for which data are not available.

<sup>3</sup>Excludes railroads.

NOTE: It is impossible to estimate year-to-year changes precisely because at the industry division level sampling errors are large. Therefore, the results are for both years rather than a comparison between them. Because of rounding, percentages may not add to 100.

**Table 3. Distribution of occupational fatalities in establishments in the private sector with 11 employees or more, by industry, 1981-82 average**

[In percent]

Cause <sup>1</sup>	Total <sup>2</sup>	Agriculture, forestry, and fishing	Mining, oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities <sup>3</sup>	Wholesale and retail trade	Finance, insurance, and real estate	Services
Over-the-road motor vehicles . . . . .	100	3	6	10	18	37	11	4	11
Falls . . . . .	100	4	4	47	20	8	6	2	8
Heart attacks . . . . .	100	3	5	16	24	11	18	7	16
Industrial vehicles or equipment	100	12	14	32	23	5	6	0	9
Struck by objects other than vehicles or equipment . . . . .	100	( <sup>4</sup> )	10	16	33	8	31	0	3
Electrocutions . . . . .	100	12	4	34	21	18	3	0	8
Nonaccidental injuries . . . . .	100	2	( <sup>4</sup> )	( <sup>4</sup> )	6	5	63	3	20
Aircraft crashes . . . . .	100	2	9	6	22	32	6	5	19
Caught in, under, or between objects other than vehicles or equipment . . . . .	100	1	4	12	21	30	20	9	3
Fires . . . . .	100	12	15	8	46	14	1	2	2
Plant machinery operations . . . . .	100	1	2	11	78	2	7	0	( <sup>4</sup> )
Explosions . . . . .	100	0	5	14	47	20	8	0	6
Gas inhalation . . . . .	100	2	9	10	48	14	12	0	5
All other . . . . .	100	6	5	18	33	13	16	1	8

<sup>1</sup>Cause is defined as the object or event associated with the fatality.

<sup>2</sup>Excludes coal, metal and nonmetal mining, and railroads for which data are not available.

<sup>3</sup>Excludes railroads.

<sup>4</sup>Less than 1 percent.

NOTE: It is impossible to estimate year-to-year changes precisely because at the industry division level sampling errors are large. Therefore, the results are for both years rather than a comparison between them. Because of rounding, percentages may not add to 100.

more than half of the cases were attributable to accidents involving over-the-road motor vehicles. Employees caught in, under, or between objects other than vehicles or equipment were the cause of 9 percent of the cases.

*Wholesale and retail trade.* Nearly 1 of every 3 fatalities were nonaccidental cases where an employee was intentionally killed on the job. The majority of these cases involved gunshot injuries. Twenty percent of the fatalities were caused by to over-the-road motor vehicle accidents.

*Finance, insurance, and real estate.* Three of every four cases were attributable to over-the-road motor vehicles, heart attacks, or employees caught in, under, or between objects other than vehicles or equipment.

*Services.* The major cause of death was over-the-road motor vehicles, 29 percent of the cases. Heart attacks and nonaccidental injuries accounted for another 31 percent of the cases.

### Background of survey

The Annual Survey of Occupational Injuries and Illnesses is a Federal-State Program in which reports are received and processed by State agencies participating with BLS. The fatality data are based on the records which employers maintain under the Occupational Safety and Health Act of 1970. The survey covers units in private industries. Excluded from coverage under the act are working conditions which are

covered by other Federal safety and health laws, the self-employed, farmers with fewer than 11 employees, private households, and employees in Federal, State, and local government agencies. In a separate reporting system, agencies of the Federal Government file reports comparable with those of private industry with the Secretary of Labor.

The 1982 survey, to which response was mandatory, involved a sample of 280,000 units with 11 or more employees. Estimates based on a sample may differ from figures that would have been obtained if a complete census of establishments had been possible using the same schedules and procedures. Relative standard errors are calculated for estimates generated from the Annual Survey of Occupational Injuries and Illnesses and are available. □

### FOOTNOTE

<sup>1</sup>Since 1977, the fatality data have been published only for units with 11 employees or more because the reductions of the survey samples affected primarily employers with fewer than 11 employees. The reductions were in response to presidential directives on reducing the paperwork burden of employers selected to participate in statistical surveys. Data for occupational fatalities in coal, metal, and nonmetal mining and railroads were provided by the Mine Safety and Health Administration of the U.S. Department of Labor and by the Federal Railroad Administration of the U.S. Department of Transportation; however, data were not provided on the objects or events which resulted in on-the-job deaths for these industrial activities.

For an account of the 1981 survey, see Janet Macon, "Number of occupational deaths remained essentially unchanged in 1981," *Monthly Labor Review*, May 1983, pp 42-44.

## More U.S. workers are college graduates

ANNE MCDUGALL YOUNG AND HOWARD HAYGHE

From now until about the end of the decade, the last of the enormous postwar birth cohort will pass through school and into the adult labor force. Millions more workers will have college degrees, as the anticipated number of bachelors' and higher degrees awarded will continue to exceed a million a year for the rest of the 1980's.<sup>1</sup> Thus, college graduates will continue to represent a growing proportion of the labor force.

Today, nearly 1 in 4 adult workers has completed college. A little more than a decade ago, in 1970, just 1 in 7 had as much formal schooling. During the 13-year interval, the baby-boom generation—now concentrated in the 25- to 34-years age group—went to college in record numbers, and, in most of these years, over a million bachelors' and advanced degrees were awarded annually.<sup>2</sup> This growth, together with the fact that labor force participation rates of college graduates are typically higher than the rates for persons with fewer years of school, generated significant increases in the college-educated work force.<sup>3</sup>

### More college graduates

Between 1970 and 1983, the number of 25- to 64-year-old workers with 4 years or more of college increased by 11.5 million. Almost half of this rise was among 25- to 34-year-olds, with 35- to 44-year-olds accounting for most of the rest. While the proportion of working men ages 25 to 64 with a college degree rose by more than two-thirds over the 1970–83 period, that of women almost doubled. (See table 1.) Along with the increase in the number of graduates, the sharp upward trend in women's labor force participation was a major factor contributing to this rise. From 1970 to 1983, the labor force participation rate increased for all but the oldest group of female college graduates, with that of 25- to 34-year-olds rising the most:

Age	Women		Men	
	1970	1983	1970	1983
25 to 64 years .....	61	77	96	95
25 to 34 years .....	58	82	95	95
35 to 44 years .....	58	76	99	98
45 to 54 years .....	67	73	97	96
55 to 64 years .....	64	56	90	83

In the past, household and child-care responsibilities were among the major reasons for women ages 25 to 34 to stay at home. During the 1970's, inflation and economic need, among other factors, apparently became more compelling

reasons for women in this age cohort to work outside the home. By 1983, not only did fewer married college graduates ages 25 to 34 have preschool children (53 percent versus 68 percent in 1970), but those who did have children under age 6 were far more likely to be in the labor force (61 percent compared with 34 percent in 1970).<sup>4</sup> The labor force participation rate of 55- to 64-year-old college graduates generally paralleled the downward trend for all women in this age group during most of the 1970–83 period.

In contrast to the situation among most women, there has been a decrease in the labor force participation rates of adult men in all educational attainment groups. For male college graduates, however, the rate has slipped by only a percentage point since 1970. This decline was considerably less than for men in other educational attainment categories, and, like that of the other men, it occurred primarily among those in the older age brackets. One result of these contrasting male-female labor force trends has been that women's share of the college-graduate work force increased, from 27 percent in 1970 to 38 percent in 1983.

The ongoing decline in the number of school leavers—workers who have not completed 12 years of formal schooling—is an additional factor behind the growth in college graduates' share of the adult work force. Between March 1970 and 1983, the total number of school leavers in the labor force declined by more than 7 million, mostly because of retirement or death among older workers who have typically completed fewer years of school than younger workers.

### Black and Hispanic workers

Blacks and Hispanics have joined in the general upgrading of the educational attainment of the population in recent years. However, their proportions with college degrees continue to be much lower than that of whites. In 1983, 13 percent of adult black workers and 10 percent of Hispanics were college graduates, compared with 25 percent of whites. Moreover, since 1970, the percentage-point increase for blacks (5 points) and Hispanics (3 points) has been much smaller than for whites (10 points). For both whites and blacks, the proportions of adult workers who were school leavers dropped by about half, while the share for Hispanics declined by one-third. This difference in the size of the decline between Hispanics on the one hand, and whites and blacks on the other, may reflect recent immigration from countries where the propensity to stay in school is not as great as in the United States, and public educational opportunities are not as widely available.<sup>5</sup>

Greater educational attainment was linked with higher labor force participation rates for all race and ethnic groups. However, labor force rates differed significantly for some race and sex groups with the same general level of schooling. Age was sometimes an important factor. For instance, among dropouts in the adult labor force, almost 40 percent of the male Hispanics were 25 to 34 years old, compared

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**Table 1. Labor force status of persons 25 to 64 years old by years of school completed, sex, race, and Hispanic origin, March 1970 and 1983**

[Numbers in thousands]

Labor force status and years of school completed	Total		Men		Women		White		Black		Hispanic origin	
	1970	1983	1970	1983	1970	1983	1970	1983	1970 <sup>1</sup>	1983	1970 <sup>2</sup>	1983
Civilian noninstitutional population	87,983	111,658	42,049	53,862	45,934	57,794	78,576	96,864	9,335	11,739	3,542	6,258
Less than 4 years of high school	34,092	24,633	16,520	11,945	17,572	12,688	28,454	19,677	5,564	4,323	2,328	3,219
High school: 4 years only	33,470	44,815	14,077	19,224	19,393	25,590	31,001	39,516	2,471	4,430	802	1,799
College: 1 to 3 years	9,844	18,996	5,025	9,229	4,819	9,768	9,182	16,755	662	1,756	243	721
4 years or more	10,577	23,213	6,427	13,463	4,150	9,749	9,939	20,914	639	1,230	169	519
Civilian labor force	61,760	83,615	39,302	47,903	22,458	35,712	55,043	72,750	6,724	8,592	2,320	4,378
Less than 4 years of high school	22,288	14,857	14,757	9,303	7,531	5,556	18,537	11,976	3,735	2,525	1,415	1,989
High school: 4 years only	23,508	33,397	13,557	17,404	9,951	15,993	21,613	29,301	1,895	3,459	572	1,378
College: 1 to 3 years	7,261	15,159	4,811	8,459	2,450	6,702	6,728	13,304	535	1,483	191	578
4 years or more	8,703	20,201	6,177	12,738	2,526	7,462	8,145	18,171	559	1,127	142	434
Labor force participation rate	70.2	74.9	93.5	88.9	48.9	61.8	70.0	75.1	72.0	73.2	65.5	70.0
Less than 4 years of high school	65.4	60.3	89.3	77.9	42.9	43.8	65.1	60.9	67.1	58.4	60.8	61.7
High school: 4 years only	70.2	74.5	96.3	90.5	51.3	62.5	69.7	74.1	76.7	78.1	71.3	76.6
College: 1 to 3 years	73.8	79.8	95.6	91.7	50.8	68.6	73.3	79.4	80.8	84.5	78.6	80.2
4 years or more	82.3	87.0	96.3	94.6	60.9	76.5	81.9	86.9	87.5	91.6	84.0	83.6
Unemployed	2,024	7,518	1,121	4,710	904	2,810	1,707	5,835	317	1,440	116	602
Less than 4 years of high school	1,024	2,351	596	150	428	850	830	1,797	196	501	85	350
High school: 4 years only	684	3,347	330	2,069	354	1,277	585	2,606	98	653	22	170
College: 1 to 3 years	206	1,112	129	708	77	405	189	861	18	197	6	55
4 years or more	110	708	65	431	45	277	104	570	5	91	3	27
Unemployment rate	3.3	9.0	2.8	9.8	4.0	7.9	3.1	8.0	4.7	16.8	5.0	13.8
Less than 4 years of high school	4.6	15.8	4.0	16.1	5.7	15.3	4.5	15.0	5.2	19.8	6.0	17.6
High school: 4 years only	2.9	10.0	2.4	11.9	3.6	8.0	2.7	8.9	5.2	18.9	3.8	12.3
College: 1 to 3 years	2.8	7.3	2.7	8.4	3.1	6.0	2.8	6.5	3.4	13.3	3.1	9.5
4 years or more	1.3	3.5	1.1	3.4	1.8	3.7	1.3	3.1	.9	8.1	2.1	6.2

<sup>1</sup>Data refer to black and other workers.

<sup>2</sup>Data are derived from the 1970 census.

NOTE: Detail for the above race and Hispanic-origin groups for 1983 will not sum to totals because data for the "other races" group are not presented and Hispanics are included in both the white and black population groups.

with 25 percent of both whites and blacks. The preponderance of younger workers pushed the labor force participation for Hispanic male dropouts to 87 percent, compared with 79 percent for whites and 72 percent for blacks. (See table 2.)

Black women were much more likely to be in the labor force than white or Hispanic women at every level of schooling, with the difference rising from about 4 percentage points

among dropouts to almost 15 percentage points among college graduates. The persistence of higher labor force rates among black women reflects, in part, financial need in families where the men, on average, have lower earnings than white men at all levels of education.<sup>6</sup> Also, a larger proportion of black families were maintained by women, 42 percent in March 1983, compared with about 13 percent of white families and 23 percent of Hispanic families.<sup>7</sup>

As can be seen, the overall participation rate for Hispanic women was lower than that for either blacks or whites. This is partly because more than half of the Hispanic women in the population had not completed high school, compared with only a fourth of the whites and a third of the blacks. Because labor force participation rates of high school dropouts are typically lower than for other education groups, the concentration of Hispanic women in that category had the effect of decreasing their overall labor force rate. Also, relatively more Hispanic than white or black women had children under age 6, whose presence tends to inhibit mothers' labor force participation.

### New occupational classification

The occupational classification system used since the 1970 decennial census has now been replaced by one that links occupational titles more closely to job function. Beginning in January 1983, the four traditional summary groups (white-

**Table 2. Labor force participation rates of persons 25 to 64 years old by years of school completed, sex, and race, March 1983**

[Percent]

Years of school completed and sex	White	Black	Hispanic origin
<b>MEN</b>			
Total	89.8	81.7	90.4
Less than 4 years of high school	79.3	71.5	86.5
High school: 4 years only	91.0	86.5	93.7
College: 1 to 3 years	92.1	87.6	95.4
4 years or more	94.7	93.4	93.8
<b>WOMEN</b>			
Total	61.1	66.4	52.2
Less than 4 years of high school	42.9	47.3	41.8
High school: 4 years only	61.4	71.9	62.0
College: 1 to 3 years	67.2	81.9	64.6
4 years or more	75.6	90.1	72.7

**Table 3. Employed civilians 25 to 64 years old by years of school completed, race, Hispanic origin, and occupation, March 1983**

[Percent distribution]

Years of school completed, race, and Hispanic origin	Employed		Executive, administrative and managerial	Professional specialty	Technical, sales, and administrative support	Service occupations	Precision production, craft, and repair	Operators, fabricators, and laborers	Farming, forestry, and fishing
	Number (in thousands)	Percent							
Total .....	76,097	100.00	12.6	15.1	30.2	11.3	12.7	15.3	3.0
Less than 4 years of high school									
Total .....	12,505	100.0	4.1	1.2	13.4	20.6	19.1	34.9	6.6
White .....	10,179	100.0	4.6	1.3	14.4	17.6	21.2	34.3	6.6
Black .....	2,023	100.0	1.4	.9	9.4	33.7	8.9	38.6	7.2
Hispanic origin .....	1,639	100.0	2.2	.9	9.9	23.2	16.5	38.7	8.5
High School: 4 years only									
Total .....	30,051	100.0	8.7	3.1	36.9	13.1	16.4	18.8	3.0
White .....	26,694	100.0	9.1	3.1	38.1	11.9	17.0	17.7	3.2
Black .....	2,805	100.0	4.7	3.0	27.5	24.2	10.8	28.8	1.1
Hispanic origin .....	1,208	100.0	7.5	1.6	34.7	15.1	15.1	23.9	2.2
College: 1 to 3 years									
Total .....	14,047	100.0	14.3	11.4	41.3	9.7	12.2	9.0	2.1
White .....	12,446	100.0	15.0	11.8	41.4	9.0	12.3	8.2	2.2
Black .....	1,287	100.0	8.9	8.5	41.7	14.9	10.1	15.3	.6
Hispanic origin .....	523	100.0	13.0	7.8	42.6	9.4	12.2	14.3	.4
College: 4 years or more									
Total .....	19,492	100.0	22.8	45.0	22.7	3.5	3.1	1.8	1.1
White .....	17,599	100.0	23.3	45.2	22.2	3.3	3.1	1.6	1.2
Black .....	1,035	100.0	18.7	45.6	21.9	6.1	3.1	4.4	.1
Hispanic origin .....	407	100.0	21.4	42.0	19.2	9.1	4.9	2.5	1.2

collar, blue-collar, service, and farm) into which Current Population Survey (CPS) occupational data were divided, were replaced by the system of six major groups—identified in table 3—that was used for 1980 census data. Many of the new occupational categories are different from the old ones, and the introduction of the new system in 1983 breaks the continuity somewhat of CPS occupational data series.<sup>8</sup>

However, the data based on the new classification system continue to confirm the well-known fact that educational attainment is one of the most important determinants of occupation. In March 1983 the largest proportion of school dropouts of all races were operators, fabricators, and laborers. High school graduates were concentrated in the technical, sales, and administrative support category, with a large proportion also working as operators, fabricators, and laborers. Among workers who had attended but not graduated from college, most were in occupations similar to those of high school graduates. But of those with 4 years of college or more, 3 out of 5 were in managerial and professional specialty occupations.

FROM A NATIONAL STANDPOINT, a better trained work force is highly desirable. However, with respect to the college educated, the growth in the number of adult workers with degrees carries with it the possibility of an uncertain future for many young college graduates. This is because the greatest increase in the number of jobs over the decade to come is projected for such occupations as janitors, sales clerks, secretaries, and so forth.<sup>9</sup> Thus, the potential exists for a growing mismatch between actual educational levels and

those required for occupations with the greatest anticipated growth.<sup>10</sup> In other words, many college graduates—perhaps 20 percent—will not be able to get jobs requiring a college degree, continuing the situation that has prevailed in recent years. Such mismatches could seriously affect the lives of many young workers and their families for years to come. □

—FOOTNOTES—

<sup>1</sup>Martin M. Frankel and Debra E. Gerald, *Projections of Education Statistics to 1990-91*, Vol. 1 (National Center for Education Statistics, 1983).

<sup>2</sup>Ibid.

<sup>3</sup>Data in this report are based on tabulations from the March 1983 Current Population Survey (CPS), conducted for the Bureau of Labor Statistics by the Bureau of the Census. The data relate to persons 25 to 64 years old, unless otherwise specified. Because these estimates are based on a sample, they may differ from those obtained if a complete census were conducted. Sampling variability may be relatively large in cases where the estimates are small. Small estimates, or small differences between estimates, should be interpreted with caution. This report is the latest in a series on this subject. The most recent was Anne McDougall Young, "Recent trends in higher education and labor force activity," *Monthly Labor Review*, February 1983, pp. 39-41. A research summary, "Educational attainment of workers, March 1981," detailed tables for March 1981, and summary educational attainment tables for 1980 revised to the 1980 Census base are included in *Educational Attainment of Workers, March 1981*, Bulletin 2159 (Bureau of Labor Statistics, January 1983).

<sup>4</sup>Unpublished tables from the March supplement to the Current Population Survey (Bureau of Labor Statistics).

<sup>5</sup>George H. Brown, Nan L. Rosen, and Susan T. Hill, *Conditions of Education for Hispanic Americans* (National Center for Education Statistics, February 1980).

<sup>6</sup>"Money Income of Households, Families, and Persons in the United States: 1981, *Current Population Reports*, Series P-60, No. 137 (Bureau of the Census, 1983), table 47.

<sup>7</sup>See Beverly L. Johnson and Elizabeth Waldman, "Most women who head families receive poor job market returns," *Monthly Labor Review*, December 1983, pp. 30-34.

<sup>8</sup>See Gloria Peterson Green and others, "Revisions in the Current Population Survey Beginning in January 1983," *Employment and Earnings*, February 1983, pp. 7-15; and John E. Bregger, "Labor Force Data from CPS to Undergo Revision in January 1983," *Monthly Labor Review*, November 1982, pp. 3-6.

<sup>9</sup>See George T. Silvestri, John M. Lukasiewicz, and Marcus E. Einstein, "Occupational employment projections through 1995," *Monthly Labor Review*, November 1983, pp. 37-49.

<sup>10</sup>See *Occupational Projections and Training Data*, Bulletin 2202 (Bureau of Labor Statistics, 1982), pp. 10 and 11.

## Pay in Mountain region coal mines outstrips national average

NORMA W. CARLSON

Coal miners in the Mountain States<sup>1</sup> averaged \$13.28 an hour in July 1982, according to an occupational wage survey by the Bureau of Labor Statistics. (See table 1.) This was 12 percent above the national average for bituminous coal mining and translated into a regional pay advantage of 2 percent in underground mines and 24 percent in surface mines.

At the time of the survey, mining in the Mountain States employed some 15,000 production workers, double the number recorded in an earlier survey conducted in January 1976. A preponderance of these workers were in mines with at least 250 employees, and most were unionized. The region's nonunion workers, however, averaged as much or more than their unionized counterparts, particularly among the 7,725 workers employed in underground mines.

Historically, six States—Illinois, Kentucky, Ohio, Pennsylvania, Virginia, and West Virginia—have accounted for the bulk of the work force in bituminous coal mining. Despite rapid growth in the Mountain States in recent years, these six States still accounted for nearly 80 percent of the Nation's soft coal employment in July 1982; in the 1976 survey, the proportion was 85 percent.

*National pay levels.* Nationwide, straight-time earnings of bituminous coal miners averaged \$11.83 an hour in July 1982, up from \$6.94 in January 1976. This represented a 70-percent increase over the 6½ years since the previous survey<sup>2</sup>, or an average annual rise of 8.5 percent. By comparison, the Bureau's Employment Cost Index for all private nonagricultural workers rose 61 percent, or approximately

7.7 percent a year, between the first quarter of 1976 and the second quarter of 1982.

Workers in underground mines, nearly seven-tenths of the 158,803 workers covered by the 1982 survey, averaged \$11.92 an hour—2 percent more than the \$11.65 recorded in surface mines. (See table 1.) This pay relationship, however, was mixed among sections of the country. For example, average earnings of underground-mine workers in Pennsylvania and Kentucky exceeded those of surface-mine workers by 20 percent and 11 percent, respectively. But surface miners held a pay advantage averaging 19 percent in the Mountain States and 4 percent in Illinois.

*Earnings distributions narrow.* Earnings of individual workers in bituminous coal mines continued to be concentrated within relatively narrow ranges. The middle 50 percent of the production work force earned between \$11.36 and \$12.43 an hour in underground mines, and between \$10.37 and \$13.15 an hour in surface mines. The industry's pay systems contribute to this heavy concentration of earnings, as virtually all workers are under formal plans providing single rates for specific groups of occupations. Moreover, the custom of granting wage changes on a uniform cents-per-hour basis has shrunk the industry's wage structure in relative terms.

Pay schedules from the pattern-setting contract between the United Mine Workers of America (UMWA) and the Bituminous Coal Operators' Association (BCOA) illustrate the single-rate arrangements for job groups as well as the effect of uniform cents-per-hour increases (table 2). As of June 7, 1982, mining jobs in both branches of the industry were grouped into five pay grades, with rates ranging from \$11.348 to \$12.415 in underground mines, and from \$11.796 to \$13.178 in surface mines.

A comparison of the June 7, 1982, rates with those in effect June 12, 1976, illustrates the pay compression effects of uniform cents-per-hour increases. Pay differences between grades 1 and 5 over this period declined from 15.7 percent to 9.4 percent in underground mines and from 19.0 percent to 11.7 percent in surface mines, while dollar differences among grades remained unchanged. A look at the wage terms of the two most recent UMWA-BCOA agreements shows why this is so.

The March 1978 agreement provided for an immediate \$1-an-hour general wage increase and a 28-cents-per-hour cost-of-living adjustment, plus increases of 70 cents each in March 1979 and March 1980. The 3-year agreement negotiated in 1981 provided for general wage increases of \$1.20 an hour in June 1981, 50 cents in June 1982, and 40 cents in June 1983, plus nine quarterly increases consisting of 15 cents in June 1982 and each quarter thereafter to March 1984, plus a final 30 cents in June 1984.

*Union-nonunion pay.* Union members accounted for nearly four-fifths of the industry's production work force. They

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averaged 5 percent more than nonunion workers in underground mines (\$11.96 versus \$11.58 an hour) and 26 percent more in surface mines (\$12.78 versus \$10.16). A notable exception to this pattern were the underground mines of the Mountain States, where UMWA contracts covered seven-tenths of the production workers<sup>3</sup>. In these mines, nonunion workers averaged 7 percent more than the union average of \$11.91 an hour.

The UMWA represented more than 90 percent of the union workers in the industry, or seven-tenths of the production work force. The Operating Engineers and the Progressive

Mine Workers Union together accounted for most of the other union workers. According to the survey, contracts with these unions are limited to surface mines, principally in the Mountain States.

*Occupational pay in 1982.* A wide variety of jobs characterizes underground mining, which involves a series of coordinated steps from extracting the coal to moving it above ground to haulage points. Thirty-nine occupations, accounting for two-thirds of the work force, were studied separately to represent these activities and the wage structure in un-

**Table 1. Number of workers and average straight-time hourly earnings<sup>1</sup> in bituminous coal mining by selected characteristics, United States and selected coal centers, July 1982**

Characteristics	United States <sup>2</sup>		Alabama		Illinois		Kentucky <sup>3</sup>		East Kentucky		West Kentucky	
	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings
Total .....	158,803	\$11.83	8,749	\$11.83	13,291	\$12.04	25,627	\$11.58	18,419	\$11.49	—	—
<b>Underground mines</b>												
All workers .....	110,080	11.92	5,881	11.81	9,396	11.89	17,786	11.94	13,245	11.95	—	—
Size of mine:												
Fewer than 250 workers .....	37,849	11.89	—	—	—	—	10,010	11.92	9,414	11.92	—	—
250-499 workers .....	36,766	11.95	—	—	3,963	11.87	4,529	12.01	3,035	12.07	—	—
500 workers or more .....	35,465	11.91	—	—	4,684	11.91	—	—	—	—	—	—
Labor-management contracts:												
Establishments with—												
Majority of workers covered .....	98,000	11.96	5,881	11.81	9,396	11.89	13,232	12.15	9,154	12.27	—	—
None or minority of workers covered .....	12,080	11.58	—	—	—	—	4,554	11.32	4,091	11.25	—	—
<b>Surface mines</b>												
All workers .....	48,723	11.65	2,868	11.88	3,895	12.41	7,841	10.75	5,174	10.30	2,667	11.63
Size of mine:												
Fewer than 100 workers .....	20,757	10.12	1,454	11.31	148	12.22	3,724	9.63	2,845	9.50	879	10.03
100-249 workers .....	10,012	12.68	—	—	1,127	12.37	1,764	11.81	681	10.82	1,083	12.44
250 workers or more .....	17,954	12.85	—	—	2,620	12.44	2,353	11.73	1,648	11.45	—	—
Labor-management contracts:												
Establishments with—												
Majority of workers covered .....	27,672	12.78	1,953	12.49	3,873	12.43	3,164	12.21	1,172	11.84	1,992	12.42
None or minority of workers covered .....	21,051	10.16	915	10.58	—	—	4,677	9.77	4,002	9.85	675	9.30
			<b>Ohio</b>		<b>Pennsylvania</b>		<b>Virginia</b>		<b>West Virginia</b>		<b>Mountain States<sup>4</sup></b>	
Total .....			17,084	\$11.63	21,131	\$11.39	8,646	\$11.18	38,217	\$12.05	15,302	\$13.28
<b>Underground mines</b>												
All workers .....			—	—	14,792	11.99	7,589	11.59	32,955	12.01	7,725	12.15
Size of mine:												
Fewer than 250 workers .....			—	—	3,444	11.93	4,727	11.42	14,738	12.08	2,838	12.31
250-499 workers .....			—	—	6,069	11.94	2,428	11.86	10,755	12.03	4,285	12.09
500 workers or more .....			—	—	5,279	12.07	—	—	7,462	11.85	—	—
Labor-management contracts:												
Establishments with—												
Majority of workers covered .....			—	—	14,484	12.00	6,054	11.88	30,201	11.99	5,596	11.91
None or minority of workers covered .....			—	—	—	—	1,535	10.43	—	—	2,129	12.77
<b>Surface mines</b>												
All workers .....			4,130	10.97	6,339	10.01	—	—	5,262	12.28	7,577	14.44
Size of mine:												
Fewer than 100 workers .....			2,212	9.93	3,840	9.18	—	—	3,499	12.16	782	13.54
100-249 workers .....			1,214	12.06	1,392	10.93	—	—	1,488	12.52	2,156	14.51
250 workers or more .....			—	—	1,107	11.71	—	—	—	—	4,639	14.55
Labor-management contracts:												
Establishments with—												
Majority of workers covered .....			2,395	12.14	990	11.71	—	—	4,529	12.49	4,649	14.36
None or minority of workers covered .....			1,735	9.35	5,349	9.69	—	—	733	10.96	2,928	14.56

<sup>1</sup>Earnings exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Workers refer to production and related employees.

<sup>2</sup>Includes data for coal centers in addition to those shown separately.

<sup>3</sup>Includes data for both East and West Kentucky.

<sup>4</sup>Mountain States include Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming.

NOTE: Dashes indicate that no data were reported or that data did not meet publication criteria.

**Table 2. Wage rates<sup>1</sup> established under contract between Bituminous Coal Mine Operators and United Mine Workers of America, selected years**

Labor grade	Effective date		
	June 12, 1976	March 27, 1979	June 7, 1982
<b>Underground workers in deep mines</b>			
Labor grade:			
1 .....	\$6.817	\$ 8.798	\$11.348
2 .....	6.890	8.870	11.420
3 .....	7.112	9.093	11.643
4 .....	7.480	9.460	12.010
5 .....	7.885	9.865	12.415
High/low difference:			
Dollars .....	1.068	1.067	1.067
Percent .....	15.7	12.1	9.4
<b>Surface workers in strip and auger mines</b>			
Labor grade:			
1 .....	\$7.265	\$ 9.245	\$11.796
2 .....	7.346	9.326	11.877
3 .....	7.632	9.612	12.163
4 .....	7.996	9.976	12.527
5 .....	8.647	10.627	13.178
High/low difference:			
Dollars .....	1.382	1.382	1.382
Percent .....	19.0	14.9	11.7
<b>Workers at surface facilities for deep or surface mines</b>			
Labor grade:			
1 .....	\$7.226	\$ 9.206	\$11.757
2 .....	7.306	9.286	11.837
3 .....	7.589	9.569	12.120
4 .....	7.833	9.813	12.364
High/low difference:			
Dollars .....	.607	.607	.607
Percent .....	8.4	6.6	5.2

<sup>1</sup>Rates refer to base pay, including any cost-of-living adjustments and general wage increases granted up through the effective date indicated.

SOURCE: BLS Wage Chronology: Bituminous Coal Mine Operators and United Mine Workers, 1933-81, Bulletin 2062 (Bureau of Labor Statistics, 1980), pp. 25-26.

derground mining. Average hourly earnings among these jobs ranged from \$12.48 for continuous mining machine operators and longwall operators to \$11.31 for boom conveyor operators. Roof bolters, the most populous group, averaged \$12.41. In addition to continuous mining machine operator, occupational categories with at least 4,000 workers included underground maintenance mechanic (\$12.47), underground maintenance electrician (\$12.46), shuttle car operator (\$11.72), and conveyor belt cleaner (\$11.39).

The majority of workers in surface mines are operators of heavy earth-moving equipment—bulldozers and power shovels—and maintenance mechanics. Wage data were collected for 16 jobs which accounted for three-fourths of the work force. Earnings averaged from \$13.73 an hour for maintenance electricians to \$6.95 for slate pickers (found at smaller sites). Bulldozer operators and truckdrivers, the two most populous groups in surface mines, averaged \$11.60 and \$11.32 per hour. Other numerically important occupations (with at least 1,000 workers) included electrician (\$13.73), maintenance welder (\$12.82), maintenance mechanic (\$12.50), power shovel operator (\$11.95), shot firer (\$11.88), oiler and greaser (\$11.42), and machine driller (\$11.29).

*Employee benefits in 1982.* Nearly all workers in underground mining received paid holidays, usually 11 days annually—the number provided under the UMWA-BCOA national wage agreement of June 1981. Paid holiday provisions applied to more than nine-tenths of the surface-mine workers, with just over one-half receiving 11 days. Less liberal holiday provisions typically applied to workers in both branches of bituminous coal mining in East Kentucky and to surface-mine workers in Pennsylvania. The Mountain States had the largest proportions of workers in establishments providing 12 holidays per year—at least one-fourth in each branch.

Virtually all production and related workers in both segments of the bituminous coal mining industry were in establishments providing paid vacations after qualifying periods of service. Under the UMWA-BCOA agreement, workers with at least 1 year of service receive an annual vacation package consisting of 14 consecutive days off with 12 days' pay, 4 floating vacation days, and 5 personal leave days. Workers also are eligible for graduated (additional) vacation days ranging from 1 day after 6 years of service to 13 days after 18 years. Under the agreement, workers with less than 1 year of service receive a total of 6 days of paid vacation annually.

For surveyed workers who were not covered by UMWA provisions, vacation provisions were typically 1 or 2 weeks of vacation pay after 1 year of service, and at least 3 weeks after 10 years of service.

Almost all workers in underground and surface mines were in establishments providing hospitalization, surgical, basic medical, and major medical insurance. At least four-fifths of the workers were in surface mines providing life, accidental death and dismemberment, and dental insurance; these three benefits, however, were more prevalent among workers in underground mines.

In underground mines, employer-financed pension plans were maintained for 95 percent of the workers. In surface mining operations, pension plans covered approximately four-fifths of the workers, but not all plans were fully funded by the employer.

Pensions are provided for UMWA miners who retired before December 1974 under a 1950 Pension Plan and Trust; for those who retired or who will retire after December 1974, pensions are administered under the 1974 Pension Plan and Trust. Both plans are funded by mine operators in accordance with provisions set forth in the collective bargaining agreement.

A COMPREHENSIVE REPORT on the 1982 survey, *Industry Wage Survey: Bituminous Coal, July 1982*, Bulletin 2185 (Bureau of Labor Statistics, 1983) is for sale by the Superintendent of Documents, Government Printing Office Washington, D.C. 20402. The report provides additional information on occupational earnings and employee benefits. Price, \$2.50. □

## FOOTNOTES

<sup>1</sup>The Mountain States include Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming.

<sup>2</sup>For details of both studies, see *Industry Wage Survey: Bituminous Coal, July 1982*, Bulletin 2185, and *Industry Wage Survey: Bituminous Coal, January 1976—March 1981*, Bulletin 1999 (Bureau of Labor Statistics). Each survey covered establishments employing 10 workers or more which were classified in Industry Group 1211, as defined in the 1972 edition of the *Standard Industrial Classification Manual* prepared by the U.S. Office of Management and Budget. Included were underground, strip, and auger mines, and coal cleaning, crushing, screening, and sizing plants operated in conjunction with the mine served. Separate auxiliary units such as central offices were excluded, as were establishments limited to coal cleaning and/or preparation.

Wage data reported in this article exclude premium pay for overtime and for work on weekends, holidays, and late shifts. The coal centers studied separately were Alabama, Illinois, Kentucky, East Kentucky, West Kentucky, Ohio, Pennsylvania, Virginia, West Virginia, and the Mountain States.

<sup>3</sup>For reports on union activity in the soft coal industry in Western States, see Everett M. Kassalow, "Labor-Management Relations and the Coal Industry," *Monthly Labor Review*, May 1979, pp. 23-27; William H. Miernyk, "Coal," in Gerald G. Somers, ed., *Collective Bargaining: Contemporary American Experience* (Madison, Wis., Industrial Relations Research Association, 1980), pp. 1-48; and Susan Carey, "UMW Organizing Bids Are Blunted by Aggressive Nonunion Operators," *Wall Street Journal*, Aug. 3, 1983, section 2, p. 21.

## Wages in the paper industries among highest in manufacturing

DAVID LARSON

Average hourly earnings of production workers in pulp, paper, and paperboard mills are among the highest found in manufacturing industries covered by the Bureau's industry wage survey program.<sup>1</sup> Straight-time earnings of the 134,113 production workers in the three industries averaged \$10.22 an hour in July 1982.<sup>2</sup> Among the individual industries, average pay levels were \$11.59 an hour in separate pulp mills, \$10.30 in paperboard mills, and \$10.10 in paper mills. Contributing to the relatively high wages paid in these industries are the many skilled workers in both production and maintenance occupations. Also, nearly all production workers (96 percent) were employed in mills operating under labor-management agreements. Agreements with the United Paperworkers International Union (AFL-CIO) were predominant, with the exception of mills in the Pacific States. There, employees were represented by the independent Western Pulp and Paper Workers Union.

Average hourly earnings in July 1982 were 56 percent above the \$6.54 level recorded in a similar survey conducted in the summer of 1977—a 9.3-percent annual rate of increase.<sup>3</sup> By comparison, the wage and salary component of the Bureau's Employment Cost Index for nondurable goods

manufacturing rose 46 percent (7.9 percent a year) from the second quarter of 1977 to the second quarter of 1982.

For the six regions studied separately, average hourly earnings in July 1982 ranged from \$12.43 in the Pacific States to \$8.92 in the Middle Atlantic region. Pay in the Southeast, where three-tenths of the production workers were employed, averaged \$10.53. Production worker employment in the Great Lakes area accounted for about one-fourth of the total while one-tenth each were found in New England, the Middle Atlantic States, the Southwest, and the Pacific States.

About three-eighths of the workers were located in metropolitan areas<sup>4</sup> in July 1982. On a regional basis, the proportion ranged from 85 percent in the Middle Atlantic States to 26 percent in New England. Nearly nine-tenths of the workers were employed in mills with 250 employees or more, and nearly one-half were in establishments with 1,000 workers or more.

Forty-nine occupations containing approximately one-half of the production work force, were selected as representative of the industries' wage structures and manufacturing activities. Average hourly earnings in these jobs ranged from \$13.14 for general maintenance mechanics to \$8.45 for janitors. (See table 1 for information on 23 of the 49 survey occupations.) Pulp and paper millwrights, numerically the largest survey occupation with 6,015 employees, averaged \$11.82. Averages of \$11.74 or more were also attained by other skilled maintenance workers including machinists, electricians, and pipefitters.

With relatively few exceptions, production workers were paid time rates, under formal plans providing single rates for individual occupations. As a result, hourly earnings for specific categories usually clustered within relatively narrow ranges. Also contributing to the high degree of wage concentration was the predominance of labor-management agreements.

Wage rates within overall job categories varied by processes used in pulp making, grade of paper, or paperboard produced, and size and speed of the machine used in making the product. For example, workers using the *sulphite* process to make pulp generally had earnings higher than those working with the *sulphate* process. Many of the machine room pay levels were higher as the machine wire width increased from 100 inches to 301 inches or more.

In July 1982, the most common form of work schedule was rotating shifts, affecting seven-tenths of the production workers. Workers typically alternated among day, evening, and night shifts, changing shifts every 7 days. Workers on evening and night shifts almost always received cents-per-hour differentials over day-shift work, typically between 10 and 20 cents on evening shifts and between 20 and 30 cents on night shifts. Day-shift work schedules of 42 hours per week were found in mills employing slightly less than one-half of the production workers. Schedules of 40 hours applied in mills with just over one-third of the workers, while

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**Table 1. Number of production workers and average hourly earnings<sup>1</sup> in pulp, paper, and paperboard mills, by selected characteristics, United States and selected regions,<sup>2</sup> July 1982**

Characteristic	United States <sup>3</sup>		New England		Middle Atlantic		Southeast		Southwest		Great Lakes		Pacific	
	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings
All production workers <sup>4</sup> . . . . .	134,113	\$10.22	17,831	\$ 9.18	11,691	\$ 8.92	39,802	\$10.53	14,264	\$10.87	31,358	\$ 9.42	14,944	\$12.43
Type of mill: <sup>5</sup>														
Pulp mills . . . . .	6,251	11.59	—	—	—	—	3,829	11.19	—	—	—	—	1,612	12.65
Paper mills . . . . .	94,637	10.10	16,682	9.22	10,516	9.03	19,259	10.69	8,444	10.95	27,654	9.52	9,709	12.32
Paperboard mills . . . . .	33,225	10.30	913	8.09	1,175	7.96	16,714	10.20	5,407	10.67	3,704	8.73	3,623	12.60
Size of community:														
Metropolitan areas <sup>6</sup> . . . . .	49,768	9.95	5,156	8.51	9,633	9.02	12,937	10.32	6,250	10.59	9,594	9.34	4,494	12.19
Nonmetropolitan areas . . . . .	84,345	10.38	12,675	9.45	2,058	8.43	26,865	10.64	8,014	11.08	21,764	9.46	10,450	12.53
Size of mill:														
100 to 249 workers . . . . .	14,694	8.40	3,889	8.12	2,108	7.67	1,760	7.90	702	7.47	4,071	8.11	1,553	12.03
250 to 999 workers . . . . .	58,045	10.45	5,107	8.98	6,702	8.98	15,843	10.68	5,869	11.34	13,602	9.37	8,703	12.46
1,000 workers or more . . . . .	61,374	10.45	8,835	9.76	2,881	9.68	22,199	10.63	7,693	10.81	13,685	9.86	4,688	12.50
<b>Pulp</b>														
Woodyard and wood preparation:														
Crane operators . . . . .	910	11.31	67	9.99	38	9.31	494	11.62	145	11.70	91	10.35	44	12.18
Pulp making:														
Cooks, batch digester . . . . .	414	12.51	17	9.72	15	9.44	207	12.38	46	13.70	33	11.33	76	13.76
Grinder operators . . . . .	404	9.93	—	—	—	—	88	10.74	—	—	64	9.25	—	—
Bleach-plant operators . . . . .	537	11.51	48	9.37	43	9.60	174	12.14	48	12.74	115	9.70	80	13.69
Pulp testers . . . . .	718	9.51	104	8.78	58	8.81	251	9.30	82	9.60	139	9.58	62	11.39
<b>Paper and paperboard</b>														
Stock preparation:														
Head stock preparers, group I . . . . .	667	10.83	106	10.44	54	9.21	190	11.40	54	10.59	182	9.61	77	13.91
Head stock preparers, group II . . . . .	941	10.05	166	9.35	143	8.89	114	10.83	46	11.73	350	9.64	84	12.56
Beater-operator helpers . . . . .	1,447	9.25	279	8.41	216	8.32	257	9.95	109	9.85	374	8.71	145	11.70
Hydrapulper operators . . . . .	1,518	8.79	216	8.01	116	8.36	148	8.21	81	7.78	707	8.67	212	11.20
Machine room:														
Paper-machine tenders . . . . .	3,595	11.81	605	10.36	467	10.00	622	12.96	268	13.60	1,132	10.69	411	15.79
Backtenders . . . . .	3,555	10.88	627	9.49	462	9.42	621	11.92	257	12.42	1,091	9.91	407	14.43
Third jands . . . . .	3,316	10.16	489	9.36	414	8.70	564	11.42	263	11.16	1,100	9.24	389	12.76
Fourth hands . . . . .	2,996	9.49	428	8.89	357	8.37	532	10.17	251	10.03	997	8.88	349	11.64
Finishing, roll:														
Rewinder operators . . . . .	1,714	9.40	230	9.45	249	8.29	240	9.19	64	10.08	706	9.29	165	11.32
Rewinder helpers . . . . .	1,111	8.85	211	8.82	209	7.87	120	8.53	41	9.19	439	9.15	52	10.40
Laboratory:														
Paper testers . . . . .	2,055	9.45	220	8.49	242	8.52	536	9.61	190	9.79	640	9.19	172	11.70
<b>Miscellaneous<sup>7</sup></b>														
Janitors, porters, or cleaners . . . . .	1,570	8.45	203	7.86	186	8.00	450	8.31	112	8.19	455	8.53	136	10.34
Maintenance electricians . . . . .	3,606	12.00	563	10.82	255	10.34	1,042	12.30	227	12.94	843	10.63	544	14.67
Maintenance mechanics, general . . . . .	5,635	13.14	389	9.24	336	9.43	2,693	13.81	1,241	14.37	327	10.42	285	14.70
Maintenance machinists . . . . .	1,360	11.74	219	10.80	186	10.40	390	12.07	71	12.71	297	10.81	167	14.70
Maintenance pipefitters . . . . .	3,066	11.87	492	10.69	231	9.97	949	12.09	217	12.61	641	10.57	479	14.68
Millwrights, pulp and paper . . . . .	6,015	11.82	950	10.84	362	9.96	1,726	12.25	281	12.03	1,533	10.45	999	14.52
Power-truck operators . . . . .	5,716	9.19	607	8.32	734	8.43	1,100	9.11	436	9.53	2,086	9.02	562	11.38

<sup>1</sup>Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

<sup>2</sup>The regions used in this study include **New England**—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; **Middle Atlantic**—New Jersey, New York, and Pennsylvania; **Border States**—Delaware, District of Columbia, Kentucky, Maryland, and West Virginia; **Southeast**—Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Texas; **Great Lakes**—Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin; **Middle West**—Iowa, Kansas, Missouri, Nebraska, North Dakota, and South Dakota; **Mountain**—Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming; and **Pacific**—California, Nevada, Oregon, and Washington. Alaska and Hawaii were not included in the study.

<sup>3</sup>Includes data for regions in addition to those shown separately.

<sup>4</sup>Includes data for approximately 16,000 workers in converted paper product departments of paper and paperboard mills.

<sup>5</sup>Data for pulp mills are limited to workers in separate pulp making establishments; data for paper and paperboard mills include workers in pulp making departments of these mills.

<sup>6</sup>Standard metropolitan statistical areas as defined by the U.S. Office of Management and Budget through February 1974.

<sup>7</sup>Includes workers in all departments, including converted paper products departments of paper and paperboard mills.

NOTE: Dashes indicate that no data were reported or that data did not meet publication criteria.

the remaining mills had longer day-shift schedules, usually 48 hours.

Nearly all workers were in mills providing paid holidays, paid vacations, and at least part of the cost of life, sickness and accident, hospitalization, surgical, and basic and major medical insurance, and retirement pension plans. Workers generally received 11 to 13 paid holidays annually, as well as from 1 to 6 weeks of vacation pay, depending on length of service. A large majority of workers were also eligible for dental insurance and paid funeral and jury-duty leave. Two-fifths could receive technological severance pay.

A comprehensive report on the survey providing additional data on occupational earnings and employee benefits, *Industry Wage Survey: Pulp, Paper, and Paperboard Mills, July 1982* (Bulletin 2180) is for sale by the Bureau's regional offices and the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Price, \$4.50. □

—FOOTNOTES—

<sup>1</sup>Of 34 industry groupings studied regularly, average hourly earnings in pulp, paper, and paperboard mills ranked seventh highest in July 1982, according to data from the Bureau's employment and earnings series. Industry groupings with higher average hourly earnings were petroleum refining, basic iron and steel, motor vehicles, cigarettes, industrial chemicals, and motor vehicle parts.

<sup>2</sup>The survey excluded establishments employing fewer than 100 workers. Earnings data exclude premium pay for overtime and for work on weekends, holidays, and late shifts. The 364 mills within the scope of the survey employed 150,200 production workers in July 1982, including 16,087 in converted paper products departments of paper and paperboard mills. The basic survey tabulations do not include separate data for workers in these departments.

<sup>3</sup>For an account of the earlier study, see *Industry Wage Survey: Pulp, Paper, and Paperboard Mills, Summer 1977*, BLS Bulletin 2008; and for a summary, see "Occupational pay and benefits in the papermaking industries," *Monthly Labor Review*, May 1979, pp. 46-47.

<sup>4</sup>Standard metropolitan statistical areas as defined by the U.S. Office of Management and Budget through February 1974.

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### Special jobs, special problems

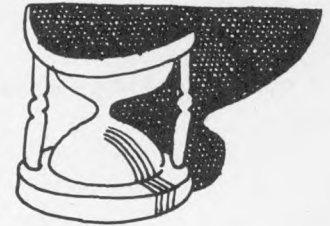
It is obvious that excessive hours create far more serious problems for people in arduous or dangerous occupations, and for special categories of workers such as young persons and pregnant women, than for other workers. For this reason, it would seem that to demand, say, a 30-hour week for all—and the demand is not a pure invention—is perhaps to miss the point that something should be done urgently for those who most need relief, and for whom a real working week of 40 hours would seem like paradise. Nor should the needs of workers outside industry be overlooked. Some of the worst examples of overwork are to be found in hotels, restaurants, shops, offices, and small workshops, not to mention agriculture, where conditions can be worse than in any factory.

—INTERNATIONAL LABOR ORGANIZATION  
*Working Conditions and Environment:  
 A Workers' Education Manual*  
 (Washington, International Labor  
 Organization, 1983), p. 24.

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# Major Agreements Expiring Next Month



This list of selected collective bargaining agreements expiring in April is based on contracts on file in the Bureau's Office of Wages and Industrial Relations. The list includes agreements covering 1,000 workers or more.

Employer and location	Industry	Labor organization <sup>1</sup>	Number of workers
American Can Co. (Interstate)	Fabricated metal products	Machinists	2,100
Associated General Contractors of America: Baton Rouge Chapter, 3 agreements (Louisiana)	Construction	Laborers; Carpenters; and Operating Engineers	8,000
Colorado Building Chapter and others, 2 agreements	Construction	Operating Engineers and Laborers	11,000
Colorado Building Chapter	Construction	Carpenters	5,000
Minnesota Chapter, 8 agreements	Construction	Bricklayers; Carpenters; Laborers; Iron Workers; Operating Engineers; and Teamsters (Ind.)	23,200
New Orleans Chapter (Louisiana)	Construction	Bricklayers; Carpenters; Cement Masons; Iron Workers; Laborers; Operating Engineers; and Teamsters (Ind.)	11,000
Associated Mechanical Contractors of Chattanooga, Inc. (Interstate)	Construction	Plumbers	1,450
Builders Exchange of Rochester, N.Y., Inc. (New York)	Construction	Laborers	1,800
Building Construction Agreement (Colorado) <sup>2</sup>	Construction	Teamsters (Ind.)	1,500
Buildings Trades Employers Association of Westchester and Putnam Counties, N.Y., Inc. (New York)	Construction	Carpenters	3,000
Boise Cascade Corp. (International Falls, Minn.)	Paper	Woodworkers	1,000
Buckeye International, Inc., Buckeye Steel Castings Co. (Ohio)	Primary metals	Steelworkers	1,350
California Conference of Mason Contractor Associations, Inc., 2 agreements (Los Angeles, Calif.)	Construction	Bricklayers	3,800
Carpenters General Contracting Agreement (Georgia and Florida) <sup>2</sup>	Construction	Carpenters	1,500
Central Maine Power Co. (Augusta, Maine)	Utilities	Electrical Workers (IBEW)	1,050
Chicago Beer Wholesalers Association (Illinois)	Wholesale trade	Teamsters (Ind.)	1,000
Colorado Building Construction, Independent Employers (Colorado) <sup>2</sup>	Construction	Carpenters	1,200
Colorado Contractors Association, Inc. (Colorado)	Construction	Laborers	1,800
Consolidated Papers, Inc., Consoweld Corporation (Wisconsin)	Paper	Paperworkers	2,700
Construction Contractors Council—AGC Labor Division Inc., 2 agreements (District of Columbia, Maryland, and Virginia)	Construction	Carpenters and Operating Engineers	7,450
Contractors of Eastern Pennsylvania and Delaware <sup>2</sup>	Construction	Operating Engineers	6,000
Cummins Engine Company, Inc. (Columbus, Ind.)	Machinery	Diesel Workers (Ind.)	6,700
Dehydration Industry (California)	Food products	Teamsters (Ind.)	3,000
E.I. Du Pont De Nemours and Company (Waynesboro, Va.)	Chemicals	United Workers, Inc. (Ind.)	1,400
Foodtown Supermarkets (New York and New Jersey)	Retail trade	Food and Commercial Workers	4,100
General Dynamics, Convair Division (California and Florida)	Transportation equipment	Machinists	2,900
General Portland, Inc. (Interstate)	Stone, clay, and glass products	Cement Workers	1,250
Grand Union Co., Suburban Division (New Jersey)	Retail food	Food and Commercial Workers	2,100
Graphic Arts Association of Delaware Valley, Inc. (Pennsylvania)	Printing and publishing	Graphics Arts	1,400
Hinky-Dinky Supermarkets, Inc. (Omaha, Nebr.)	Retail food	Food and Commercial Workers	2,650
Ideal Basic Industries, Inc. (Interstate)	Stone, clay, and glass products	Cement Workers	1,850
Industrial Contractors Association of Baton Rouge and Vicinity, Inc. (Louisiana)	Construction	Plumbers	1,200

See footnotes at end of table.

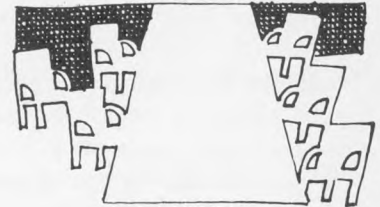
## Continued—Major agreements expiring next month

Employer and location	Industry	Labor organization <sup>1</sup>	Number of workers
Jeffboat, Inc. (Jeffersonville, Ind.)	Transportation equipment	Teamsters (Ind.)	1,850
Kroger Co., Dallas Marketing Area (Texas)	Retail food	Food and Commercial Workers	1,650
Lynchburg Foundry Co. (Radford, Va.)	Primary metals	Steelworkers	1,000
Marquette Cement Manufacturing Co. (Interstate)	Stone, clay, and glass products	Cement Workers	1,050
Martin Marietta Aluminum, Inc. (Torrance, Calif.)	Primary metals	Steelworkers	1,550
Metro Association of Plumbing-Heating-Cooling Contractors, Inc. (Minneapolis, Minn.)	Construction	Plumbers	1,100
Monsanto Co., John F. Queeny Plant (St. Louis, Mo.)	Chemicals	Chemical Workers	1,000
National Distillers and Chemical Corp. (Interstate)	Food products	Distillery Workers	1,700
National Electrical Contractors Association, Inc., St. Paul Chapter (Minnesota)	Construction	Electrical Workers (IBEW)	1,400
National Electrical Contractors Association, Inc., Washington, D.C. Chapter	Construction	Electrical Workers (IBEW)	2,000
Nevada Resort Association, 2 agreements (Las Vegas, Nev.)	Hotels	Hotel Employees and Restaurant Employees	16,100
North Texas Contractors Association, 2 agreements (Texas)	Construction	Laborers and Carpenters	7,800
Northwestern Mutual Life Insurance Co. (Milwaukee, Wis.)	Insurance	Office and Professional Employees	1,500
Owens-Corning Fiberglas Corp. (Kansas City, Kans.)	Stone, clay, and glass products	Building and Construction Trades Council	1,050
Painting and Decorating Contractors Association, Minneapolis Chapter, Inc. (Minnesota)	Construction	Painters	1,200
Public Service Company of Indiana, Inc. (Indiana)	Utilities	Electrical Workers (IBEW)	2,200
Public Service Electric and Gas Company (New Jersey)	Utilities	Electrical Workers (IBEW)	4,400
Pullman, Inc., Pullman-Standard (Interstate)	Transportation equipment	Steelworkers	4,800
Sheet Metal and Air Conditioning Contractors National Association (District of Columbia, Maryland, and Virginia)	Construction	Sheet Metal Workers	1,150
Textron, Inc., Sheaffer Eaton Division (Iowa)	Miscellaneous manufacturing	Auto Workers	1,050

<sup>1</sup>Affiliated with AFL-CIO except where noted as independent (Ind.).

<sup>2</sup>Industry area (group of companies signing same contract).

# Developments in Industrial Relations



## Accord ends 6-week strike at Greyhound

A 6-week strike against Greyhound Lines by 12,500 employees ended when the Amalgamated Transit Union announced that the drivers, mechanics, and service, terminal, and office personnel had approved a 3-year contract. About 75 percent of the workers voted in favor of the settlement, which was supported by the ATU's Council of Greyhound Local Unions. The accord differed in two major respects from one the union members decisively rejected earlier: it provided for the strikers to retain their seniority, giving them precedence over 1,200 replacements Greyhound hired during the stoppage, and it called for increased pensions for current retirees.

The overall outcome of the settlement was a reduction in wages and benefits for the employees. Greyhound claimed that its labor costs were 30 to 50 percent higher than other large bus companies, and that the wage and benefit cuts were necessary to enable it to compete effectively with other bus lines and with airlines offering lower fares. Greyhound said its drivers were paid an average of \$27,437 a year plus \$8,307 in benefits, compared with averages of \$22,985 and \$4,367 for the other bus lines. Union officials said that Greyhound's claimed costs were exaggerated.

A feature of the settlement is a new "two-tier" pay structure under which rates were cut 7.8 percent for employees on the payroll on October 31, 1983. Rates for workers hired later were reduced more than 7.8 percent.

In a benefit change, workers on the payroll on October 31, 1983, began contributing 4 percent of their gross earnings to the pension plan on January 1, 1984 (previously, Greyhound paid the entire cost). Workers hired after October 31, 1983, are required to contribute 3 percent of their earnings to a separate new pension plan which provides smaller benefits than the existing plan. Workers who retired prior to the effective date of the new labor contract will receive 3 percent increases in their pensions on May 1 of 1985 and 1986.

Paid holidays were reduced to 8 per year for all employees (previously 10 for operating employees and 12 for some office employees). Greyhound's financing of health and welfare benefits was changed to a uniform \$100 a month per employee on November 1, 1983, \$113 on November 1,

1984, and \$120 on November 1, 1985. Previously, Greyhound's obligation was \$76.17 a month in the Western States and \$77.34 in the other regions, plus periodic lump-sum payments into the plans.

## Recent NLRB rulings

Several recent decisions of the National Labor Relations Board drew criticism from union officials who asserted that the Board was assuming an antiunion, probusiness attitude. Max Zimny, general counsel of the Ladies' Garment Workers, characterized the current board as the most promanagement he had encountered during his 31-year career in labor law.

Several management attorneys disputed that view, contending that the board was simply correcting a pronunion leaning that had developed when Carter Administration appointees held a majority of the seats. The current board consists of three members appointed by President Reagan—Chairman Donald L. Dotson, Patricia Diaz Dennis, and Robert P. Hunter—and one holdover from the Carter Administration—Don A. Zimmerman. The fifth seat is vacant.

In one of the decisions, the board held that an employer may shift operations to a nonunion plant to escape the higher labor costs of a union contract. This ruling does not apply if the contract specifically prohibits relocation, and the employer must satisfy all obligations to bargain on the issue before actually moving.

The case arose in 1982, when the Illinois Spring Co. moved 100 jobs from an auto parts plant in Milwaukee to its headquarters in McHenry, Ill., after the employees rejected company requests for wage and benefit cuts. The United Auto Workers union, the bargaining agent at the Milwaukee plant, then filed a complaint with the board, which blocked the move. The company appealed the decision to the U.S. District Court of Appeals in Chicago, which later sent the case back to the board after the board requested permission to reconsider its ruling.

The opinion, signed by three members of the board, noted that the union's contract with the company did not contain a work preservation clause and that the board should not "create an implied work preservation clause in every American labor agreement based on wage and benefits or (union) recognition provisions." The majority opinion maintained the current decision will enhance the collective bargaining process, in contrast to the 1982 decision which discouraged

"Developments in Industrial Relations" is prepared by George Ruben, Division of Developments in Labor-Management Relations, Bureau of Labor Statistics, and is largely based on information from secondary sources.

"truthful midterm bargaining over decisions to transfer unit work" because a union could veto the transfer if an employer admitted it was due to high union labor costs.

In a dissenting opinion, Zimmerman said that Illinois Spring's planned shift of work was illegal because it "was simply an attempt to modify the wage-rate provisions in the contract, albeit indirectly. . . ."

In another case, the same three members held that it was contrary to Federal labor law for the board to intervene in a labor-management dispute before the parties have exhausted their own arbitration procedures. The case had been initiated by the International Association of Machinists on behalf of an employee of United Technologies Corp. who allegedly had been threatened with disciplinary action.

In the other ruling, also by a 3-to-1 margin, the board said it would defer to arbitrators' awards even if such awards are not "totally consistent with board precedent. Unless the award is 'palpably' wrong, . . . we will defer." The decision supplanted a 1982 ruling to defer to arbitrators only when they resolved disputes as the board would have. The case involved the president of an Oil, Chemical and Atomic Workers local union at an Olin Corp. facility who was fired for allegedly violating a contractual no-strike provision by directing and participating in a "sick-out" job action.

In an earlier decision which drew criticism from organized labor, the board ruled that employers are no longer required to publicize the fact that an employee can solicit another employee for union activities while at work, as long as both are on their own time, such as during a break or lunch period. Under the new approach, which overturned a 1981 ruling, an employer need only say, "No soliciting on working time."

In a dissent to this ruling, Zimmerman contended that many workers will mistakenly believe that the new rule prohibits soliciting during the entire work shift, including their own time.

This case involved an employee who was fired for passing a union authorizing card to a coworker. One of the board's administrative law judges ruled that both workers were on their own time and ordered the employee reinstated. The judge also held that the rules of the employer, Our Way, Inc., of Atlanta, were unclear on solicitation during working time.

In overruling the judge, the board argued that its new standard is adequate because workers will understand that they are free to solicit on their own time.

The board overturned a 1975 decision by holding that an employee can escape firing or other penalties for attempting to correct unsafe working conditions only by first discussing the problem with other employees and attempting to persuade employers to correct the problem through joint action. The ruling came in a case in which the board upheld the firing of an employee who refused to drive a truck he believed to be unsafe and reported the defects to State officials.

In the 1975 ruling, the board had reinstated a worker who

informed State health officials of adverse working conditions. Although he did not discuss the problem with other workers, the board said that reinstatement was proper because the employee was individually acting on a problem that should have concerned all employees.

### **Gulf contract sets pattern in petroleum refining**

A round of pattern settlements began in the petroleum refining, pipeline, and petrochemical industries after Gulf Oil Corp. and the Oil, Chemical and Atomic Workers negotiated a 2-year contract. The wage and benefit terms were expected to eventually apply to about 50,000 workers covered by contracts with nearly 100 companies. The union's bargaining strength was diminished somewhat by the worldwide oversupply of petroleum, a factor in the closing of 80 U.S. refineries and the loss of 7,000 jobs in the last 2 years. The OCAW also was faced with the problem that walkouts to enforce its demands are not completely effective because the high degree of automation in the industry permits management to maintain more or less normal operation.

The Gulf accord, which covered 2,700 employees, provided for a 20-cent-an-hour immediate wage increase and a 35-cent increase at the beginning of the second contract year. Based on the reported previous average hourly earnings of \$13.61, the increases amounted to 1.5 and 2.5 percent.

The OCAW did not win its demand that Gulf assume the full cost of health insurance premiums, but the company did agree to raise its contribution toward family coverage by \$10 a month, effective immediately, and by another \$5 a year later. Gulf had been paying \$151.50 of the \$174 a month cost, which was expected to rise to \$212 on February 1. Gulf's obligation for single employees remained at \$57 a month, which covered the full cost for these workers.

Among the first companies to settle on pattern contracts were Atlantic Richfield, Amoco, and Mobil.

### **Efforts to aid auto workers continue**

The automobile manufacturing industry and the United Auto Workers (UAW) continue efforts to counter the increasing competition from foreign producers and to aid displaced U.S. auto workers.

General Motors and the UAW moved to develop a domestically produced small car. Alfred S. Warren, GM's vice president for industrial relations, said the venture was vital in proving that the company could produce small cars at a competitive price.

Under the plan, GM and the UAW will establish a joint study center to increase union and worker involvement in all manufacturing and assembly plans for the new vehicle, which will be called Saturn.

Both Warren and UAW vice president Donald F. Ephlin said the overall effort will not displace the existing collective bargaining relationship, but will develop "innovative pro-

duction systems based on improved contractual arrangements and management practices'' by improving the relationship between the company and the union.

The study center will be directed by a joint steering committee which will establish seven subcommittees to help plan the manufacturing and assembly operations.

In a move to aid displaced workers, GM and the UAW worked out a new \$9.2 million tuition assistance plan which will be available to 70,000 workers on indefinite layoff who still have rehire or recall rights. Under the new plan, these workers will receive "up front" money for training—which need not relate to their previous employment—in an accredited college, university, or vocational school. Previously, laid-off workers were required to train in areas related to their former employment, and they were not reimbursed until completion of the training.

The new plan is financed by a company obligation for various types of training specified in the March 1982 GM-UAW collective bargaining agreement. The obligation is 5 cents for each straight-time hour worked by employees in the bargaining unit.

The funds had earlier been used to establish training and placement programs at Fremont and South Gate, Calif., following the closing of plants, and in Flint and Pontiac, Mich.

### **Teamsters' members accept pay cut for stock**

Despite the inability of trucking management and the Teamsters to agree on national approaches to improving the industry's financial condition, there continued to be instances where workers agreed to contract changes to aid individual companies.

Under the voluntary aid plan negotiated by the Teamsters and Branch Motor Express, 2,000 workers were offered stock in exchange for a 15-percent pay cut lasting 5 years. Branch said that 85 percent of the workers had decided to participate and would receive 43 percent of the stock of the parent Branch Industries, Inc. Employees who do not participate will continue to receive full pay.

Vice President Howard Kaskel said the plan will save the company about \$50 million over the 5-year period, which will be applied to reducing debt and modernizing Branch's truck fleet. Kaskel said that the firm had not threatened bankruptcy, but the employees were aware of the financial losses Branch had suffered during the last 3 years.

Branch also has a small number of workers represented by the Machinists and the International Longshoremen's Association. The offer was presented individually to those workers.

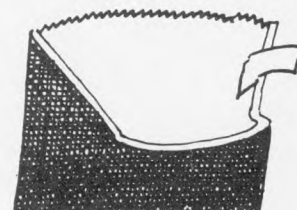
### **Union leadership changes**

Oil, Chemical and Atomic Workers' President Robert F. Goss and seven other staff members accepted an early retirement option offered as part of a program to reduce the union's staff. Goss, 62, was elected president of the union in 1979, culminating a career which started in 1941 with a laboring job in a petroleum refinery. Goss also was elected to the AFL-CIO's Executive Council in 1979. Joseph M. Misbrenner, vice president of the OCAW, was elected to complete Goss' term. Misbrenner, 59, also started his career in a refinery and moved up through a succession of leadership positions. In 1976, he was named assistant to the president and, in 1979, was elected to the vice president post.

Cement, Lime and Gypsum Workers' President Thomas F. Miechur retired and was succeeded by Secretary-Treasurer Richard A. Northrip. Miechur, 60, joined the union in 1942, served as a local and district representative of the union, and from 1959 to 1971 was administrative assistant to the president. He also served as a vice president of the AFL-CIO's Industrial Union Department and the Maritime Trades Department. Northrip, 54, joined the union in 1953, moved through several local union and regional posts prior to being elected secretary-treasurer in 1975.

In other business, the union's executive board authorized a special convention in March to vote on a proposed merger with the Boilermakers union, which already had membership authorization to proceed with a merger. □

# Book Reviews



## Saint or sinner?

*Walter Reuther and the Rise of the Auto Workers.* By John Barnard; ed. Oscar Handlin. Boston, Little, Brown and Co., 1983. 236 pp. \$13.50.

Author Ambrose Bierce defined "a saint" as a dead sinner, revised and edited. While the definition does not accurately describe this portrayal of the life of Walter Reuther, it comes close. Author John Barnard, an obvious Reuther admirer, occasionally excuses, defends, and apologizes for the "sins" committed by the labor leader. But that is a common affliction among biographers, and Professor Barnard bridles his admiration enough to produce a concise and well-written account of the leader of the United Auto Workers and his rise to power.

During his lifetime, the legendary Reuther shared the labor spotlight with such luminaries as Philip Murray, John L. Lewis, Sidney Hillman, and George Meany. One of the most controversial figures of the labor movement, some critics vilified him as a Communist menace, while others labeled him a capitalist lackey. Reuther's admirers called him a genius, a social architect, and one of the most outstanding men in America. A regular visitor to the White House, he was admired, tolerated, or distrusted by presidents. Walter Reuther was that kind of person, and John Barnard captures the essence of his character in this book.

Barnard traced the life of his subject from the cradle to the grave. Born in industrial Wheeling, W. Va., and weaned on the Christian-Socialist philosophy of his German-immigrant father, the future UAW leader was the product of a working-class environment. Moving to Detroit, Reuther, already an experienced tool and die maker, secured a foreman's position at the Ford Motor Co. while still in his early twenties, mostly on the basis of intellect, bravado, and stamina. The economic collapse in 1929 and union organizing activities resulted in his discharge. With his brother Victor, he left the United States to tour Europe, and eventually worked in the Soviet Union for 18 months, ironically, in a plant built and donated to the Russian people by Henry Ford.

Reuther returned to the United States in 1935 and began his steady climb to the presidencies of the Auto Workers and Congress of Industrial Organizations (CIO). With other

CIO pioneers, including his brothers Victor and Roy, he helped found the United Auto Workers. Walter Reuther became a nationally known figure after a *Detroit News* photographer captured on film the beating he and organizer Richard Frankensteen received from company goons in the immortal "Battle of the Overpass" for trying to recruit Ford Motor Co. workers into the union. Within a few years, as Barnard clearly illustrates, Reuther and his UAW colleagues brought the executives of Ford, General Motors, and Chrysler to the bargaining table.

After years of internecine power struggles among Communists, racketeers, and establishment factions, the UAW chose Reuther as its president. Under his guidance, the union pioneered in such areas as pension benefits, productivity improvements, pay increases, cost-of-living allowances, supplemental unemployment benefits, and the promotion of racial equality in the shop. Many students of the labor movement believe that Reuther promoted the most progressive socioeconomic labor program in U.S. history. According to Barnard, the prescient labor leader predicted the problem the American industrial sector would experience in the 1980's as early as the 1960's and advocated reforms in the science of management theory, productivity, and technological planning to accommodate future changes. The author also illustrates how these advanced theories, along with other differences of opinion, led to the break in relations between George Meany and Reuther, resulting in the departure of the UAW from the AFL-CIO in 1968. An airplane crash in 1970 ended the life of the UAW president, but the union carried on his legacy.

Barnard, in a conspicuously brief monograph, does a good job of analyzing an intensely complex subject and apparently portrays Reuther as some contemporaries often viewed him. For example, the young unionist's meteoric rise to power—president of the UAW at the age of 39—his aggressive, uncompromising drive, and temperance in a field noted for its hard drinkers, caused resentment among some colleagues as well as rivals. When President Franklin D. Roosevelt, ebullient over Reuther's plan to increase productivity in airplane manufacturing in World War II, greeted him as his "red-haired engineer," disgruntled UAW President R. J. Thomas shot back, ". . . he's just a tool and die maker." In another incident, President Harry S. Truman warned CIO patriarch Philip Murray that Reuther was after

his job. Murray responded, "No, Mr. President, he is really after your job." Barnard weaves these and other anecdotes into the narrative, adding interest and insight to the generally known incidents in the life of Walter Reuther.

Reuther, an intense and determined fighter, often altered and even sacrificed loyalties to win a cause or protect his image. He and his brother Victor wrote the "Vic-Wal" letters in the 1930's praising the socialist system of the Soviet Union; yet in later years, when socialist sympathies were personal liabilities, they issued weak and unconvincing disclaimers of parts of the letters. During his rise to power, Reuther worked with and received the support of the UAW's Communist faction, then purged that group from the union in the 1950's. In fact, Reuther alienated most of his UAW colleagues at some time or another. As Barnard states, "All the UAW's prominent figures . . . had now drawn together (by the early 1940's) in a shaky defensive combination against Reuther." While Barnard covers these events in lively prose, he has a tendency to whitewash what some people believe was the dark side of Reuther's personality.

This book has some minor annoyances. It is much too brief considering the subject and abundance of resource materials available. Apparently, the Library of American Biography placed constraints on the author to maintain continuity with other monographs in this biographical series. The publishers admit that this is a "concise, selective account of Reuther's life and stormy career." Thus, some incidents in the labor leader's life are covered rather superficially. For example, the author covers the attempt on Reuther's life in 1948 when a shotgun blast ripped through the kitchen window of the family home. By contrast, Frank Cormier and William Eaton's *Reuther*, published in 1970, elaborates more on the dramatic preliminaries leading to the attempt, providing the reader with a better perspective.

Another source of irritation is the lack of footnotes. The author has compiled an excellent bibliography of both primary and secondary sources, including the UAW papers in the Archives of Labor History and Urban Affairs at Wayne State University, but does not give the source of specific citations. Serious scholars will want to know where the author got some of his information, and how he formed certain hypotheses. The other major Reuther biographies often cited by scholars suffer from the same malady, and publishers of future works should take note.

The final authoritative and comprehensive history of Walter Reuther's life has yet to be written. This book complements other published biographies and, despite Professor Barnard's favorable interpretation of the subject, is more objective than the work of some predecessors (for example, Jane Gould and Lorena Hickock's laudatory *Walter Reuther: Labor's Rugged Individualist*, and Eldorus Dayton's highly critical *Walter Reuther: Autocrat of the Bargaining Table*). Still, the most comprehensive study of the labor leader is *Reuther*, which parallels the degree of objectivity in this monograph. Thus, *Walter Reuther and the Rise of the Auto*

*Workers* is a good work that has a definite place in the literature of the labor movement. Perhaps, it portrays the labor leader as more saint than sinner, but future Reuther biographers will probably revise and edit this and other interpretations to define the man and his works according to their perspectives.

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### An economic and social picture

*Sociological Perspectives on Labor Markets*. Edited by Ivar Berg. New York, Academic Press, 1981. 374 pp. \$31.

*Professionals as Workers: Mental Labor in Advanced Capitalism*. Edited by Charles Derber. Boston, G. K. Hall and Co., 1982. 231 pp. \$25.

*Professionals in Search of Work: Coping with the Stress of Job Loss and Underemployment*. By H. G. Kaufman. New York, John Wiley & Sons, 1982. 359 pp. \$28.95.

*Professionals Out of Work*. By Paula G. Leventman. New York, The Free Press, 1981. 266 pp. \$19.95.

Three of the four books reviewed here deal with the changing labor market for professional workers. The authors are academic social scientists, mainly sociologists and economists.

The book edited by Ivar Berg is a collection of updated papers presented at the 1979 and 1980 annual meetings of the American Sociological Association and the Southern Sociological Society. Berg hoped that these papers would generate more systematic thinking among economists and sociologists studying the same phenomena from different perspectives, and introduce a sociological dimension in labor market studies.

Berg's objectives have generally been met. In his paper, Mark Granovetter has advocated more attention being paid to the mechanisms of how both jobseekers and employers are matched. He also maintains that the determinants of labor market disequilibrium contain such sociological variables as resistance to migration and lack of information. Paula England has demonstrated that while there has been a decline in occupational sex segregation since 1900, World War II had a more significant impact in the 1940's than did affirmative action programs and the women's movement in the 1970's. Teresa Sullivan made a persuasive case for placing more emphasis on nonmarket production, especially self-sufficiency projects.

The most theoretical work was presented by Charles Derber in four of the book's nine chapters. Derber's main hypothesis is that professional workers are becoming proletarianized and thus subject to the power and control of

others. These workers are usually in large public or private bureaucratic settings, not as self-employed individuals. The loss of control over decisions concerning the objectives and policy directions of their work has led to ideological proletarianization.

While this is not a new hypothesis, Derber differs from the Marxist theorists in that he sees professionals retaining control over their skills and technical expertise, unlike the craftworkers of the 19th century who suffered technical proletarianization as well. His hypothesis, however, is confirmed in the chapters on physicians, lawyers, academics, engineers, and social workers.

H. G. Kaufman's book also breaks new ground, for he deals with the psychological effects of unemployment and underemployment among highly educated workers, a neglected area. The study is based on a survey of engineers and scientists who experienced long-term unemployment and underemployment. Kaufman has compared his study to earlier ones and thus his findings gain validity. It is an extremely well-documented work.

He found that professionals experience more psychological stress than other workers. This includes lower self-esteem, motivation, and life expectancy, and higher levels of anxiety, anomie, depression, isolation, and anger. There are, of course, individual differences based upon such variables as age, marital status, education, occupation, and career.

One chapter deals with the stages of unemployment. In stage I, the individual experiences relief and relaxation, followed by stage II of concerted effort to find employment. In stage III, there is vacillation, self-doubt, and anger. The final stage is one of resignation and withdrawal.

Underemployment may be an even greater problem than unemployment, because professionals view their work as having intrinsic value for their well-being and thus insufficient utilization of their knowledge and skills creates considerable stress. Kaufman has presented a grim but accurate picture.

Paula G. Leventman's book parallels Kaufman's work in that it is based on two surveys of unemployed scientists, engineers, and data systems analysts. The significant difference is that she conducted indepth interviews which allows the reader to grasp a better understanding of the sociopsychological difficulties faced by unemployed and underemployed professionals.

Leventman found that professionals suffered from the same psychological stress mentioned by Kaufman and that families experienced significant disruptions as well. Despite the professionals' feelings of confusion, alienation, and apathy, they were not politically radicalized.

These works have broken new theoretical ground and generated a lot of data. They are of great interest to labor market economists and professional workers. Because labor market projections indicate that employment problems will

probably continue for many professionals, increased readership of these books may be expected.

—JOHN DREIJMANIS  
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### Dissatisfaction—extent of the problem

The broad causes of [job] dissatisfaction are not hard to find . . . . In 1974, the Director-General of the International Labor Office stated:

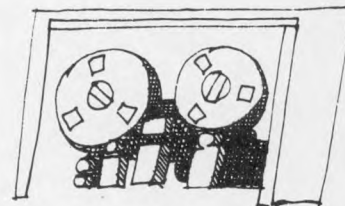
Far too many workers are in deadend jobs, requiring the exercise of little or no initiative or responsibility, with few prospects of advancement or mobility to other types of work. Far too many workers perform tasks which are far below their intellectual capacity, and which they consider to be degrading in relation to the education which they have received. In many industries and occupations, work has been "rationalized" to an extreme, broken down into simple, negative and monotonous jobs which are fit for an unthinking robot, but which are an insult to the dignity, the aspirations and the cultural level of 20th century man.

—T. M. FRASER

*Human Stress, Work and Job Satisfaction:  
A Critical Approach* (Washington, International  
Labor Office, 1983), p. 29.

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# Current 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. A brief introduction to each group of tables provides definitions, notes on the data, sources, and other material usually found in footnotes.

Readers who need additional information are invited to consult the BLS regional offices listed on the inside front cover of this issue of the *Review*. Some general notes applicable to several series are given below.

**Seasonal adjustment.** Certain monthly and quarterly data are adjusted to eliminate the effect of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might otherwise mask short-term movements of the statistical series. Tables containing these data are identified as "seasonally adjusted." Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted labor force data in tables 3-8 were revised in the February 1984 issue of the *Review*, to reflect experience through 1983.

Beginning in January 1980, the BLS introduced two major modifications in the seasonal adjustment methodology for labor force data. First, the data are being seasonally adjusted with a new procedure called X-11/ARIMA, which was developed at Statistics Canada as an extension of the standard X-11 method. A detailed description of the procedure appears in *The X-11 ARIMA Seasonal Adjustment Method* by Estela Bee Dagum (Statistics Canada Catalogue No. 12-564E, February 1980). The second change is that seasonal factors are now being calculated for use during the first 6 months of the year, rather than for the entire year, and then are calculated at mid-year for the July-December period. Revisions of historical data continue to be made only at the end of each calendar year.

Annual revision of the seasonally adjusted payroll data shown in tables 11, 13, and 15 were made in July 1983 using the X-11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in tables 29 and 30 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from

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 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  $1967 = 100$ , the hourly rate expressed in 1967 dollars is \$2 ( $\$3/150 \times 100 = \$2$ ). The resulting values are described as "real," "constant," or "1967" dollars.

**Availability of information.** Data that supplement the tables in this section are published by the Bureau of Labor Statistics in a variety of sources. Press releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule given below. More information from household and establishment surveys is provided in *Employment and Earnings*, a monthly publication of the Bureau. Comparable household information is published in a two-volume data book—*Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2096. Comparable establishment information appears in two data books—*Employment and Earnings, United States*, and *Employment and Earnings, States and Areas*, and their annual supplements. More detailed information on wages and other aspects of collective bargaining appears in the monthly periodical, *Current Wage Developments*. More detailed price information is published each month in the periodicals, the *CPI Detailed Report* and *Producer Prices and Price Indexes*.

### Symbols

- p = preliminary. To improve 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 may also reflect other adjustments.
- n.e.c. = not elsewhere classified.

**Schedule of release dates for BLS statistical series**

Series	Release date	Period covered	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation . . . . .	March 9	February	April 6	March	May 4	April	1-11
Producer Price Index . . . . .	March 16	February	April 13	March	May 11	April	23-27
Consumer Price Index . . . . .	March 23	February	April 24	March	May 22	April	19-22
Real earnings . . . . .	March 23	February	April 24	March	May 22	April	12-16
Productivity and costs:							
Nonfarm business and manufacturing . . . . .			April 26	1st quarter			28-31
Nonfinancial corporations . . . . .					May 29	1st quarter	28-31
Major collective bargaining settlements . . . . .			April 27	1st quarter			35-36
Employment Cost Index . . . . .			April 30	1st quarter			32-34

## EMPLOYMENT DATA FROM THE HOUSEHOLD SURVEY

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 civilians 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. Members of the Armed Forces stationed in the United States are also included in the employed total. 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 or waiting to start new jobs within the next 30 days are also counted among the unemployed. The **overall unemployment rate** represents the number unemployed as a percent of the labor force, including the resident Armed Forces. The **unemployment**

**rate** for all civilian workers represents the number unemployed as a percent of the civilian labor force.

The **labor force** consists of all employed or unemployed civilians plus members of the Armed Forces stationed in the United States. Persons **not in the labor force** are those not classified as employed or unemployed; this group includes persons who are retired, those engaged in their own housework, those not working while attending school, those unable to work because of long-term illness, those discouraged from seeking work because of personal or job market factors, and those who are voluntarily idle. The **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, and members of the Armed Forces stationed in the United States. The **labor force participation rate** is the proportion of the noninstitutional population that is in the labor force. The **employment-population ratio** is total employment (including the resident Armed Forces) as a percent of the 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 preceding years. These adjustments affect the comparability of historical data presented in table 1. A description of these adjustments and their effect on the various data series appear in the Explanatory Notes of *Employment and Earnings*.

Data in tables 2-8 are seasonally adjusted, based on the seasonal experience through December 1983.

**1. Employment status of the noninstitutional population, 16 years and over, selected years, 1950-83**

(Numbers in thousands)

Year	Noninstitutional population	Labor force										Not in labor force
		Number	Percent of population	Employed					Unemployed			
				Total	Percent of population	Resident Armed Forces	Civilian		Number	Percent of labor force		
							Total	Agriculture			Nonagricultural industries	
1950	106,164	63,377	59.7	60,087	56.6	1,169	58,918	7,160	51,758	3,288	5.2	42,787
1955	111,747	67,087	60.0	64,234	57.5	2,064	62,170	6,450	55,722	2,852	4.3	44,660
1960	119,106	71,489	60.0	67,639	56.8	1,861	65,778	5,458	60,318	3,852	5.4	46,617
1965	128,459	76,401	59.5	73,034	56.9	1,946	71,088	4,361	66,726	3,366	4.4	52,058
1966	130,180	77,892	59.8	75,017	57.6	2,122	72,895	3,979	68,915	2,875	3.7	52,288
1967	132,092	79,565	60.2	76,590	58.0	2,218	74,372	3,844	70,527	2,975	3.7	52,527
1968	134,281	80,990	60.3	78,173	58.2	2,253	75,920	3,817	72,103	2,817	3.5	53,291
1969	136,573	82,972	60.8	80,140	58.7	2,238	77,902	3,606	74,296	2,832	3.4	53,602
1970	139,203	84,889	61.0	80,796	58.0	2,118	78,678	3,463	75,215	4,093	4.8	54,315
1971	142,189	86,355	60.7	81,340	57.2	1,973	79,367	3,394	75,972	5,016	5.8	55,834
1972	145,939	88,847	60.9	83,966	57.5	1,813	82,153	3,484	78,669	4,882	5.5	57,091
1973	148,870	91,203	61.3	86,838	58.3	1,774	85,064	3,470	81,594	4,355	4.8	57,667
1974	151,841	93,670	61.7	88,515	58.3	1,721	86,794	3,515	83,279	5,156	5.5	58,171
1975	154,831	95,453	61.6	87,524	56.5	1,678	85,845	3,408	82,438	7,929	8.3	59,377
1976	157,818	97,826	62.0	90,420	57.3	1,668	88,752	3,331	85,421	7,406	7.6	59,991
1977	160,689	100,665	62.6	93,673	58.3	1,656	92,017	3,283	88,734	6,991	6.9	60,025
1978	153,541	103,882	63.5	97,679	59.7	1,631	96,048	3,387	92,661	6,202	6.0	59,659
1979	166,460	106,559	64.0	100,421	60.3	1,597	98,824	3,347	95,477	6,137	5.8	59,900
1980	169,349	108,544	64.1	100,907	59.6	1,604	99,303	3,364	95,938	7,637	7.0	60,806
1981	171,775	110,315	65.2	102,042	59.4	1,645	100,397	3,368	97,030	8,273	7.5	61,460
1982	173,939	111,872	64.3	101,194	58.2	1,668	99,526	3,401	96,125	10,578	9.5	62,067
1983	175,891	113,226	64.4	102,510	58.3	1,676	100,834	3,383	97,450	10,717	9.5	62,665

**2. Employment status of the population, including Armed Forces in the United States, by sex, seasonally adjusted**

(Numbers in thousands)

Employment status and sex	Annual average		1983												1984
	1982	1983	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
<b>TOTAL</b>															
Noninstitutional population <sup>1,2</sup>	173,939	175,891	175,021	175,169	175,320	175,465	175,622	175,793	175,970	176,122	176,297	176,474	176,636	176,809	177,219
Labor force <sup>2</sup>	111,872	113,226	112,344	112,352	112,399	112,646	112,619	113,573	113,489	113,799	113,924	113,561	113,720	113,824	113,901
Participation rate <sup>3</sup>	64.3	64.4	64.2	64.1	64.1	64.2	64.1	64.6	64.5	64.6	64.6	64.3	64.4	64.4	64.3
Total employed <sup>2</sup>	101,194	102,510	100,821	100,836	100,980	101,277	101,431	102,411	102,889	103,166	103,571	103,665	104,291	104,629	104,876
Employment-population rate <sup>4</sup>	58.2	58.3	57.6	57.6	57.6	57.7	57.8	58.3	58.5	58.6	58.7	58.7	59.0	59.2	59.2
Resident Armed Forces <sup>1</sup>	1,668	1,676	1,667	1,664	1,664	1,671	1,669	1,668	1,664	1,682	1,695	1,695	1,685	1,688	1,686
Civilian employed	99,526	100,834	99,154	99,172	99,316	99,606	99,762	100,743	101,225	101,484	101,876	101,970	102,606	102,941	103,190
Agriculture	3,401	3,383	3,420	3,415	3,386	3,392	3,374	3,479	3,499	3,449	3,308	3,240	3,257	3,356	3,271
Nonagricultural industries	96,125	97,450	95,734	95,757	95,930	96,214	96,388	97,264	97,726	98,035	98,568	98,730	99,349	99,585	99,918
Unemployed	10,678	10,717	11,523	11,516	11,419	11,369	11,188	11,162	10,600	10,633	10,353	9,896	9,429	9,195	9,026
Unemployment rate <sup>5</sup>	9.5	9.5	10.3	10.2	10.2	10.1	9.9	9.8	9.3	9.3	9.1	8.7	8.3	8.1	7.9
Not in labor force	62,067	62,665	62,677	62,817	62,921	62,819	63,003	62,220	62,481	62,323	62,373	62,913	62,916	62,985	63,318
<b>Men, 16 years and over</b>															
Noninstitutional population <sup>1,2</sup>	83,052	84,064	83,652	83,720	83,789	83,856	83,931	84,014	84,099	84,173	84,261	84,344	84,423	84,506	84,745
Labor force <sup>2</sup>	63,979	64,580	64,017	64,077	64,096	64,311	64,348	64,778	64,840	64,807	64,877	64,709	64,846	64,838	64,930
Participation rate <sup>3</sup>	77.0	76.8	76.5	76.5	76.5	76.7	76.7	77.1	77.1	77.0	77.0	76.7	76.8	76.7	76.6
Total employed <sup>2</sup>	57,800	58,320	57,334	57,321	57,423	57,589	57,744	58,369	58,592	58,607	58,828	58,950	59,389	59,580	59,781
Employment-population rate <sup>4</sup>	69.6	69.4	68.5	68.5	68.5	68.7	68.8	69.5	69.7	69.6	69.8	69.9	70.3	70.5	70.5
Resident Armed Forces <sup>1</sup>	1,527	1,533	1,531	1,528	1,528	1,530	1,528	1,525	1,521	1,538	1,549	1,543	1,534	1,537	1,542
Civilian employed	56,271	56,787	55,803	55,793	55,895	56,059	56,216	56,844	57,071	57,069	57,279	57,407	57,855	58,043	58,239
Unemployed	6,179	6,260	6,683	6,756	6,673	6,722	6,604	6,409	6,248	6,200	6,049	5,759	5,457	5,258	5,149
Unemployment rate <sup>5</sup>	9.7	9.7	10.4	10.5	10.4	10.5	10.3	9.9	9.6	9.6	9.3	8.9	8.4	8.1	7.9
<b>Women, 16 years and over</b>															
Noninstitutional population <sup>1,2</sup>	90,887	91,827	91,369	91,449	91,532	91,609	91,691	91,779	91,871	91,949	92,036	92,129	92,214	92,302	92,474
Labor force <sup>2</sup>	47,894	48,646	48,327	48,275	48,303	48,335	48,271	48,795	48,649	48,992	49,047	48,852	48,874	48,986	48,971
Participation rate <sup>3</sup>	52.7	53.0	52.9	52.8	52.8	52.8	52.6	53.2	53.0	53.3	53.3	53.0	53.0	53.1	53.0
Total employed <sup>2</sup>	43,395	44,190	43,487	43,515	43,557	43,688	43,687	44,042	44,297	44,559	44,743	44,715	44,902	45,049	45,094
Employment-population rate <sup>4</sup>	47.7	48.1	47.6	47.6	47.6	47.7	47.6	48.0	48.2	48.5	48.6	48.5	48.7	48.8	48.8
Resident Armed Forces <sup>1</sup>	139	143	136	136	136	141	141	143	143	144	146	152	151	151	144
Civilian employed	43,256	44,047	43,351	43,379	43,421	43,547	43,546	43,899	44,154	44,415	44,597	44,563	44,751	44,898	44,950
Unemployed	4,499	4,457	4,840	4,760	4,746	4,647	4,584	4,753	4,352	4,433	4,304	4,137	3,972	3,937	3,876
Unemployment rate <sup>5</sup>	9.4	9.2	10.0	9.9	9.8	9.6	9.5	9.7	8.9	9.0	8.8	8.5	8.1	8.0	7.9

<sup>1</sup>The population and Armed Forces figures are not adjusted for seasonal variation.

<sup>2</sup>Includes members of the Armed Forces stationed in the United States.

<sup>3</sup>Labor force as a percent of the noninstitutional population.

<sup>4</sup>Total employed as a percent of the noninstitutional population.

<sup>5</sup>Unemployment as a percent of the labor force (including the resident Armed Forces).

### 3. Employment status of the civilian population by sex, age, race, and Hispanic origin, seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1983												1984	
	1982	1983	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	
<b>TOTAL</b>																
Civilian noninstitutional population <sup>1</sup>	172,271	174,215	173,354	173,505	173,656	173,794	173,953	174,125	174,306	174,440	174,602	174,779	174,951	175,121	175,533	
Civilian labor force	110,204	111,550	110,677	110,688	110,735	110,975	110,950	111,905	111,825	112,117	112,229	111,866	112,035	112,136	112,215	
Participation rate	64.0	64.0	63.8	63.8	63.8	63.8	63.8	64.3	64.2	64.3	64.3	64.0	64.0	64.0	63.9	
Employed	99,526	100,034	99,154	99,172	99,316	99,606	99,762	100,743	101,225	101,484	101,876	101,970	102,606	102,941	103,190	
Employment-population ratio <sup>2</sup>	57.8	57.9	57.2	57.2	57.2	57.3	57.3	57.9	58.1	58.2	58.3	58.3	58.6	58.8	58.8	
Unemployed	10,678	10,717	11,523	11,516	11,419	11,369	11,188	11,162	10,600	10,633	10,353	9,896	9,429	9,195	9,026	
Unemployment rate	9.7	9.6	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5	9.2	8.8	8.4	8.2	8.0	
Not in labor force	62,067	62,665	62,677	62,817	62,921	62,819	63,003	62,220	62,481	62,323	62,373	62,913	62,916	62,985	63,318	
<b>Men, 20 years and over</b>																
Civilian noninstitutional population <sup>1</sup>	73,644	74,872	74,339	74,434	74,528	74,611	74,712	74,814	74,927	75,012	75,115	75,216	75,327	75,433	75,692	
Civilian labor force	57,980	58,744	58,131	58,225	58,268	58,512	58,546	58,844	58,982	59,012	58,949	59,053	59,050	59,299		
Participation rate	78.7	78.5	78.2	78.2	78.2	78.4	78.4	78.7	78.7	78.6	78.6	78.4	78.4	78.3	78.3	
Employed	52,891	53,489	52,508	52,508	52,673	52,830	52,963	53,492	53,765	53,804	53,947	54,140	54,457	54,658	54,999	
Employment-population ratio <sup>2</sup>	71.8	71.4	70.6	70.5	70.7	70.8	70.9	71.5	71.8	71.7	71.8	72.0	72.3	72.5	72.7	
Agriculture	2,422	2,429	2,436	2,402	2,425	2,421	2,440	2,497	2,521	2,475	2,431	2,376	2,336	2,374	2,356	
Nonagricultural industries	50,469	51,058	50,072	50,106	50,248	50,409	50,523	50,995	51,244	51,329	51,516	51,764	52,121	52,284	52,643	
Unemployed	5,089	5,257	5,623	5,717	5,595	5,682	5,583	5,352	5,217	5,150	5,065	4,809	4,596	4,392	4,300	
Unemployment rate	8.8	8.9	9.7	9.8	9.6	9.7	9.5	9.1	8.8	8.7	8.6	8.2	7.8	7.4	7.3	
<b>Women, 20 years and over</b>																
Civilian noninstitutional population <sup>1</sup>	82,864	84,069	83,490	83,593	83,699	83,794	83,899	84,008	84,122	84,224	84,333	84,443	84,553	84,666	84,860	
Civilian labor force	43,699	44,636	44,234	44,248	44,259	44,311	44,331	44,684	44,647	44,896	45,062	44,936	44,953	45,024	44,981	
Participation rate	52.7	53.1	53.0	52.9	52.9	52.9	52.8	53.2	53.1	53.3	53.4	53.2	53.2	53.2	53.0	
Employed	40,086	41,004	40,255	40,315	40,368	40,531	40,583	40,847	41,123	41,298	41,550	41,570	41,738	41,843	41,798	
Employment-population ratio <sup>2</sup>	48.4	48.8	48.2	48.2	48.2	48.4	48.4	48.6	48.9	49.0	49.3	49.2	49.4	49.4	49.3	
Agriculture	601	620	617	640	632	621	605	634	613	627	581	597	638	653	625	
Nonagricultural industries	39,485	40,384	39,638	39,675	39,736	39,910	39,978	40,213	40,510	40,671	40,969	40,973	41,100	41,190	41,174	
Unemployed	3,613	3,632	3,979	3,933	3,891	3,780	3,748	3,837	3,524	3,598	3,512	3,366	3,215	3,181	3,182	
Unemployment rate	8.3	8.1	9.0	8.9	8.8	8.5	8.5	8.6	7.9	8.0	7.8	7.5	7.2	7.1	7.1	
<b>Both sexes, 16 to 19 years</b>																
Civilian noninstitutional population <sup>1</sup>	15,763	15,274	15,525	15,478	15,429	15,389	15,342	15,303	15,257	15,204	15,154	15,120	15,072	15,022	14,981	
Civilian labor force	8,526	8,171	8,312	8,215	8,208	8,152	8,073	8,377	8,196	8,267	8,155	7,981	8,029	8,062	7,935	
Participation rate	54.1	53.5	53.5	53.1	53.2	53.0	52.6	54.7	53.7	54.4	53.8	52.8	53.3	53.7	53.0	
Employed	6,549	6,342	6,391	6,349	6,275	6,245	6,216	6,404	6,337	6,382	6,379	6,260	6,411	6,440	6,392	
Employment-population ratio <sup>2</sup>	41.5	41.5	41.2	41.0	40.7	40.6	40.5	41.8	41.5	42.0	42.1	41.4	42.5	42.9	42.7	
Agriculture	378	334	367	373	329	350	329	348	365	347	296	267	283	329	290	
Nonagricultural industries	6,171	6,008	6,024	5,976	5,946	5,895	5,887	6,056	5,972	6,035	6,083	5,993	6,128	6,111	6,102	
Unemployed	1,977	1,829	1,921	1,866	1,933	1,907	1,857	1,973	1,859	1,885	1,776	1,721	1,618	1,622	1,543	
Unemployment rate	23.2	22.4	23.1	22.7	23.6	23.4	23.0	23.6	22.7	22.8	21.8	21.6	20.2	20.1	19.4	
<b>White</b>																
Civilian noninstitutional population <sup>1</sup>	149,441	150,805	150,129	150,187	150,382	150,518	150,671	150,810	150,959	151,003	151,021	151,175	151,324	151,484	151,939	
Civilian labor force	96,143	97,021	96,287	96,238	96,265	96,450	96,472	97,235	97,255	97,498	97,507	97,339	97,559	97,724	97,813	
Participation rate	64.3	64.3	64.1	64.1	64.0	64.1	64.0	64.5	64.4	64.6	64.6	64.4	64.5	64.5	64.4	
Employed	87,903	88,893	87,481	87,367	87,530	87,854	88,004	88,836	89,260	89,503	89,693	89,851	90,430	90,779	91,044	
Employment-population ratio <sup>2</sup>	58.8	58.9	58.3	58.2	58.2	58.4	58.4	58.9	59.1	59.3	59.4	59.4	59.8	59.9	59.9	
Unemployed	8,241	8,128	8,806	8,871	8,735	8,596	8,468	8,399	7,995	7,995	7,814	7,488	7,129	6,945	6,768	
Unemployment rate	8.6	8.4	9.1	9.2	9.1	8.9	8.8	8.6	8.2	8.2	8.0	7.7	7.3	7.1	6.9	
<b>Black</b>																
Civilian noninstitutional population <sup>1</sup>	18,584	18,925	18,768	18,796	18,823	18,851	18,880	18,911	18,942	18,966	18,994	19,026	19,057	19,086	19,196	
Civilian labor force	11,331	11,647	11,544	11,561	11,573	11,651	11,645	11,718	11,741	11,724	11,720	11,565	11,623	11,650	11,660	
Participation rate	61.0	61.5	61.5	61.5	61.5	61.8	61.7	62.0	62.0	61.8	61.7	60.8	61.0	61.0	60.7	
Employed	9,189	9,375	9,158	9,272	9,249	9,245	9,277	9,339	9,443	9,408	9,504	9,449	9,563	9,582	9,707	
Employment-population ratio <sup>2</sup>	49.4	49.5	48.8	49.3	49.1	49.0	49.1	49.4	49.9	49.6	50.0	49.7	50.2	50.2	50.6	
Unemployed	2,142	2,272	2,386	2,289	2,324	2,406	2,368	2,379	2,298	2,316	2,216	2,116	2,060	2,068	1,953	
Unemployment rate	18.9	19.5	20.7	19.8	20.1	20.7	20.3	20.3	19.6	19.8	18.9	18.3	17.7	17.8	16.7	
<b>Hispanic origin</b>																
Civilian noninstitutional population <sup>1</sup>	9,400	12,771	9,328	9,368	9,551	9,665	9,747	9,738	9,640	9,690	9,700	9,745	9,677	9,735	9,778	
Civilian labor force	5,983	8,119	5,986	6,001	6,070	6,161	6,139	6,202	6,090	6,145	6,202	6,165	6,232	6,267	6,336	
Participation rate	63.6	63.6	64.2	64.1	63.6	63.7	63.0	63.7	63.2	63.4	63.9	63.3	64.4	64.4	64.8	
Employed	5,158	6,995	5,063	5,071	5,114	5,259	5,284	5,336	5,339	5,350	5,392	5,398	5,463	5,540	5,627	
Employment-population ratio <sup>2</sup>	54.9	54.8	54.3	54.1	53.5	54.4	54.2	54.8	55.4	55.2	55.6	55.4	56.5	56.9	57.6	
Unemployed	825	1,124	923	930	956	902	855	866	751	795	810	767	769	727	708	
Unemployment rate	13.8	13.8	15.4	15.5	15.7	14.6	13.9	14.0	12.3	12.9	13.1	12.4	12.3	11.6	11.2	

<sup>1</sup>The population figures are not seasonally adjusted.

<sup>2</sup>Civilian employment as a percent of the civilian noninstitutional population.

the "other races" groups are not presented and Hispanics are included in both the white and black population groups.

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals because data for

c = corrected.

**4. Selected employment indicators, seasonally adjusted**

[In thousands]

Selected categories	Annual average		1983												1984
	1982	1983	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
<b>CHARACTERISTIC</b>															
Civilian employed, 16 years and over	99,526	100,834	99,154	99,172	99,316	99,606	99,762	100,743	101,225	101,484	101,876	101,970	102,606	102,941	103,190
Men	56,271	56,787	55,803	55,793	55,895	56,059	56,216	56,844	57,071	57,069	57,279	57,407	57,855	58,043	58,239
Women	43,256	44,047	43,351	43,379	43,421	43,547	43,546	43,899	44,154	44,415	44,597	44,563	44,751	44,898	44,950
Married men, spouse present	38,074	37,967	37,498	37,491	37,545	37,602	37,616	37,911	38,254	38,281	38,232	38,240	38,388	38,494	38,682
Married women, spouse present	24,053	24,603	24,182	24,129	24,220	24,361	24,304	24,416	24,618	24,905	24,921	24,953	25,057	25,140	24,947
Women who maintain families	5,099	5,091	5,029	5,016	5,093	4,969	4,991	5,029	5,071	5,096	5,124	5,172	5,236	5,254	5,293
<b>MAJOR INDUSTRY AND CLASS OF WORKER</b>															
<b>Agriculture:</b>															
Wage and salary workers	1,505	1,579	1,616	1,617	1,558	1,578	1,588	1,624	1,631	1,628	1,572	1,505	1,481	1,512	1,443
Self-employed workers	1,636	1,565	1,589	1,562	1,584	1,595	1,558	1,591	1,573	1,564	1,515	1,527	1,556	1,572	1,613
Unpaid family workers	261	240	231	230	265	219	233	252	251	240	236	227	224	265	233
<b>Nonagricultural industries:</b>															
Wage and salary workers	88,462	89,500	87,865	87,916	88,078	88,390	88,584	89,345	89,687	90,032	90,743	90,617	91,094	91,422	91,641
Government	15,562	15,537	15,428	15,510	15,479	15,524	15,530	15,514	15,593	15,671	15,560	15,578	15,585	15,481	15,535
Private industries	72,945	73,963	72,437	72,406	72,599	72,866	73,054	73,831	74,094	74,361	75,183	75,039	75,509	75,941	76,106
Private households	1,207	1,247	1,180	1,222	1,234	1,221	1,238	1,295	1,276	1,270	1,279	1,278	1,216	1,241	1,197
Other	71,738	72,716	71,257	71,184	71,365	71,645	71,816	72,536	72,818	73,091	73,904	73,761	74,293	74,700	74,909
Self-employed workers	7,262	7,575	7,440	7,403	7,456	7,504	7,448	7,510	7,595	7,641	7,656	7,695	7,800	7,734	7,936
Unpaid family workers	401	376	374	354	344	354	345	352	322	375	380	405	474	450	364
<b>PERSONS AT WORK<sup>1</sup></b>															
Nonagricultural industries	90,552	92,038	90,726	90,276	90,450	92,233	91,070	90,913	92,126	91,953	93,322	93,273	93,834	94,173	94,707
Full-time schedules	72,245	73,624	71,764	71,703	72,035	73,567	72,949	73,071	73,844	73,499	74,666	75,047	75,398	75,802	76,237
Part time for economic reasons	5,852	5,997	6,678	6,362	6,169	6,077	5,965	5,886	5,700	5,866	6,027	5,724	5,848	5,712	5,943
Usually work full time	2,169	1,826	2,138	2,059	1,934	1,888	1,748	1,777	1,781	1,742	1,771	1,617	1,719	1,672	1,771
Usually work part time	3,683	4,171	4,540	4,303	4,235	4,189	4,217	4,109	3,919	4,124	4,256	4,107	4,129	4,040	4,172
Part time for noneconomic reasons	12,455	12,417	12,284	12,211	12,246	12,589	12,156	11,956	12,582	12,588	12,629	12,502	12,588	12,659	12,527

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



## 5. Selected unemployment indicators, seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1983											1984	
	1982	1983	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
<b>CHARACTERISTIC</b>															
Total, all civilian workers . . . . .	9.7	9.6	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5	9.2	8.8	8.4	8.2	8.0
Both sexes, 16 to 19 years . . . . .	23.2	22.4	23.1	22.7	23.6	23.4	23.0	23.6	22.7	22.8	21.8	21.6	20.2	20.1	19.4
Men, 20 years and over . . . . .	8.8	8.9	9.7	9.8	9.6	9.7	9.5	9.1	8.8	8.7	8.6	8.2	7.8	7.4	7.3
Women, 20 years and over . . . . .	8.3	8.1	9.0	8.9	8.8	8.5	8.5	8.6	7.9	8.0	7.8	7.5	7.2	7.1	7.1
White, total . . . . .	8.6	8.4	9.1	9.2	9.1	8.9	8.8	8.6	8.2	8.2	8.0	7.7	7.3	7.1	6.9
Both sexes, 16 to 19 years . . . . .	20.4	19.3	20.3	20.1	21.1	20.3	19.9	20.1	19.4	19.5	18.2	18.5	17.2	17.0	16.2
Men, 16 to 19 years . . . . .	21.7	20.2	21.5	21.4	22.6	21.4	20.4	20.4	20.3	20.7	18.9	19.8	17.6	17.5	17.8
Women, 16 to 19 years . . . . .	19.0	18.3	19.0	18.7	19.6	19.1	19.4	19.7	18.4	18.2	17.4	16.9	16.6	16.5	14.5
Men, 20 years and over . . . . .	7.8	7.9	8.5	8.8	8.5	8.5	8.4	7.9	7.7	7.7	7.7	7.3	6.9	6.7	6.3
Women, 20 years and over . . . . .	7.3	6.9	7.9	7.7	7.5	7.3	7.2	7.4	6.8	6.7	6.6	6.3	6.0	5.9	6.0
Black, total . . . . .	18.9	19.5	20.7	19.8	20.1	20.7	20.3	20.3	19.6	19.8	18.9	18.3	17.7	17.8	16.7
Both sexes, 16 to 19 years . . . . .	48.0	48.5	47.0	46.5	45.1	49.1	48.4	49.8	48.4	51.4	51.1	48.7	47.3	49.0	47.9
Men, 16 to 19 years . . . . .	48.9	48.8	48.0	47.2	46.5	48.6	52.1	50.7	48.3	53.7	52.7	45.6	44.9	46.4	47.1
Women, 16 to 19 years . . . . .	47.1	48.2	45.7	45.7	43.5	49.6	44.1	48.7	48.4	48.8	49.2	52.2	50.0	51.9	48.8
Men, 20 years and over . . . . .	17.8	18.1	19.9	18.8	19.1	20.0	19.5	18.9	18.6	18.2	16.9	16.3	15.6	15.1	14.8
Women, 20 years and over . . . . .	15.4	16.5	17.4	16.9	17.4	16.9	17.0	16.9	16.2	16.4	16.1	15.9	15.6	15.9	14.3
Hispanic origin, total . . . . .	13.8	13.8	15.4	15.5	15.7	14.6	13.9	14.0	12.3	12.9	13.1	12.4	12.3	11.6	11.2
Married men, spouse present . . . . .	6.5	6.5	7.2	7.2	7.1	7.1	7.0	6.7	6.2	6.3	6.1	5.7	5.5	5.2	5.0
Married women, spouse present . . . . .	7.4	7.0	7.8	7.6	7.5	7.4	7.4	7.6	7.0	6.9	6.8	6.3	6.0	6.1	6.0
Women who maintain families . . . . .	11.7	12.2	13.2	13.2	13.3	13.0	12.7	12.5	11.8	11.8	12.0	11.4	10.5	10.9	10.7
Full-time workers . . . . .	9.6	9.5	10.3	10.4	10.2	10.2	10.0	9.7	9.4	9.3	9.1	8.7	8.2	8.0	7.8
Part-time workers . . . . .	10.5	10.4	10.7	10.1	10.6	10.5	10.9	11.8	10.2	10.2	10.1	10.0	9.8	9.8	9.2
Unemployed 15 weeks and over . . . . .	3.2	3.8	4.2	4.2	4.1	4.0	4.1	4.0	3.9	3.6	3.5	3.3	3.1	3.0	2.9
Labor force time lost <sup>1</sup> . . . . .	11.0	10.9	11.7	11.9	11.7	11.5	11.5	11.1	10.7	10.7	10.5	10.0	9.7	9.4	9.2
<b>INDUSTRY</b>															
Nonagricultural private wage and salary workers . . . . .	10.1	9.9	10.9	10.8	10.7	10.5	10.4	10.1	9.7	9.8	9.4	9.0	8.6	8.3	7.9
Mining . . . . .	13.4	17.0	17.6	19.1	19.2	20.3	20.8	17.9	16.6	14.9	16.9	12.1	12.8	12.4	10.9
Construction . . . . .	20.0	18.4	20.2	19.9	20.2	20.0	20.0	18.4	18.0	17.9	18.1	15.8	15.6	16.3	15.0
Manufacturing . . . . .	12.3	11.2	13.1	13.1	12.8	12.5	12.3	11.6	10.7	11.2	10.2	9.6	8.9	8.3	8.4
Durable goods . . . . .	13.3	12.1	14.7	14.5	14.3	13.7	13.5	12.5	11.4	11.7	10.9	10.2	9.0	8.3	8.0
Nondurable goods . . . . .	10.8	10.0	10.8	11.0	10.8	10.8	10.6	10.2	9.7	10.5	9.3	8.7	8.7	8.2	8.9
Transportation and public utilities . . . . .	6.8	7.4	7.8	8.0	7.6	7.7	7.3	7.8	7.3	7.7	7.4	7.2	6.7	6.5	5.1
Wholesale and retail trade . . . . .	10.0	10.0	10.8	10.9	10.9	10.4	10.2	10.2	9.8	9.8	9.5	9.8	9.1	8.8	8.4
Finance and service industries . . . . .	6.9	7.2	7.6	7.4	7.3	7.3	7.5	7.2	7.3	7.2	7.0	6.9	6.7	6.6	6.3
Government workers . . . . .	4.9	5.3	5.6	5.8	5.7	5.8	5.6	5.1	5.4	5.1	5.0	5.1	4.9	5.0	5.0
Agricultural wage and salary workers . . . . .	14.7	16.0	15.7	16.3	15.9	16.8	16.8	16.5	15.0	15.1	16.5	16.2	15.7	15.6	15.5

<sup>1</sup>Aggregate hours lost by the unemployed and persons on part time for economic reasons as a percent of potentially available labor force hours.

**6. Unemployment rates by sex and age, seasonally adjusted**

[Civilian workers]

Sex and age	Annual average		1983												1984
	1982	1983	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Total, 16 years and over	9.7	9.6	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5	9.2	8.8	8.4	8.2	8.0
16 to 24 years	17.8	17.2	18.4	18.3	18.2	18.1	18.0	17.6	16.8	17.2	16.5	16.3	15.4	14.9	14.8
16 to 19 years	23.2	22.4	23.1	22.7	23.6	23.4	23.0	23.6	22.7	22.8	21.8	21.6	20.2	20.1	19.4
16 to 17 years	24.9	24.5	24.5	24.0	25.4	25.8	25.6	25.6	25.1	24.8	24.0	24.0	21.9	22.9	21.9
18 to 19 years	22.1	21.1	22.0	21.8	22.6	21.9	21.3	22.3	20.8	21.6	20.5	20.3	19.3	18.8	17.6
20 to 24 years	14.9	14.5	16.0	16.1	15.4	15.4	15.5	14.5	13.9	14.4	13.8	13.6	13.0	12.2	12.5
25 years and over	7.4	7.5	8.1	8.2	8.1	8.0	7.9	7.9	7.4	7.3	7.2	6.8	6.5	6.4	6.2
25 to 54 years	7.9	8.0	8.7	8.7	8.7	8.5	8.5	8.3	7.9	7.8	7.7	7.2	6.9	6.8	6.5
55 years and over	5.0	5.3	5.4	5.4	5.4	5.5	5.3	5.5	5.3	5.1	5.2	5.0	4.9	4.9	4.7
Men, 16 years and over	9.9	9.9	10.7	10.8	10.7	10.7	10.5	10.1	9.9	9.8	9.6	9.1	8.6	8.3	8.1
16 to 24 years	19.1	18.4	19.8	19.8	19.4	19.5	19.5	18.6	18.4	18.6	17.6	17.3	15.9	15.6	15.6
16 to 19 years	24.4	23.3	24.3	24.0	25.1	24.4	23.9	24.0	23.8	24.3	22.8	22.5	20.2	20.4	20.8
16 to 17 years	26.4	25.2	24.8	24.4	26.3	26.9	26.7	26.0	27.3	26.0	23.9	24.3	22.0	23.3	21.6
18 to 19 years	23.1	22.2	23.7	23.5	24.4	22.9	22.3	22.8	21.2	23.2	22.2	21.6	19.6	18.9	19.6
20 to 24 years	16.4	15.9	17.6	17.6	16.6	17.0	17.3	15.9	15.8	15.7	15.0	14.7	13.8	13.3	13.1
25 years and over	7.5	7.8	8.3	8.5	8.4	8.4	8.2	7.9	7.6	7.5	7.5	7.0	6.8	6.5	6.2
25 to 54 years	8.0	8.2	8.8	9.0	9.0	8.9	8.8	8.4	8.1	8.0	8.0	7.4	7.1	6.7	6.6
55 years and over	5.1	5.6	5.8	5.8	5.8	6.1	5.8	5.5	5.5	5.4	5.6	5.4	5.4	5.4	4.8
Women, 16 years and over	9.4	9.2	10.0	9.9	9.9	9.6	9.5	9.8	9.0	9.1	8.8	8.5	8.2	8.1	7.9
16 to 24 years	16.2	15.8	16.8	16.7	16.8	16.6	16.3	16.4	15.0	15.7	15.2	15.1	14.7	14.0	13.9
16 to 19 years	21.9	21.3	21.8	21.3	21.9	22.3	22.0	23.1	21.5	21.1	20.6	20.5	20.1	19.8	18.0
16 to 17 years	23.2	23.7	24.1	23.6	24.4	24.7	24.4	25.2	22.6	23.4	24.0	23.6	21.8	22.5	22.2
18 to 19 years	21.0	19.9	20.1	19.9	20.6	20.7	20.2	21.7	20.5	19.9	18.5	18.8	19.0	18.7	15.4
20 to 24 years	13.2	12.9	14.2	14.3	14.1	13.6	13.4	12.9	11.7	12.8	12.5	12.3	12.0	11.0	11.7
25 years and over	7.3	7.2	8.0	7.8	7.7	7.5	7.5	7.8	7.1	7.0	6.9	6.5	6.2	6.3	6.2
25 to 54 years	7.7	7.7	8.6	8.3	8.3	8.0	8.1	8.1	7.6	7.5	7.3	7.0	6.6	6.8	6.5
55 years and over	4.8	4.7	4.9	4.9	4.8	4.6	4.7	5.5	5.1	4.7	4.5	4.4	4.1	4.3	4.5

**7. Unemployed persons by reason for unemployment, seasonally adjusted**

[Numbers in thousands]

Reason for unemployment	Annual average		1983												1984
	1982	1983	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Job losers	6,258	6,258	6,810	6,864	6,848	6,767	6,753	6,525	6,235	6,133	5,938	5,601	5,226	5,017	4,825
On layoff	2,127	1,780	2,151	2,084	2,005	1,979	1,958	1,841	1,735	1,660	1,562	1,392	1,321	1,283	1,238
Other job losers	4,141	4,478	4,659	4,780	4,843	4,788	4,795	4,684	4,500	4,473	4,376	4,209	3,905	3,734	3,588
Job leavers	840	830	826	830	888	816	808	799	752	799	858	866	868	855	809
Reentrants	2,384	2,412	2,557	2,505	2,460	2,491	2,404	2,436	2,415	2,479	2,362	2,322	2,250	2,246	2,192
New entrants	1,185	1,216	1,199	1,188	1,182	1,251	1,246	1,412	1,229	1,214	1,234	1,127	1,154	1,150	1,175
<b>PERCENT DISTRIBUTION</b>															
Total unemployed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Job losers	58.7	58.4	59.8	60.3	60.2	59.8	60.2	58.4	58.6	57.7	57.1	56.5	55.0	54.1	53.6
On layoff	19.9	16.6	18.9	18.3	17.6	17.5	17.5	16.5	16.3	15.6	15.0	14.0	13.9	13.8	13.7
Other job losers	38.8	41.8	40.9	42.0	42.6	42.3	42.8	41.9	42.3	42.1	42.1	42.4	41.1	40.3	39.9
Job leavers	7.9	7.7	7.3	7.3	7.8	7.2	7.2	7.2	7.1	7.5	8.3	8.7	9.1	9.2	9.0
Reentrants	22.3	22.5	22.4	22.0	21.6	22.0	21.4	21.8	22.7	23.3	22.7	23.4	23.7	24.2	24.4
New entrants	11.1	11.3	10.5	10.4	10.4	11.0	11.1	12.6	11.6	11.4	11.9	11.4	12.1	12.4	13.1
<b>PERCENT OF CIVILIAN LABOR FORCE</b>															
Job losers	5.7	5.6	6.2	6.2	6.2	6.1	6.1	5.8	5.6	5.5	5.3	5.0	4.7	4.5	4.3
Job leavers	.8	.7	.7	.7	.8	.7	.7	.7	.7	.7	.8	.8	.8	.8	.7
Reentrants	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0
New entrants	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.3	1.1	1.1	1.1	1.0	1.0	1.0	1.0

**8. Duration of unemployment, seasonally adjusted**

[Numbers in thousands]

Weeks of unemployment	Annual average		1983												1984
	1982	1983	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Less than 5 weeks	3,883	3,570	3,600	3,732	3,535	3,595	3,568	3,630	3,529	3,633	3,740	3,504	3,328	3,382	3,233
5 to 14 weeks	3,311	2,937	3,331	3,169	3,173	3,139	3,012	2,950	2,841	2,951	2,784	2,725	2,616	2,504	2,556
15 weeks and over	3,485	4,210	4,623	4,613	4,587	4,396	4,510	4,486	4,398	4,078	3,889	3,655	3,527	3,369	3,201
15 to 26 weeks	1,708	1,652	1,954	1,928	1,861	1,691	1,774	1,593	1,794	1,597	1,383	1,372	1,337	1,284	1,166
27 weeks and over	1,776	2,559	2,669	2,685	2,726	2,705	2,736	2,893	2,604	2,481	2,506	2,283	2,190	2,085	2,035
Mean duration in weeks	15.6	20.0	19.4	19.1	19.2	19.2	20.2	21.4	21.3	19.9	20.2	20.1	20.2	19.6	20.5
Median duration in weeks	8.7	10.1	11.3	9.8	10.4	10.8	11.9	10.8	10.1	9.4	9.4	9.5	9.4	9.0	9.2

## EMPLOYMENT, HOURS, AND EARNINGS DATA FROM ESTABLISHMENT SURVEYS

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 189,000 establishments representing all industries except agriculture. 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

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

**Production workers** in manufacturing include blue-collar worker supervisors and all nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12-16 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in transportation and public utilities; in wholesale and retail trade; in finance, insurance, and real estate; and in services industries. These groups 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). The **Hourly Earnings Index** is calculated from average hourly earnings data adjusted to exclude the effects of two types of changes that are unrelated to underlying wage-rate developments: fluctuations in overtime premiums

in manufacturing (the only sector for which overtime data are available) and the effects of changes and seasonal factors in the proportion of workers in high-wage and low-wage industries.

**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 gross average weekly hours which were in excess of regular hours and for which overtime premiums were paid.

**The Diffusion Index**, introduced in table 17 of the May 1983 issue, represents the percent of 186 nonagricultural industries in which employment was rising over the indicated period. One-half of the industries with unchanged employment are counted as rising. In line with Bureau practice, data for the 3-, 6-, and 9-month spans are seasonally adjusted, while that for the 12-month span is unadjusted. The diffusion index is useful for measuring the dispersion of economic gains or losses and is also an economic indicator.

### Notes on the data

Establishment data collected by the Bureau of Labor Statistics are periodically adjusted to comprehensive counts of employment (called "benchmarks"). The latest complete adjustment was made with the release of May 1983 data, published in the July 1983 issue of the *Review*. Consequently, data published in the *Review* prior to that issue are not necessarily comparable to current data. Unadjusted data have been revised back to April 1981; seasonally adjusted data have been revised back to January 1978. Unadjusted data from April 1982 forward, and seasonally adjusted data from January 1979 forward are subject to revision in future benchmarks. Earlier comparable unadjusted and seasonally adjusted data are published in a *Supplement to Employment and Earnings* (unadjusted data from April 1977 through February 1983 and seasonally adjusted data from January 1974 through February 1983) and in *Employment and Earnings, United States, 1909-78*, BLS Bulletin 1312-11 (for prior periods).

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9-20. See also *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982).

**9. Employment by industry, selected years, 1950-82**

[Nonagricultural payroll data, in thousands]

Year	Total	Private sector	Goods-producing				Service-producing									
			Total	Mining	Construction	Manufacturing	Total	Transportation and public utilities	Wholesale and retail trade			Finance, insurance, and real estate	Services	Government		
									Total	Wholesale trade	Retail trade			Total	Federal	State and local
1950	45,197	39,170	18,506	901	2,364	15,241	26,691	4,034	9,386	2,635	6,751	1,888	5,357	6,026	1,928	4,098
1955	50,641	43,727	20,513	792	2,839	16,882	30,128	4,141	10,535	2,926	7,610	2,298	6,240	6,914	2,187	4,727
1960 <sup>1</sup>	54,189	45,836	20,434	712	2,926	16,796	33,755	4,004	11,391	3,143	8,248	2,629	7,378	8,353	2,270	6,083
1964	58,283	48,686	21,005	634	3,097	17,274	37,278	3,951	12,160	3,337	8,823	2,911	8,660	9,596	2,348	7,248
1965	60,765	50,589	21,926	632	3,232	18,062	38,839	4,036	12,716	3,466	9,250	2,977	9,036	10,074	2,378	7,696
1966	63,901	53,116	23,158	627	3,317	19,214	40,743	4,158	13,245	3,597	9,648	3,058	9,498	10,784	2,564	8,220
1967	65,803	54,413	23,308	613	3,248	19,447	42,495	4,268	13,606	3,689	9,917	3,185	10,045	11,391	2,719	8,672
1968	67,897	56,058	23,737	606	3,350	19,781	44,160	4,318	14,099	3,779	10,320	3,337	10,567	11,839	2,737	9,102
1969	70,384	58,189	24,361	619	3,575	20,167	46,023	4,442	14,706	3,907	10,798	3,512	11,169	12,195	2,758	9,437
1970	70,880	58,325	23,578	623	3,588	19,367	47,302	4,515	15,040	3,993	11,047	3,645	11,548	12,554	2,731	9,823
1971	71,214	58,331	22,935	609	3,704	18,623	48,278	4,476	15,352	4,001	11,351	3,772	11,797	12,881	2,696	10,185
1972	73,675	60,341	23,668	628	3,889	19,151	50,007	4,541	15,949	4,113	11,836	3,908	12,276	13,334	2,684	10,649
1973	76,790	63,058	24,893	642	4,097	20,154	51,897	4,656	16,607	4,277	12,329	4,045	12,857	13,732	2,663	11,068
1974	78,265	64,095	24,794	697	4,020	20,077	53,471	4,725	16,987	4,433	12,554	4,148	13,441	14,170	2,724	11,446
1975	76,945	62,259	22,600	752	3,525	18,323	54,345	4,542	17,060	4,415	12,645	4,165	13,892	14,686	2,748	11,937
1976	79,382	64,511	23,352	779	3,576	18,997	56,030	4,582	17,755	4,546	13,209	4,271	14,551	14,871	2,733	12,138
1977	82,471	67,344	24,346	813	3,851	19,582	58,125	4,713	18,516	4,708	13,808	4,467	15,303	15,127	2,727	12,399
1978	86,697	71,026	25,585	851	4,229	20,505	61,113	4,923	19,542	4,969	14,573	4,724	16,252	15,672	2,753	12,919
1979	89,823	73,876	26,461	958	4,463	21,040	63,363	5,136	20,192	5,204	14,989	4,975	17,112	15,947	2,773	13,147
1980	90,406	74,166	25,658	1,027	4,346	20,285	64,748	5,146	20,310	5,275	15,035	5,180	17,890	16,241	2,866	13,375
1981	91,156	75,126	25,497	1,139	4,188	20,170	65,659	5,165	20,547	5,358	15,189	5,298	18,619	16,031	2,772	13,259
1982	89,596	73,793	23,907	1,143	3,911	18,853	65,689	5,081	20,401	5,280	15,122	5,340	19,064	15,803	2,739	13,064

<sup>1</sup>Data include Alaska and Hawaii beginning in 1959.

**10. Employment by State**

[Nonagricultural payroll data, in thousands]

State	December 1982	November 1983	December 1983 <sup>p</sup>	State	December 1982	November 1983	December 1983 <sup>p</sup>
Alabama	1,310.1	1,324.2	1,326.3	Montana	271.3	273.6	272.3
Alaska	195.5	210.3	210.3	Nebraska	598.3	605.4	601.1
Arizona	1,043.5	1,078.6	1,088.0	Nevada	405.1	424.6	424.7
Arkansas	719.7	756.0	753.9	New Hampshire	391.7	400.5	402.1
California	9,828.0	10,066.0	10,103.4	New Jersey	3,089.6	3,147.9	3,152.6
Colorado	1,323.2	1,345.9	1,351.8	New Mexico	476.5	485.0	485.9
Connecticut	1,439.9	1,457.7	1,467.0	New York	7,261.7	7,309.4	7,331.8
Delaware	261.5	266.2	266.0	North Carolina	2,352.4	2,412.7	2,416.8
District of Columbia	593.5	593.9	595.9	North Dakota	249.6	254.4	252.0
Florida	3,834.4	3,968.6	4,014.7	Ohio	4,102.5	4,187.0	4,183.3
Georgia	2,226.5	2,287.5	2,295.6	Oklahoma	1,218.6	1,206.5	1,210.8
Hawaii	402.8	400.1	402.1	Oregon	950.2	964.7	957.9
Idaho	312.7	326.1	322.9	Pennsylvania	4,475.7	4,539.2	4,540.0
Illinois	4,527.8	4,550.4	4,546.4	Rhode Island	391.4	401.8	400.9
Indiana	1,979.8	2,022.2	2,019.5	South Carolina	1,159.7	1,180.8	1,184.7
Iowa	1,023.0	1,029.7	1,025.6	South Dakota	228.7	236.0	233.7
Kansas	908.9	918.9	918.3	Tennessee	1,668.1	1,720.7	1,713.5
Kentucky	1,165.6	1,186.2	1,194.3	Texas	6,219.7	6,231.7	6,263.4
Louisiana	1,607.1	1,597.1	1,594.8	Utah	563.1	573.0	572.6
Maine	407.9	415.6	414.5	Vermont	203.4	206.5	207.6
Maryland	1,680.5	1,701.6	1,704.8	Virginia	2,140.2	2,190.5	2,198.5
Massachusetts	2,633.1	2,665.9	2,676.3	Washington	1,564.1	1,599.7	1,596.6
Michigan	3,165.9	3,266.7	3,276.9	West Virginia	595.7	596.1	596.1
Minnesota	1,693.9	1,744.6	1,744.6	Wisconsin	1,846.0	1,895.8	1,889.4
Mississippi	793.6	798.9	800.8	Wyoming	210.7	215.4	215.3
Missouri	1,908.6	1,938.3	1,932.6	Virgin Islands	36.2	35.5	35.2

<sup>p</sup> = preliminary.

### 11. Employment by industry division and major manufacturing group, seasonally adjusted

[Nonagricultural payroll data, in thousands]

Industry division and group	Annual average		1983												1984
	1981	1982	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. P	Jan. P
<b>TOTAL</b>	91,156	89,596	88,885	88,746	88,814	89,101	89,421	89,844	90,152	89,735	90,851	91,087	91,355	91,583	91,870
<b>PRIVATE SECTOR</b>	75,126	73,793	73,132	73,004	73,090	73,377	73,677	74,123	74,472	74,074	74,990	75,312	75,579	75,815	76,163
<b>GOODS-PRODUCING</b>	25,497	23,907	23,186	23,049	23,030	23,159	23,347	23,518	23,724	23,830	23,935	24,168	24,311	24,412	24,612
<b>Mining</b>	1,139	1,143	1,037	1,014	1,006	997	994	1,003	1,017	1,023	1,026	1,044	1,045	1,046	1,043
<b>Construction</b>	4,188	3,911	3,905	3,790	3,757	3,786	3,860	3,933	3,974	4,014	4,038	4,060	4,094	4,091	4,194
<b>Manufacturing</b>	20,170	18,853	18,244	18,245	18,267	18,376	18,493	18,582	18,733	18,793	18,871	19,064	19,172	19,275	19,375
Production workers	14,020	12,790	12,291	12,303	12,323	12,435	12,531	12,615	12,756	12,803	12,859	13,043	13,147	13,227	13,328
<b>Durable goods</b>	12,109	11,100	10,594	10,608	10,617	10,689	10,788	10,844	10,961	11,022	11,081	11,235	11,320	11,405	11,463
Production workers	8,294	7,350	6,931	6,949	6,961	7,035	7,115	7,169	7,278	7,329	7,378	7,522	7,601	7,667	7,726
Lumber and wood products	666	603	625	631	638	651	662	679	688	699	703	712	714	716	718
Furniture and fixtures	464	433	430	427	433	440	446	450	459	457	459	465	470	473	476
Stone, clay, and glass products	638	578	557	557	559	565	570	573	577	582	585	590	590	589	593
Primary metal industries	1,122	922	817	810	816	820	828	830	839	840	849	867	871	880	872
Fabricated metal products	1,590	1,435	1,364	1,364	1,362	1,369	1,379	1,384	1,391	1,410	1,411	1,430	1,438	1,449	1,457
Machinery, except electrical	2,498	2,267	2,048	2,042	2,030	2,031	2,064	2,066	2,094	2,109	2,115	2,131	2,158	2,176	2,195
Electric and electronic equipment	2,094	2,016	1,974	1,981	1,988	1,999	2,010	2,030	2,047	2,043	2,082	2,107	2,128	2,146	2,165
Transportation equipment	1,898	1,744	1,710	1,729	1,723	1,743	1,757	1,762	1,794	1,807	1,801	1,848	1,862	1,882	1,895
Instruments and related products	730	716	695	693	691	690	689	687	687	692	696	699	701	702	705
Miscellaneous manufacturing	408	386	374	374	377	381	383	383	385	383	380	386	388	392	387
<b>Nondurable goods</b>	8,061	7,753	7,650	7,637	7,650	7,687	7,705	7,738	7,772	7,771	7,790	7,829	7,852	7,870	7,912
Production workers	5,727	5,440	5,360	5,354	5,362	5,400	5,416	5,446	5,478	5,474	5,481	5,521	5,546	5,560	5,602
Food and kindred products	1,671	1,638	1,626	1,620	1,619	1,633	1,632	1,643	1,638	1,627	1,630	1,628	1,633	1,628	1,640
Tobacco manufactures	70	68	69	67	67	66	66	65	65	62	63	64	61	62	61
Textile mill products	823	750	726	726	730	733	736	745	746	752	753	759	758	760	765
Apparel and other textile products	1,244	1,164	1,150	1,148	1,143	1,149	1,153	1,159	1,180	1,175	1,177	1,191	1,199	1,206	1,212
Paper and allied products	689	662	653	652	652	654	656	657	658	659	662	665	666	670	671
Printing and publishing	1,266	1,269	1,266	1,265	1,269	1,274	1,276	1,281	1,284	1,289	1,290	1,297	1,301	1,303	1,310
Chemicals and allied products	1,109	1,079	1,057	1,056	1,056	1,058	1,058	1,056	1,059	1,056	1,060	1,061	1,061	1,063	1,067
Petroleum and coal products	214	201	200	199	199	199	198	198	197	195	195	193	193	192	192
Rubber and miscellaneous plastics products	737	701	688	691	699	707	716	721	732	739	742	753	762	769	777
Leather and leather products	238	221	215	214	216	214	214	213	213	217	218	218	218	217	217
<b>SERVICE-PRODUCING</b>	65,659	65,689	65,699	65,697	65,784	65,942	66,074	66,326	66,428	65,905	66,916	66,919	67,044	67,171	67,258
<b>Transportation and public utilities</b>	5,165	5,081	4,979	4,966	4,963	4,988	4,993	4,992	4,984	4,341	5,031	5,019	5,019	5,005	5,031
<b>Wholesale and retail trade</b>	20,547	20,401	20,355	20,343	20,350	20,329	20,356	20,494	20,529	20,580	20,612	20,666	20,718	20,773	20,837
<b>Wholesale trade</b>	5,358	5,280	5,185	5,181	5,176	5,180	5,197	5,222	5,229	5,249	5,274	5,287	5,291	5,312	5,340
<b>Retail trade</b>	15,189	15,122	15,170	15,162	15,174	15,149	15,159	15,272	15,300	15,331	15,338	15,379	15,427	15,461	15,497
<b>Finance, insurance, and real estate</b>	5,298	5,340	5,374	5,384	5,391	5,423	5,435	5,451	5,465	5,488	5,499	5,503	5,515	5,524	5,540
<b>Services</b>	18,619	19,064	19,238	19,262	19,356	19,478	19,546	19,668	19,770	19,835	19,913	19,956	20,016	20,101	20,143
<b>Government</b>	16,031	15,803	15,753	15,742	15,724	15,724	15,744	15,721	15,680	15,661	15,861	15,775	15,776	15,768	15,707
Federal	2,772	2,739	2,748	2,742	2,742	2,749	2,756	2,742	2,738	2,733	2,773	2,764	2,763	2,771	2,760
State and local	13,259	13,064	13,005	13,000	12,982	12,975	12,988	12,979	12,942	12,928	13,083	13,011	13,013	12,997	12,947

p = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

**12. Hours and earnings, by industry division, selected years, 1950-82**

[Gross averages, production or nonsupervisory workers on nonagricultural payrolls]

Year	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings
	Private sector			Mining			Construction			Manufacturing		
1950	\$53.13	39.8	\$1.34	\$67.16	37.9	\$1.77	\$69.68	37.4	\$1.86	\$58.32	40.5	\$1.44
1955	67.72	39.6	1.71	89.54	40.7	2.20	90.90	37.1	2.45	75.30	40.7	1.85
1960 <sup>1</sup>	80.67	38.6	2.09	105.04	40.4	2.60	112.57	36.7	3.07	89.72	39.7	2.26
1964	91.33	38.7	2.36	117.74	41.9	2.81	132.06	37.2	3.55	102.97	40.7	2.53
1965	95.45	38.8	2.46	123.52	42.3	2.92	138.38	37.4	3.70	107.53	41.2	2.61
1966	98.82	38.6	2.56	130.24	42.7	3.05	146.26	37.6	3.89	112.19	41.4	2.71
1967	101.84	38.0	2.68	135.89	42.6	3.19	154.95	37.7	4.11	114.49	40.6	2.82
1968	107.73	37.8	2.85	142.71	42.6	3.35	164.49	37.3	4.41	122.51	40.7	3.01
1969	114.61	37.7	3.04	154.80	43.0	3.60	181.54	37.9	4.79	129.51	40.6	3.19
1970	119.83	37.1	3.23	164.40	42.7	3.85	195.45	37.3	5.24	133.33	39.8	3.35
1971	127.31	36.9	3.45	172.14	42.4	4.06	211.67	37.2	5.69	142.44	39.9	3.57
1972	136.90	37.0	3.70	189.14	42.6	4.44	221.19	36.5	6.06	154.71	40.5	3.82
1973	145.39	36.9	3.94	201.40	42.4	4.75	235.89	36.8	6.41	166.46	40.7	4.09
1974	154.76	36.5	4.24	219.14	41.9	5.23	249.25	36.6	6.81	176.80	40.0	4.42
1975	163.53	36.1	4.53	249.31	41.9	5.95	266.08	36.4	7.31	190.79	39.5	4.83
1976	175.45	36.1	4.86	273.90	42.4	6.46	283.73	36.8	7.71	209.32	40.1	5.22
1977	189.00	36.0	5.25	301.20	43.4	6.94	295.65	36.5	8.10	228.90	40.3	5.68
1978	203.70	35.8	5.69	332.88	43.4	7.67	318.69	36.8	8.66	249.27	40.4	6.17
1979	219.91	35.7	6.16	365.07	43.0	8.49	342.99	37.0	9.27	269.34	40.2	6.70
1980	235.10	35.3	6.66	397.06	43.3	9.17	367.78	37.0	9.94	288.62	39.7	7.27
1981	255.20	35.2	7.25	439.75	43.7	10.04	299.26	36.9	10.82	318.00	39.8	7.99
1982	266.92	34.8	7.67	459.23	42.6	10.78	426.45	36.7	11.62	330.65	38.9	8.50
	Transportation and public utilities			Wholesale and retail trade			Finance, insurance, and real estate			Services		
1950				\$44.55	40.5	\$1.10	\$50.52	37.7	\$1.34			
1955				55.16	39.4	1.40	63.92	37.6	1.70			
1960 <sup>1</sup>				66.01	38.6	1.71	75.14	37.2	2.02			
1964	\$118.78	41.1	\$2.89	74.66	37.9	1.97	85.79	37.3	2.30	\$70.03	36.1	\$1.94
1965	125.14	41.3	3.03	76.91	37.7	2.04	88.91	37.2	2.39	73.60	35.9	2.05
1966	128.13	41.2	3.11	79.39	37.1	2.14	92.13	37.3	2.47	77.04	35.5	2.17
1967	130.82	40.5	3.23	82.35	36.6	2.25	95.72	37.1	2.58	80.38	35.1	2.29
1968	138.85	40.6	3.42	87.00	36.1	2.41	101.75	37.0	2.75	83.97	34.7	2.42
1969	147.74	40.7	3.63	91.39	35.7	2.56	108.70	37.1	2.93	90.57	34.7	2.61
1970	155.93	40.5	3.85	96.02	35.3	2.72	112.67	36.7	3.07	96.66	34.4	2.81
1971	168.82	40.1	4.21	101.09	35.1	2.88	117.85	36.6	3.22	103.06	33.9	3.04
1972	187.86	40.4	4.65	106.45	34.9	3.05	122.98	36.6	3.36	110.85	33.9	3.27
1973	203.31	40.5	5.02	111.76	34.6	3.23	129.20	36.6	3.53	117.29	33.8	3.47
1974	217.48	40.2	5.41	119.02	34.2	3.48	137.61	36.5	3.77	126.00	33.6	3.75
1975	233.44	39.7	5.88	126.45	33.9	3.73	148.19	36.5	4.06	134.67	33.5	4.02
1976	256.71	39.8	6.45	133.79	33.7	3.97	155.43	36.4	4.27	143.52	33.3	4.31
1977	278.90	39.9	6.99	142.52	33.3	4.28	165.26	36.4	4.54	153.45	33.0	4.65
1978	302.80	40.0	7.57	153.64	32.9	4.67	178.00	36.4	4.89	163.67	32.8	4.99
1979	325.58	39.9	8.16	164.96	32.6	5.06	190.77	36.2	5.27	175.27	32.7	5.36
1980	351.25	39.6	8.87	176.46	32.2	5.48	209.60	36.2	5.79	190.71	32.6	5.85
1981	382.18	39.4	9.70	190.62	32.2	5.92	229.05	36.3	6.31	208.97	32.6	6.41
1982	401.70	39.0	10.30	198.10	31.9	6.21	245.44	36.2	6.78	224.94	32.6	6.90

<sup>1</sup>Data include Alaska and Hawaii beginning in 1959.

### 13. Weekly hours, by industry division and major manufacturing group, seasonally adjusted

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1983												1984
	1981	1982	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. P	Jan. P
<b>PRIVATE SECTOR</b> .....	35.2	34.8	35.1	34.5	34.8	34.9	35.1	35.1	35.0	35.0	35.2	35.3	35.2	35.3	35.6
<b>MANUFACTURING</b> .....	39.8	38.9	39.7	39.2	39.5	40.1	40.0	40.1	40.2	40.3	40.8	40.6	40.6	40.5	40.9
Overtime hours .....	2.8	2.3	2.4	2.4	2.6	2.9	2.7	2.9	3.0	3.1	3.3	3.3	3.3	3.4	3.4
<b>Durable goods</b> .....	40.2	39.3	40.1	39.7	39.9	40.5	40.4	40.6	40.8	40.8	41.5	41.2	41.2	41.2	41.6
Overtime hours .....	2.8	2.2	2.2	2.3	2.5	2.8	2.6	2.8	3.0	3.1	3.4	3.4	3.5	3.5	3.6
Lumber and wood products .....	38.7	38.0	40.5	39.5	39.5	40.0	39.8	40.0	39.9	40.2	40.5	40.3	39.7	39.9	40.9
Furniture and fixtures .....	38.4	37.2	38.6	37.9	38.3	39.3	39.2	39.6	39.7	39.7	40.1	39.8	39.7	40.2	40.5
Stone, clay, and glass products .....	40.6	40.0	41.4	40.5	40.6	41.0	41.2	41.6	41.7	41.7	42.1	41.7	41.7	41.6	42.1
Primary metal industries .....	40.5	38.6	38.9	39.1	39.4	39.9	40.3	40.3	40.8	40.9	41.2	41.7	41.6	42.0	41.7
Fabricated metal products .....	40.3	39.2	39.9	39.6	39.7	40.5	40.4	40.5	40.7	40.9	41.6	41.2	41.4	41.4	41.6
Machinery, except electrical .....	40.9	39.7	39.6	39.4	39.7	40.2	40.0	40.4	40.7	40.7	41.2	41.3	41.3	41.4	41.9
Electric and electronic equipment .....	40.0	39.3	39.9	39.5	39.8	40.4	40.3	40.5	40.8	40.7	41.1	41.1	41.1	40.9	41.4
Transportation equipment .....	40.9	40.5	41.6	41.2	41.7	42.3	41.6	41.9	42.0	41.8	43.5	42.5	42.5	41.9	42.8
Instruments and related products .....	40.4	39.8	40.4	39.7	40.0	40.5	40.4	40.1	40.7	40.4	41.0	40.7	40.6	40.7	41.2
<b>Nondurable goods</b> .....	39.1	38.4	39.1	38.5	39.0	39.5	39.4	39.6	39.5	39.5	39.9	39.7	39.7	39.7	39.8
Overtime hours .....	2.8	2.5	2.6	2.6	2.7	3.0	2.9	3.0	3.0	3.1	3.1	3.1	3.1	3.2	3.1
Food and kindred products .....	39.7	39.4	39.3	39.0	39.2	39.6	39.4	39.8	39.4	39.6	39.9	39.7	39.5	39.6	39.5
Textile mill products .....	39.6	37.5	39.7	39.0	39.6	40.6	40.4	40.7	40.7	40.9	41.3	40.7	40.7	40.7	40.7
Apparel and other textile products .....	35.7	34.7	36.6	35.2	35.6	36.2	36.1	36.1	35.8	36.2	36.8	36.5	36.4	36.4	37.1
Paper and allied products .....	42.5	41.8	41.8	41.4	42.1	42.4	42.7	42.8	42.9	42.9	43.3	43.2	43.0	42.9	43.1
Printing and publishing .....	37.3	37.1	37.5	37.1	37.4	37.7	37.4	37.6	37.7	37.5	37.8	38.0	37.9	37.6	37.8
Chemicals and allied products .....	41.6	40.9	41.0	41.0	41.2	41.5	41.6	41.9	41.8	41.6	41.7	41.7	41.8	41.9	41.8
Petroleum and coal products .....	43.2	43.9	44.5	44.4	44.9	43.5	43.6	43.8	43.7	43.5	43.2	43.5	43.6	44.5	44.7
Leather and leather products .....	36.7	35.6	36.3	34.9	36.0	37.0	36.8	36.8	37.4	37.2	37.7	37.5	37.2	36.9	36.2
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	39.4	39.0	38.6	38.6	38.8	38.8	38.9	38.9	38.9	39.3	39.4	39.4	39.2	39.3	39.6
<b>WHOLESALE AND RETAIL TRADE</b> .....	32.2	31.9	31.9	31.4	31.7	31.7	31.9	32.0	31.9	31.8	31.8	32.1	32.0	32.3	32.4
<b>WHOLESALE TRADE</b> .....	38.5	38.4	38.5	38.2	38.4	38.5	38.6	38.7	38.6	38.5	38.7	38.7	38.7	38.7	38.8
<b>RETAIL TRADE</b> .....	30.1	29.9	29.9	29.3	29.7	29.6	29.9	29.9	29.8	29.7	29.7	30.0	30.0	30.3	30.4
<b>SERVICES</b> .....	32.6	32.6	32.9	32.5	32.7	32.7	32.9	32.7	32.6	32.7	32.8	32.9	32.7	32.6	32.8

p = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

**14. Hourly earnings, by industry division and major manufacturing group**

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1983												1984
	1981	1982	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. <sup>P</sup>	Jan. <sup>P</sup>
<b>PRIVATE SECTOR</b> .....	\$7.25	\$7.67	\$7.90	\$7.92	\$7.90	\$7.94	\$7.97	\$7.97	\$8.00	\$7.94	\$8.11	\$8.15	\$8.16	\$8.15	\$8.24
Seasonally adjusted .....	( <sup>1</sup> )	( <sup>1</sup> )	7.88	7.91	7.91	7.95	7.97	8.00	8.03	7.98	8.08	8.13	8.13	8.16	8.21
<b>MINING</b> .....	10.04	10.78	11.21	11.25	11.19	11.28	11.20	11.25	11.29	11.28	11.35	11.35	11.43	11.45	11.56
<b>CONSTRUCTION</b> .....	10.82	11.62	11.95	12.00	11.95	11.90	11.80	11.74	11.78	11.84	12.03	12.04	11.89	12.01	12.04
<b>MANUFACTURING</b> .....	7.99	8.50	8.71	8.75	8.74	8.77	8.78	8.81	8.86	8.79	8.90	8.92	8.99	9.06	9.07
<b>Durable goods</b> .....	8.54	9.06	9.26	9.31	9.29	9.31	9.34	9.37	9.40	9.34	9.48	9.49	9.56	9.62	9.62
Lumber and wood products .....	6.99	7.46	7.68	7.72	7.68	7.74	7.78	7.85	7.82	7.83	7.88	7.87	7.80	7.80	7.89
Furniture and fixtures .....	5.91	6.31	6.49	6.50	6.51	6.51	6.52	6.60	6.65	6.67	6.73	6.71	6.72	6.77	6.77
Stone, clay, and glass products .....	8.27	8.86	9.10	9.10	9.13	9.16	9.20	9.28	9.34	9.31	9.43	9.39	9.41	9.41	9.44
Primary metal industries .....	10.81	11.33	11.56	11.53	11.24	11.25	11.28	11.23	11.37	11.28	11.33	11.28	11.31	11.32	11.36
Fabricated metal products .....	8.19	8.78	8.98	9.04	9.05	9.07	9.08	9.11	9.10	9.12	9.21	9.22	9.27	9.38	9.34
<b>Machinery, except electrical</b> .....	8.81	9.29	9.40	9.44	9.46	9.48	9.59	9.63	9.65	9.61	9.71	9.74	9.81	9.91	9.90
<b>Electric and electronic equipment</b> .....	7.62	8.21	8.53	8.56	8.60	8.60	8.60	8.63	8.69	8.64	8.75	8.73	8.78	8.85	8.88
<b>Transportation equipment</b> .....	10.39	11.12	11.40	11.49	11.49	11.53	11.52	11.63	11.62	11.53	11.80	11.88	12.02	12.06	11.96
<b>Instruments and related products</b> .....	7.42	8.10	8.42	8.48	8.47	8.46	8.48	8.48	8.57	8.53	8.61	8.60	8.62	8.70	8.67
<b>Miscellaneous manufacturing</b> .....	5.97	6.43	6.72	6.73	6.75	6.76	6.82	6.81	6.82	6.81	6.85	6.85	6.86	6.99	7.05
<b>Nondurable goods</b> .....	7.18	7.73	7.97	7.99	8.00	8.03	8.03	8.04	8.11	8.05	8.11	8.11	8.18	8.24	8.28
Food and kindred products .....	7.44	7.89	8.09	8.11	8.16	8.20	8.18	8.17	8.17	8.12	8.14	8.13	8.23	8.31	8.36
Tobacco manufactures .....	8.88	9.78	9.87	9.96	10.43	10.61	10.74	10.91	10.84	10.24	9.90	9.67	10.74	10.28	10.67
Textile mill products .....	5.52	5.83	6.08	6.10	6.11	6.14	6.14	6.16	6.17	6.19	6.23	6.24	6.26	6.31	6.40
Apparel and other textile products .....	4.97	5.20	5.33	5.33	5.33	5.35	5.33	5.36	5.35	5.35	5.39	5.43	5.45	5.47	5.51
Paper and allied products .....	8.60	9.32	9.65	9.65	9.67	9.72	9.81	9.91	10.06	10.02	10.11	10.10	10.19	10.24	10.23
Printing and publishing .....	8.19	8.75	8.97	8.99	9.03	9.03	9.05	9.06	9.10	9.14	9.25	9.24	9.27	9.32	9.29
Chemicals and allied products .....	9.12	9.96	10.34	10.41	10.39	10.43	10.50	10.52	10.58	10.61	10.69	10.78	10.86	10.89	10.90
Petroleum and coal products .....	11.38	12.46	13.16	13.25	13.28	13.27	13.17	13.17	13.20	13.16	13.36	13.36	13.44	13.60	13.63
Rubber and miscellaneous plastics products .....	7.17	7.65	7.91	7.91	7.92	7.95	7.97	7.96	8.06	8.03	8.08	8.12	8.10	8.20	8.23
Leather and leather products .....	4.99	5.32	5.50	5.50	5.52	5.52	5.51	5.49	5.52	5.50	5.56	5.55	5.56	5.57	5.65
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	9.70	10.30	10.69	10.72	10.68	10.72	10.74	10.73	10.86	10.68	10.90	10.93	11.01	11.00	11.05
<b>WHOLESALE AND RETAIL TRADE</b> .....	5.92	6.21	6.42	6.45	6.43	6.45	6.46	6.46	6.48	6.47	6.54	6.57	6.58	6.54	6.67
<b>WHOLESALE TRADE</b> .....	7.56	8.02	8.31	8.28	8.27	8.34	8.36	8.35	8.42	8.41	8.48	8.54	8.54	8.60	8.67
<b>RETAIL TRADE</b> .....	5.25	5.47	5.65	5.69	5.68	5.69	5.71	5.71	5.72	5.71	5.77	5.78	5.81	5.77	5.86
<b>FINANCE, INSURANCE, AND REAL ESTATE</b> .....	6.31	6.78	7.19	7.22	7.19	7.23	7.31	7.26	7.30	7.25	7.33	7.45	7.39	7.42	7.56
<b>SERVICES</b> .....	6.41	6.90	7.18	7.19	7.17	7.20	7.23	7.20	7.18	7.18	7.31	7.39	7.41	7.43	7.54

<sup>1</sup>Not available.  
p = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

**15. Hourly Earnings Index, for production workers on private nonagricultural payrolls, by industry**

[1977 = 100]

Industry	Not seasonally adjusted					Seasonally adjusted						Percent change from: Dec. 1984 to Jan. 1984
	Jan. 1983	Nov. 1983	Dec. 1983 <sup>P</sup>	Jan. 1984 <sup>P</sup>	Percent change from: Jan. 1983 to Jan. 1984	Jan. 1983	Sept. 1983	Oct. 1983	Nov. 1983	Dec. 1983 <sup>P</sup>	Jan. 1984 <sup>P</sup>	
<b>PRIVATE SECTOR (In current dollars)</b> .....	153.4	157.1	157.6	158.8	3.6	152.7	155.9	156.8	156.9	157.5	158.2	0.5
Mining .....	164.7	169.8	170.1	171.6	4.2	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Construction .....	144.2	145.0	145.8	146.0	1.3	144.0	145.5	145.1	144.6	145.2	145.8	.4
Manufacturing .....	157.0	159.7	160.4	161.1	2.6	156.5	158.3	158.9	159.7	160.1	160.6	.4
Transportation and public utilities .....	155.0	159.8	159.9	160.9	3.8	154.4	157.2	158.4	158.7	159.2	160.2	.6
Wholesale and retail trade .....	149.4	153.8	153.9	155.2	3.8	148.9	153.1	154.1	154.1	154.6	154.7	.0
Finance, insurance, and real estate .....	156.7	161.0	161.7	164.8	5.2	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Services .....	153.5	158.5	159.0	161.2	5.0	152.2	157.1	158.4	158.1	159.0	159.9	.6
<b>PRIVATE SECTOR (In constant dollars)</b> .....	95.3	94.6	94.9	( <sup>2</sup> )	( <sup>2</sup> )	94.7	94.2	94.4	94.3	94.5	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup>This series is not seasonally adjusted because the seasonal component is small relative to the trend-cycle, irregular components, or both, and consequently cannot be separated with sufficient precision.

<sup>2</sup>Not available.

p = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.



### 16. Weekly earnings, by industry division and major manufacturing group

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1983												1984
	1981	1982	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. <sup>p</sup>	Jan. <sup>p</sup>
<b>PRIVATE SECTOR</b>															
Current dollars	\$255.20	\$266.92	\$273.34	\$270.86	\$274.13	\$275.52	\$278.15	\$280.54	\$283.20	\$281.08	\$286.28	\$287.70	\$286.42	\$289.33	\$289.22
Seasonally adjusted	( <sup>1</sup> )	( <sup>1</sup> )	276.59	272.90	275.27	277.46	279.75	280.80	281.05	279.30	284.42	286.99	286.18	288.05	292.28
Constant (1977) dollars	170.13	167.87	169.88	168.24	169.85	169.55	170.33	171.37	172.37	170.35	172.77	173.31	172.44	174.19	( <sup>1</sup> )
<b>MINING</b>	438.75	459.23	476.43	464.63	467.74	469.25	472.64	478.13	475.31	481.66	489.19	490.32	490.35	499.22	500.55
<b>CONSTRUCTION</b>	399.26	426.45	440.96	424.80	434.98	436.73	441.32	444.95	450.00	449.92	455.94	449.09	431.61	441.97	437.05
<b>MANUFACTURING</b>															
Current dollars	318.00	330.65	341.43	339.50	346.10	349.05	350.32	355.04	354.40	353.36	363.12	363.04	366.79	373.27	366.43
Constant (1977) dollars	212.00	207.96	212.20	210.87	214.44	214.80	214.53	216.88	215.70	214.16	219.14	218.70	220.82	224.73	( <sup>1</sup> )
<b>Durable goods</b>	343.31	356.06	367.62	366.81	372.53	375.19	377.34	382.30	379.76	380.14	392.47	391.94	396.74	404.04	396.34
Lumber and wood products	270.51	283.48	300.29	299.54	302.59	308.05	312.76	320.28	313.58	319.46	320.72	318.74	308.88	312.00	311.66
Furniture and fixtures	226.94	234.73	243.38	243.10	251.29	253.89	254.28	263.34	258.69	267.47	271.22	271.08	269.47	278.25	266.06
Stone, clay, and glass products	335.76	354.40	364.91	358.54	368.85	374.64	380.88	390.69	391.35	391.95	399.83	395.32	395.22	394.28	385.15
Primary metal industries	437.81	437.34	450.84	450.82	456.23	451.13	452.33	454.82	460.49	457.97	469.06	464.74	470.50	479.97	473.71
Fabricated metal products	330.06	344.18	354.71	354.37	361.10	364.61	366.83	371.69	365.82	372.10	381.29	380.79	385.63	396.77	384.81
<b>Machinery except electrical</b>	360.33	368.81	372.24	371.94	377.40	379.20	382.64	388.09	386.97	387.28	399.08	400.31	408.10	422.17	414.81
Electric and electronic equipment	304.80	322.65	338.64	336.41	344.00	344.86	345.72	350.38	350.21	349.92	358.75	358.80	363.49	369.93	365.86
Transportation equipment	424.95	450.36	468.54	469.94	480.28	484.26	482.69	491.95	484.55	475.04	505.04	506.09	515.66	522.20	505.91
Instruments and related products	299.77	322.38	337.64	335.81	340.49	339.25	341.74	340.90	344.51	343.76	353.01	350.02	353.42	360.18	354.60
Miscellaneous manufacturing	231.64	247.56	260.06	253.72	263.25	263.64	264.62	264.91	264.62	266.27	270.58	272.63	273.71	279.60	274.25
<b>Nondurable goods</b>	280.74	296.83	307.64	305.22	311.20	313.97	315.58	319.19	319.53	319.59	325.21	323.59	327.20	330.42	325.40
Food and kindred products	295.37	310.87	315.51	312.24	316.61	318.98	321.47	325.17	322.72	324.80	328.86	323.57	327.55	333.23	328.55
Tobacco manufactures	344.54	369.68	360.26	339.64	378.61	395.75	401.68	420.04	398.91	386.05	380.16	370.36	431.75	387.56	389.46
Textile mill products	218.59	218.63	237.12	286.07	242.57	246.83	248.67	253.18	248.03	254.41	257.92	256.46	256.66	258.71	255.36
Apparel and other textile products	177.43	180.44	188.68	185.48	190.28	192.07	192.41	196.18	193.14	195.81	198.35	199.82	200.02	200.20	197.81
Paper and allied products	365.50	389.58	402.41	396.62	406.14	410.18	415.94	425.14	429.56	428.86	439.79	436.32	440.21	447.49	439.89
<b>Printing and publishing</b>	305.49	324.63	332.79	330.83	338.63	337.72	337.57	338.84	341.25	344.58	351.50	351.12	353.19	357.89	347.45
Chemicals and allied products	379.39	407.36	421.87	425.77	428.07	432.85	435.75	440.79	440.13	439.25	447.91	449.53	457.21	461.74	453.44
Petroleum and coal products	491.62	546.99	572.46	573.73	584.32	581.23	575.73	579.48	584.76	572.46	591.85	585.17	590.02	603.84	595.63
Rubber and miscellaneous plastics products	288.95	302.94	317.19	314.03	321.55	326.75	327.57	328.75	329.65	330.84	338.55	340.23	340.20	347.68	345.66
Leather and leather products	183.13	189.39	196.90	190.30	197.06	201.48	204.42	207.52	207.00	206.25	208.50	206.46	207.39	207.20	201.14
<b>TRANSPORTATION AND PUBLIC UTILITIES</b>	382.18	401.70	409.43	411.65	413.32	413.79	415.64	419.54	425.71	421.86	429.46	430.64	432.69	435.60	433.16
<b>WHOLESALE AND RETAIL TRADE</b>	190.62	198.10	201.59	199.31	201.90	203.18	205.43	207.37	210.60	209.63	209.28	210.24	209.90	213.20	212.11
<b>WHOLESALE TRADE</b>	291.06	307.97	318.27	313.81	316.74	319.42	321.86	323.15	326.70	325.47	328.18	331.35	331.35	335.40	334.66
<b>RETAIL TRADE</b>	158.03	163.55	164.98	163.30	166.42	167.29	169.59	171.87	175.03	174.16	172.52	172.82	173.14	177.14	174.04
<b>FINANCE, INSURANCE, AND REAL ESTATE</b>	229.05	245.44	262.44	260.64	258.84	261.00	265.35	262.09	264.99	261.73	263.88	270.44	266.78	268.60	276.70
<b>SERVICES</b>	208.97	224.94	234.79	232.96	233.74	234.72	236.42	236.88	237.66	237.66	239.04	242.39	241.57	242.22	245.80

<sup>1</sup> Not available.  
p = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

### 17. Indexes of diffusion: industries in which employment increased

[In percent]

Time span	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Over 1-month span	1982	28.5	45.4	36.0	39.0	47.6	32.8	38.4	37.1	34.1	29.3	32.0	42.2
	1983	56.5	45.7	62.4	69.1	71.0	64.5	68.5	68.0	60.8	70.7	64.5	P64.2
	1984	P66.7	—	—	—	—	—	—	—	—	—	—	—
Over 3-month span	1982	25.3	28.8	32.0	34.1	32.5	33.6	27.2	27.2	26.1	25.5	24.7	40.6
	1983	45.4	55.1	65.6	75.8	76.1	77.2	73.9	79.6	79.6	74.2	P71.2	P73.1
Over 6-month span	1982	20.2	23.7	25.3	29.8	26.1	26.1	23.4	19.1	21.2	26.1	26.6	35.8
	1983	50.5	63.2	73.4	76.3	79.3	83.6	82.5	80.4	P82.5	P82.3	—	—
Over 12-month span	1982	22.0	20.7	18.0	19.4	18.3	20.7	20.7	22.8	24.2	31.5	37.6	44.1
	1983	48.9	58.3	62.6	73.4	76.1	P80.6	P83.3	—	—	—	—	—

p = preliminary.

are counted as rising.) Data are centered within the spans. See the "Definitions" in this section.

NOTE: Figures are the percent of industries with employment rising. (Half of the unchanged components

See "Notes" on the data" for a description of the most recent benchmark revision.

## UNEMPLOYMENT INSURANCE DATA

NATIONAL UNEMPLOYMENT INSURANCE DATA are compiled monthly by the Employment and Training Administration of the U.S. Department of Labor from monthly reports of unemployment insurance activity prepared by State agencies. Railroad unemployment insurance data are prepared by the U.S. Railroad Retirement Board.

### Definitions

Data for **all programs** represent an unduplicated count of insured unemployment under State programs, Unemployment Compensation for Ex-Servicemen, and Unemployment Compensation for Federal Employees, and the Railroad Insurance Act.

Under both State and Federal unemployment insurance programs for civilian employees, insured workers must report the completion of at least 1 week of unemployment before they are defined as unemployed. Persons not covered by unemployment insurance (about 10 percent of the labor force) and those who have exhausted or not yet earned benefit rights are excluded from the scope of the survey. **Initial claims** are notices filed by

persons in unemployment insurance programs to indicate they are out of work and wish to begin receiving compensation. A claimant who continued to be unemployed a full week is then counted in the insured unemployment figure. The **rate of insured unemployment** expresses the number of insured unemployed as a percent of the average insured employment in a 12-month period.

Average weekly seasonally adjusted insured unemployment data are computed by BLS' Weekly Seasonal Adjustment program. This procedure incorporated the X-11 Variant of the Census Method II Seasonal Adjustment program.

An **application** for benefits is filed by a railroad worker at the beginning of his first period of unemployment in a benefit year; no application is required for subsequent periods in the same year. **Number of payments** are payments made in 14-day registration periods. The **average amount of benefit payment** is an average for all compensable periods, not adjusted for recovery of overpayments or settlement of underpayments. However, **total benefits paid** have been adjusted.

### 18. Unemployment insurance and employment service operations

[All items except average benefits amounts are in thousands]

Item	1983												
	1982 Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec. <sup>P</sup>
<b>All programs:</b>													
Insured unemployment	5,074	5,459	5,437	5,134	4,642	3,947	3,481	3,275	2,917	2,580	2,478	2,620	2,915
State unemployment insurance program: <sup>1</sup>													
Initial claims <sup>2</sup>	3,080	3,143	2,065	2,075	1,874	1,666	1,740	1,804	1,668	1,381	<sup>r</sup> 1,522	1,714	2,191
Insured unemployment (average weekly volume)	4,581	4,923	4,759	4,401	3,906	3,361	3,063	3,049	2,766	2,449	2,358	2,508	2,805
Rate of insured unemployment	5.2	5.6	5.5	5.0	4.5	3.9	3.5	3.5	3.2	2.8	2.7	2.9	3.3
Weeks of unemployment compensated	17,836	18,307	16,895	19,529	14,986	13,133	12,819	10,959	11,305	<sup>r</sup> 9,383	8,417	9,264	10,739
Average weekly benefit amount for total unemployment	<sup>r</sup> \$123.55	\$124.29	\$124.47	\$125.47	\$124.85	\$124.49	\$123.44	\$121.59	\$121.42	\$121.36	<sup>r</sup> \$122.94	122.04	125.11
Total benefits paid	<sup>r</sup> \$2,137,986	\$2,205,551	\$2,052,415	\$2,367,752	\$1,816,539	\$1,587,888	\$1,549,758	\$1,298,189	\$1,337,442	\$1,104,362	<sup>r</sup> \$1,001,668	1,094,196	1,297,911
State unemployment insurance program: <sup>1</sup> (Seasonally adjusted data)													
Initial claims <sup>2</sup>	2,586	2,187	2,138	2,148	1,952	1,993	1,836	1,723	1,841	1,664	<sup>r</sup> 1,656	1,702	1,687
Insured unemployment (average weekly volume)	4,355	3,980	3,979	3,884	3,774	3,538	3,301	3,303	3,026	3,088	2,617	2,677	2,721
Rate of insured unemployment	5.0	4.6	4.6	4.5	4.3	4.1	3.8	3.8	3.5	3.6	3.1	3.1	3.2
Unemployment compensation for ex-servicemen: <sup>3</sup>													
Initial claims <sup>1</sup>	24	21	16	18	15	14	16	16	19	17	16	15	15
Insured unemployment (average weekly volume)	26	37	37	34	30	26	25	25	26	27	28	28	27
Weeks of unemployment compensated	90	132	143	156	117	104	107	94	108	106	<sup>r</sup> 104	115	115
Total benefits paid	\$11,210	\$16,807	\$18,032	\$19,588	\$14,776	\$13,111	\$13,588	\$12,118	\$13,855	\$13,519	<sup>r</sup> \$14,122	15,144	15,031
Unemployment compensation for Federal civilian employees: <sup>4</sup>													
Initial claims	15	16	10	11	10	9	13	12	11	11	15	13	13
Insured unemployment (average weekly volume)	33	35	33	31	26	22	21	23	22	22	25	27	29
Weeks of unemployment compensated	<sup>r</sup> 145	142	131	146	109	93	90	85	94	83	<sup>r</sup> 88	109	120
Total benefits paid	<sup>r</sup> \$16,118	\$16,045	\$15,083	\$16,871	\$12,422	\$10,603	\$10,272	\$9,640	\$10,760	\$9,522	<sup>r</sup> \$10,228	12,390	13,960
Railroad unemployment insurance:													
Applications	17	20	7	8	94	4	30	55	14	9	7	8	8
Insured unemployment (average weekly volume)	83	102	72	65	79	90	49	49	46	41	48	40	43
Number of payments	172	219	158	169	172	183	123	92	107	103	92	92	95
Average amount of benefit payment	\$217.00	\$220.32	\$214.54	\$213.44	\$203.87	\$215.15	\$203.54	\$199.87	\$214.21	\$214.77	\$211.41	\$212.36	\$213.71
Total benefits paid	\$39,500	\$44,514	\$33,100	\$36,243	\$27,783	\$29,411	\$14,984	\$17,551	\$21,789	\$20,239	\$19,531	\$19,536	\$19,870
Employment service: <sup>5</sup>													
New applications and renewals	4,527	.....	.....	8,381	.....	.....	11,987	.....	.....	15,595	.....	.....	.....
Nonfarm placements	642	.....	.....	1,184	.....	.....	1,921	.....	.....	3,012	.....	.....	.....

<sup>1</sup>Initial claims and State insured unemployment include data under the program for Puerto Rican sugarcane workers.

<sup>2</sup>Excludes transition claims under State programs.

<sup>3</sup>Excludes data on claims and payments made jointly with other programs.

<sup>4</sup>Excludes data or claims and payments made jointly with State programs.

<sup>5</sup>Cumulative total for fiscal year (October 1-September 30). Data computed quarterly.

NOTE: Data for Puerto Rico and the Virgin Islands included. Dashes indicate data not available.

p = preliminary.

r = revised.

## PRICE DATA

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 (1967 = 100, unless otherwise noted).

### Definitions

The Consumer Price Index is a monthly statistical measure of the average change in prices in a fixed market basket of goods and services. Effective with the January 1978 index, the Bureau of Labor Statistics began publishing CPI's for two groups of the population. It introduced a CPI for All Urban Consumers, covering 80 percent of the total noninstitutional population, and revised the CPI for Urban Wage Earners and Clerical Workers, covering about half the new index population. The All Urban Consumers index covers in addition to wage earners and clerical workers, 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 is kept essentially unchanged between major revisions so that only price changes will be measured. Data are collected from more than 24,000 retail establishments and 24,000 tenants in 85 urban areas across the country. All taxes directly associated with the purchase and use of items are included in the index. Because the CPI's are based on the expenditures of two population groups in 1972-73, they may not accurately reflect the experience of individual families and single persons with different buying habits.

Though the CPI is often called the "Cost-of-Living Index," it measures only price change, which is just one of several important factors affecting living costs. Area indexes do not measure differences in the level of prices among cities. They only measure the average change in prices for each area since the base period.

**Producer Price Indexes** measure average changes in prices received in primary markets of the United States by products of commodities in all stages of processing. The sample used for calculating these indexes contains about 2,800 commodities and about 10,000 quotations per month selected to represent the movement of prices of all commodities produced in the manufacturing, agriculture, forestry, fishing, mining, gas and electricity, and public utilities sectors. The universe includes all commodities produced or imported for sale in commercial transactions in primary markets in the United States.

Producer Price Indexes can be organized by stage of processing or by commodity. The stage of processing structure organizes products by degree of fabrication (that is, finished goods, intermediate or semifinished goods, and crude materials). The commodity structure organizes products by similarity of end-use or material composition.

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.

In calculating Producer Price Indexes, price changes for the various commodities are averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1972. 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 groupings.

**Price indexes for the output of selected SIC industries** measure average price changes in commodities produced by particular industries, as defined in the *Standard Industrial Classification Manual 1972* (Washington, U.S. Office of Management and Budget, 1972). These indexes are derived from several price series, combined to match the economic activity of the specified industry and weighted by the value of shipments in the industry. They use data from comprehensive industrial censuses conducted by the U.S. Bureau of the Census and the U.S. Department of Agriculture.

### Notes on the data

Regional CPI's cross classified by population size were introduced in the May 1978 *Review*. These indexes enable users in local areas for which an index is not published to get a better approximation of the CPI for their area by using the appropriate population size class measure for their region. The cross-classified indexes are published bimonthly. (See table 20.)

For details concerning the 1978 revision of the CPI, see *The Consumer Price Index: Concepts and Content Over the Years*, Report 517, revised edition (Bureau of Labor Statistics, May 1978).

As of January 1976, the Producer Price Index incorporated a revised weighting structure reflecting 1972 values of shipments.

Additional data and analyses of price changes are provided in the *CPI Detailed Report* and *Producer Prices and Price Indexes*, both monthly publications of the Bureau.

For a discussion of the general method of computing producer, and industry price indexes, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 7. For consumer prices, see *BLS Handbook of Methods for Surveys and Studies* (1976), chapter 13. See also John F. Early, "Improving the measurement of producer price change," *Monthly Labor Review*, April 1978. For industry prices, see also Bennett R. Moss, "Industry and Sector Price Indexes," *Monthly Labor Review*, August 1965.

**19. Consumer Price Index for Urban Wage Earners and Clerical Workers, annual averages and changes, 1967-82**

[1967 = 100]

Year	All items		Food and beverages		Housing		Apparel and upkeep		Transportation		Medical care		Entertainment		Other goods and services	
	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change
1967	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...
1968	104.2	4.2	103.6	3.6	104.0	4.0	105.4	5.4	103.2	3.2	106.1	6.1	105.7	5.7	105.2	5.2
1969	109.8	5.4	108.8	5.0	110.4	6.2	111.5	5.8	107.2	3.9	113.4	6.9	111.0	5.0	110.4	4.9
1970	116.3	5.9	114.7	5.4	118.2	7.1	116.1	4.1	112.7	5.1	120.6	6.3	116.7	5.1	115.8	5.8
1971	121.3	4.3	118.3	3.1	123.4	4.4	119.8	3.3	118.6	5.2	128.4	6.5	122.9	5.3	122.4	4.8
1972	125.3	3.3	123.2	4.1	128.1	3.8	122.3	3.1	119.9	1.1	132.5	3.2	126.5	2.9	127.5	4.2
1973	133.1	6.2	139.5	13.2	133.7	4.4	126.8	3.7	123.8	3.3	137.7	3.9	130.0	2.8	132.5	3.9
1974	147.7	11.0	158.7	13.8	148.8	11.3	136.2	7.4	137.7	11.2	150.5	9.3	139.8	7.5	142.0	7.2
1975	161.2	9.1	172.1	8.4	164.5	10.6	142.3	4.5	150.6	9.4	168.6	12.0	152.2	8.9	153.9	8.4
1976	170.5	5.8	177.4	3.1	174.6	6.1	147.6	3.7	165.5	9.9	184.7	9.5	159.8	5.0	162.7	5.7
1977	181.5	6.5	188.0	8.0	186.5	6.8	154.2	4.5	177.2	7.1	202.4	9.6	167.7	4.9	172.2	5.8
1978	195.3	7.6	206.2	9.7	202.6	8.6	159.5	3.4	185.8	4.9	219.4	8.4	176.2	5.1	183.2	6.4
1979	217.7	11.5	228.7	10.9	227.5	12.3	166.4	4.3	212.8	14.5	240.1	9.4	187.6	6.5	196.3	7.2
1980	247.0	13.5	248.7	8.7	263.2	15.7	177.4	6.6	250.5	17.7	287.2	11.3	203.7	8.5	213.6	8.8
1981	272.3	10.2	267.8	7.7	293.2	11.4	186.6	5.2	281.3	12.3	295.1	10.4	219.0	7.5	233.3	9.2
1982	288.6	6.0	278.5	4.0	314.7	7.3	190.9	2.3	293.1	4.2	326.9	10.8	232.4	6.1	257.0	10.2

**20. Consumer Price Index for All Urban Consumers and revised CPI for Urban Wage Earners and Clerical Workers, U.S. city average—general summary and groups, subgroups, and selected items**

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982		1983					1982		1983				
	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
All items	292.4	299.3	300.3	301.8	302.6	303.1	303.5	292.0	298.2	299.5	300.8	301.3	301.4	301.5
Food and beverages	279.1	284.7	284.9	285.3	285.7	285.3	286.5	279.6	285.0	285.1	285.6	285.9	285.6	286.8
Housing	316.3	324.5	324.8	326.4	326.8	327.0	327.4	316.8	323.1	324.3	325.3	325.2	324.5	324.2
Apparel and upkeep	193.6	195.0	197.3	200.4	200.7	200.7	199.3	192.8	194.0	196.3	199.3	199.8	199.7	198.1
Transportation	294.8	300.4	302.4	303.7	305.0	306.3	306.3	296.3	301.9	304.1	305.5	306.9	308.2	308.2
Medical care	344.3	357.7	360.0	361.2	362.9	364.9	366.2	341.8	355.6	359.9	359.2	360.9	362.9	364.3
Entertainment	240.1	246.0	246.6	247.5	249.1	249.5	249.5	236.5	242.5	243.1	244.1	245.4	245.7	245.8
Other goods and services	276.6	287.5	289.0	294.4	298.6	298.1	298.6	274.0	286.4	288.0	292.0	294.1	295.5	295.9
Commodities	267.7	272.5	273.4	274.5	275.0	275.2	275.5	268.2	274.2	275.1	275.9	276.1	276.2	276.3
Commodities less food and beverages	258.0	262.3	263.6	265.1	265.8	266.3	266.0	258.8	264.9	266.1	267.2	267.3	267.5	267.1
Nondurables less food and beverages	270.0	273.5	274.7	275.8	275.2	274.5	273.5	271.9	275.7	276.9	277.9	277.4	276.6	275.4
Durables	247.3	252.9	254.3	256.4	258.7	261.0	261.8	247.0	254.8	256.0	257.0	257.7	258.7	258.9
Services	335.6	345.6	346.8	349.0	350.2	351.0	351.6	336.2	342.8	344.8	346.9	348.1	348.2	348.4
Rent, residential	230.8	237.1	238.2	239.5	240.4	241.3	242.0	230.3	236.5	237.6	238.9	239.8	240.7	241.3
Household services less rent of shelter (12/82 = 100)	100.0	104.8	104.8	105.1	104.8	104.2	104.1	...	...	...	...	...	...	...
Transportation services	299.4	302.3	304.0	305.4	307.8	310.1	310.8	296.7	298.4	300.2	301.4	303.9	306.0	306.9
Medical care services	373.4	387.2	389.8	391.0	392.9	395.0	396.3	370.1	384.4	387.0	388.3	390.2	392.3	393.8
Other services	270.0	276.3	276.9	282.5	285.2	286.5	287.2	267.5	274.2	274.8	279.6	282.2	283.6	284.3
Special indexes:														
All items less food	292.1	299.3	300.5	302.3	303.2	303.9	304.0	292.1	298.5	300.0	301.5	302.1	302.3	302.1
All items less homeowners' costs	...	102.3	102.7	103.2	103.5	103.6	103.7	...	...	...	...	...	...	...
All items less mortgage interest costs	...	...	...	...	...	...	...	278.3	285.3	286.3	287.5	288.1	288.3	288.5
Commodities less food	255.8	260.2	261.4	262.9	263.6	264.1	263.8	256.6	262.7	263.9	264.9	265.1	264.9	264.9
Nondurables less food	264.7	268.4	269.6	270.6	270.2	269.5	268.5	266.6	270.6	271.7	272.8	272.3	271.5	270.4
Nondurables less food and apparel	305.2	310.4	310.9	311.0	310.2	309.3	308.6	306.5	312.1	312.7	312.8	311.9	310.9	310.1
Nondurables	275.8	280.3	281.0	281.8	281.7	281.1	281.2	276.8	281.4	282.1	282.8	282.7	282.1	282.2
Services less rent of shelter (12/82 = 100)	100.0	103.1	103.5	104.2	104.5	104.7	104.8	...	...	...	...	...	...	...
Services less medical care	329.3	338.9	339.9	342.2	343.3	344.1	344.5	330.4	336.1	338.1	340.2	341.3	341.3	341.3
Domestically produced farm foods	264.8	269.6	269.2	269.2	268.5	267.7	269.7	264.0	268.5	268.0	268.1	267.4	266.7	268.7
Selected beef cuts	270.0	275.8	270.5	267.5	265.6	265.3	265.5	271.2	277.2	271.6	268.9	266.7	266.4	266.6
Energy <sup>1</sup>	419.9	430.1	429.8	429.3	425.1	419.9	418.0	420.8	430.9	430.7	430.2	425.8	420.8	418.7
Energy commodities <sup>1</sup>	425.4	423.4	423.7	422.1	418.2	414.4	411.8	425.6	424.5	424.9	423.4	419.6	415.8	412.9
All items less energy	282.5	289.2	290.3	292.1	293.4	294.4	295.0	281.5	287.4	288.8	290.3	291.3	291.8	292.1
All items less food and energy	279.9	286.8	288.2	290.2	291.8	293.2	293.6	279.0	284.9	286.6	288.3	289.5	290.3	290.3
Commodities less food and energy	237.1	242.7	244.2	246.2	247.6	248.9	249.0	236.8	243.8	245.1	246.4	247.1	247.8	247.7
Services less energy	329.6	337.9	339.3	341.6	343.3	344.9	345.5	330.1	334.5	336.8	339.0	340.8	341.6	341.8
Purchasing power of the consumer dollar, 1967 = \$1	\$0.342	\$0.334	\$0.333	\$0.331	\$0.330	\$0.330	\$0.329	\$0.342	\$0.335	\$0.334	\$0.332	\$0.332	\$0.332	\$0.332

See footnote at end of table.

## 20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers						Urban Wage Earners and Clerical Workers							
	1982	1983					1982	1983						
	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	
<b>FOOD AND BEVERAGES</b>	279.1	284.7	284.9	285.3	285.7	285.3	286.5	279.6	285.0	285.1	285.6	285.9	285.6	286.8
<b>Food</b>	286.5	292.0	292.2	292.6	292.9	292.5	293.9	286.7	292.1	292.2	292.6	292.9	292.6	294.0
Food at home	277.8	282.8	282.5	282.5	282.3	281.4	283.0	277.1	281.8	281.5	281.5	281.3	280.5	282.1
Cereals and bakery products	286.3	293.7	294.0	293.7	294.0	295.7	297.1	284.9	292.3	292.5	292.3	292.6	294.3	295.7
Cereals and cereal products (12/77 = 100)	153.4	158.3	158.6	158.5	158.1	157.9	158.2	154.2	159.2	159.5	159.3	158.8	158.6	158.9
Flour and prepared flour mixes (12/77 = 100)	139.5	142.8	143.9	142.9	141.4	140.8	140.1	139.8	143.3	144.6	143.4	141.9	141.3	140.4
Cereal (12/77 = 100)	168.0	176.7	177.2	177.5	177.6	177.3	178.0	170.1	178.8	179.5	179.7	179.8	179.4	180.1
Rice, pasta, and cornmeal (12/77 = 100)	145.3	146.5	145.6	146.0	145.5	146.1	146.8	146.5	147.7	146.8	147.1	146.6	147.2	148.0
Bakery products (12/77 = 100)	150.9	154.4	154.5	154.4	154.8	156.0	156.9	149.6	153.2	153.3	153.1	153.5	154.8	155.7
White bread	248.1	254.3	253.1	252.9	254.4	257.0	257.4	243.9	249.9	248.7	248.5	250.0	252.7	253.2
Other breads (12/77 = 100)	147.6	149.5	150.1	149.8	149.8	151.9	152.0	149.6	151.6	152.2	151.9	151.8	154.1	154.1
Fresh biscuits, rolls, and muffins (12/77 = 100)	151.6	153.2	153.4	152.6	154.4	155.7	157.8	147.6	149.6	149.6	148.7	150.6	151.7	153.7
Fresh cakes and cupcakes (12/77 = 100)	151.5	155.4	154.9	155.2	156.2	157.9	159.7	149.7	153.6	153.3	153.5	154.5	156.2	157.9
Cookies (12/77 = 100)	153.7	157.0	157.6	157.6	156.0	157.6	159.2	154.6	157.9	158.5	158.6	156.8	158.4	159.9
Crackers, bread, and cracker products (12/77 = 100)	144.1	150.3	151.4	148.3	147.7	147.8	148.1	145.5	151.8	152.8	149.5	149.1	149.2	149.6
Fresh sweetrolls, coffeecake, and donuts (12/77 = 100)	150.4	154.1	155.3	155.9	155.8	156.8	157.7	152.9	156.9	158.0	158.6	158.5	159.6	160.4
Frozen and refrigerated bakery products and fresh pies, tarts, and turnovers (12/77 = 100)	155.2	159.4	159.4	161.3	161.9	160.6	161.5	148.4	152.5	152.5	154.3	154.9	154.0	154.9
Meats, poultry, fish, and eggs	261.6	260.4	258.8	258.7	257.1	256.6	259.3	261.5	260.1	258.4	258.4	256.6	256.1	258.6
Meats, poultry, and fish	268.8	267.2	265.0	264.2	261.9	260.8	261.8	268.6	266.8	264.4	263.8	261.4	260.2	261.0
Meats	271.1	267.8	264.2	262.6	260.4	258.6	258.3	270.8	267.3	263.7	262.2	260.0	258.1	257.7
Beef and veal	270.2	275.8	270.7	268.0	266.2	265.7	266.0	270.6	276.5	271.1	268.7	266.7	266.1	266.4
Ground beef other than canned	261.7	261.4	256.5	254.3	250.9	251.6	251.3	262.7	262.7	258.0	255.9	252.1	252.5	251.7
Chuck roast	281.0	277.6	272.4	269.5	265.8	266.2	266.9	289.6	286.3	280.6	277.4	273.1	274.0	275.2
Round roast	243.0	240.7	232.4	230.3	234.4	235.3	231.3	246.4	243.8	235.0	232.8	237.2	238.1	233.9
Round steak	253.5	257.8	250.3	247.4	251.5	250.0	249.9	251.3	256.5	248.5	245.7	250.9	248.6	248.0
Sirloin steak	253.0	285.2	280.9	277.3	268.4	265.3	262.7	252.7	287.5	281.8	280.1	270.1	266.9	264.1
Other beef and veal (12/77 = 100)	162.8	168.8	166.6	164.8	164.0	163.2	164.7	161.2	167.4	165.1	163.7	162.6	161.8	163.5
Pork	270.1	251.2	249.6	250.2	246.4	241.1	240.3	269.5	250.8	249.3	249.7	246.0	240.7	239.8
Bacon	290.8	267.3	264.7	269.5	262.5	253.7	253.0	296.1	271.6	268.8	273.6	266.4	256.8	256.4
Chops	242.4	232.9	232.4	229.6	227.2	222.3	219.0	240.8	231.1	230.5	227.9	225.6	220.3	217.5
Ham other than canned (12/77 = 100)	129.6	108.3	109.6	111.0	111.6	109.1	111.8	126.4	105.5	106.8	108.1	108.8	106.4	108.8
Sausage	332.0	318.9	313.9	311.3	307.4	305.0	303.4	332.5	320.0	315.3	312.2	308.4	305.9	304.2
Canned ham	272.4	256.8	254.0	252.8	251.9	248.0	246.5	276.9	262.6	259.8	258.8	257.7	254.3	252.0
Other pork (12/77 = 100)	145.6	140.0	138.4	139.0	134.4	131.5	129.9	144.9	139.3	137.8	138.2	133.9	131.1	129.3
Other meats	269.7	266.9	264.6	262.6	262.2	262.6	261.3	269.8	266.6	264.4	262.4	262.0	262.4	260.7
Frankfurters	268.9	265.9	266.7	259.8	260.8	259.7	259.0	268.4	264.9	265.9	258.6	259.7	258.8	257.5
Bologna, liverwurst, and salami (12/77 = 100)	155.3	154.0	153.2	153.0	152.8	152.8	150.4	155.1	154.1	153.3	152.9	152.8	152.8	150.2
Other lunchmeats (12/77 = 100)	141.8	137.1	136.4	136.1	135.2	135.8	134.7	139.8	135.2	134.5	134.2	133.3	133.9	132.8
Lamb and organ meats (12/77 = 100)	134.3	138.4	133.8	133.9	133.7	134.6	136.1	137.5	141.6	136.6	136.9	136.8	137.8	139.3
Poultry	190.4	198.1	200.5	204.4	199.6	201.7	209.8	188.4	196.1	198.5	202.6	197.6	199.7	207.8
Fresh whole chicken	185.4	198.7	202.1	209.6	199.1	207.6	219.4	183.5	196.6	200.0	207.2	196.7	205.1	216.7
Fresh and frozen chicken parts (12/77 = 100)	124.8	129.6	131.7	135.9	132.2	134.1	139.4	123.1	127.7	129.9	134.2	130.5	132.1	132.2
Other poultry (12/77 = 100)	126.0	126.0	125.7	122.9	126.0	120.6	122.3	123.3	125.3	125.3	124.2	125.5	120.3	127.1
Fish and seafood	369.6	368.9	372.7	372.6	374.1	374.9	376.4	368.2	367.3	370.8	370.7	372.0	373.4	374.9
Canned fish and seafood	138.9	135.7	135.9	133.9	133.5	132.6	132.5	138.2	135.2	134.3	133.4	132.9	132.1	132.0
Fresh and frozen fish and seafood (12/77 = 100)	141.9	143.3	145.5	146.7	147.8	148.8	149.9	141.5	142.8	144.8	146.0	147.1	148.5	149.5
Eggs	172.5	177.9	183.7	193.3	200.1	208.2	234.0	173.3	178.7	184.6	194.3	201.0	209.3	235.3
<b>Dairy products</b>	247.8	249.8	250.2	250.2	250.1	250.2	249.9	247.1	249.0	249.4	249.4	249.2	249.3	249.0
Fresh milk and cream (12/77 = 100)	135.5	136.2	136.5	136.1	135.9	135.9	135.9	135.0	135.7	135.9	135.5	135.2	135.3	135.3
Fresh whole milk	221.9	222.8	223.2	222.6	221.9	222.1	222.3	221.1	222.0	222.3	221.7	220.9	221.2	221.4
Other fresh milk and cream (12/77 = 100)	135.2	136.4	136.8	136.4	136.6	136.4	136.2	134.7	135.8	136.2	135.8	136.0	135.8	135.6
Processed dairy products	146.6	148.2	148.4	149.0	149.2	149.3	148.8	146.9	148.5	148.6	149.3	149.4	149.5	149.0
Butter	252.1	253.3	254.2	253.9	256.2	254.8	254.1	254.5	255.8	256.8	256.4	258.7	257.4	256.6
Cheese (12/77 = 100)	144.6	146.9	146.4	146.8	146.7	146.8	146.4	144.9	147.3	146.7	147.1	147.0	147.1	146.7
Ice cream and related products (12/77 = 100)	151.8	151.6	152.5	154.4	154.9	155.3	154.0	150.8	150.7	151.5	153.5	154.0	154.2	153.0
Other dairy products (12/77 = 100)	141.7	144.5	145.9	146.0	145.2	145.7	146.0	142.4	145.1	146.5	145.5	145.8	146.1	146.5
<b>Fruits and vegetables</b>	277.6	298.7	299.4	297.6	296.7	288.9	292.6	273.6	294.7	295.1	293.3	292.7	285.1	289.3
Fresh fruits and vegetables	272.3	310.6	310.7	306.6	304.9	288.7	294.2	266.6	304.8	304.3	300.3	298.9	283.4	289.8
Fresh fruits	273.9	326.5	328.9	316.7	304.4	279.5	270.4	262.5	315.3	317.5	305.9	293.4	269.3	261.1
Apples	243.7	287.5	310.0	320.2	271.8	265.9	270.0	243.7	288.8	311.9	321.3	273.8	267.3	270.8
Bananas	242.6	325.2	291.0	278.6	272.8	233.1	230.0	242.0	323.1	290.7	276.5	270.3	230.7	227.8
Oranges	313.0	347.9	359.8	337.0	299.0	307.8	283.4	283.0	321.5	329.9	307.1	271.3	279.3	257.5
Other fresh fruits (12/77 = 100)	144.8	173.3	173.2	164.1	171.1	148.5	143.0	138.7	166.6	166.3	157.7	164.7	142.9	137.8
Fresh vegetables	270.8	295.8	293.8	297.2	305.5	297.4	316.6	270.4	295.5	292.5	295.4	303.9	296.2	315.7
Potatoes	241.3	320.7	342.2	336.1	316.9	305.0	317.6	237.5	318.2	338.2	330.9	311.7	300.1	314.3
Lettuce	334.6	280.5	293.9	337.0	360.4	329.8	371.8	336.0	280.6	294.2	338.2	360.9	330.0	375.0
Tomatoes	272.8	243.1	200.5	212.2	241.9	243.0	222.2	278.4	247.3	204.0	216.2	246.8	246.9	224.7
Other fresh vegetables (12/77 = 100)	142.2	167.6	163.6	158.0	163.0	163.0	177.2	141.						

20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982		1983					1982		1983				
	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
<b>FOOD AND BEVERAGES—Continued</b>														
<b>Food—Continued</b>														
<b>Food at home—Continued</b>														
Fruits and vegetables—Continued														
Processed vegetables—Continued														
Cut corn and canned beans except lima (12/77 = 100)	140.3	140.9	142.0	141.8	142.4	143.2	145.8	137.8	138.6	139.5	139.3	140.0	140.8	143.2
Other canned and dried vegetables (12/77 = 100)	132.0	131.7	132.9	134.0	135.7	136.0	136.8	130.5	130.2	131.5	132.6	134.2	134.5	135.3
Other foods at home	333.7	338.7	339.1	340.7	342.7	343.4	343.6	334.6	339.3	339.9	341.5	343.5	344.2	344.4
Sugar and sweets	369.2	376.1	375.8	376.4	375.5	376.0	377.7	369.1	376.0	375.7	376.2	375.3	375.7	377.6
Candy and chewing gum (12/77 = 100)	149.5	151.8	151.6	151.9	151.8	152.0	152.8	149.6	151.8	151.8	151.6	151.6	151.8	152.7
Sugar and artificial sweeteners (12/77 = 100)	164.3	169.7	169.7	170.3	169.3	170.4	171.1	165.6	171.0	171.0	171.6	170.8	171.7	172.4
Other sweets (12/77 = 100)	151.7	153.0	152.8	152.7	152.2	151.7	152.3	149.4	150.8	150.6	150.5	150.1	149.5	150.0
Fats and oils (12/77 = 100)	258.6	259.0	258.1	264.8	271.1	275.4	278.2	258.7	258.7	257.8	264.7	271.2	275.5	278.2
Margarine	256.5	259.5	257.2	259.3	264.6	268.9	273.7	255.4	257.6	255.1	257.3	262.6	267.1	271.6
Nondairy substitutes and peanut butter (12/77 = 100)	151.7	150.5	149.8	148.9	151.6	151.8	151.4	150.2	148.8	148.1	147.2	149.8	150.1	149.6
Other fats, oils, and salad dressings (12/77 = 100)	130.3	130.3	130.3	136.9	140.7	143.8	145.4	130.8	130.9	130.9	137.5	141.5	144.5	146.1
Nonalcoholic beverages	424.3	428.7	430.7	431.2	436.4	435.2	433.7	426.1	430.3	432.5	433.1	438.4	437.3	435.7
Cola drinks, excluding diet cola	307.2	310.3	312.4	312.7	317.2	315.7	314.3	304.8	307.8	309.9	310.2	314.7	313.2	311.6
Carbonated drinks, including diet cola (12/77 = 100)	142.4	145.1	146.3	147.6	150.8	149.4	148.8	140.2	142.6	144.1	145.3	148.7	147.5	146.9
Roasted coffee	361.4	356.6	356.0	353.7	352.8	355.4	354.2	356.2	351.7	350.8	348.4	347.6	350.2	349.0
Freeze dried and instant coffee	346.1	351.4	352.3	348.3	350.2	352.4	351.2	345.6	350.7	351.5	347.5	349.3	351.6	350.5
Other noncarbonated drinks (12/77 = 100)	139.0	140.4	140.5	141.0	141.9	141.8	141.8	139.2	140.7	140.8	141.3	142.2	142.1	142.2
Other prepared foods	270.7	276.8	276.9	277.8	276.8	277.9	278.2	272.4	278.4	278.5	279.4	278.2	279.4	299.7
Canned and packaged soup (12/77 = 100)	136.9	141.9	141.8	141.4	141.3	142.0	142.8	138.9	143.7	143.7	143.3	143.2	143.9	144.6
Frozen prepared foods (12/77 = 100)	149.0	154.4	155.1	155.7	154.7	156.4	155.5	148.5	153.5	154.2	154.9	153.7	155.7	154.5
Snacks (12/77 = 100)	152.7	159.3	159.3	159.9	159.0	158.6	158.9	154.8	161.3	161.4	162.0	160.8	160.7	161.0
Seasonings, olives, pickles, and relish (12/77 = 100)	157.4	158.5	158.3	158.9	159.6	160.7	160.6	156.4	157.5	157.4	158.1	158.7	159.9	159.5
Other condiments (12/77 = 100)	152.6	156.1	156.0	156.3	156.0	155.4	155.5	154.4	157.9	157.9	158.2	157.9	157.2	157.4
Miscellaneous prepared foods (12/77 = 100)	151.0	151.6	151.5	152.2	151.8	152.8	153.3	151.2	151.8	151.8	152.5	152.0	153.0	153.5
Other canned and packaged prepared foods (12/77 = 100)	146.1	146.8	146.5	147.2	146.2	147.0	148.0	147.3	148.0	147.7	148.4	147.4	148.2	149.2
Food away from home	312.6	319.8	321.0	322.2	323.9	324.8	325.5	315.8	323.0	324.3	325.4	327.2	328.0	328.7
Lunch (12/77 = 100)	152.2	154.9	155.4	155.9	156.7	157.1	157.5	153.8	156.5	157.1	157.5	158.3	158.7	159.0
Dinner (12/77 = 100)	150.4	153.4	153.9	154.9	155.5	156.2	156.5	152.1	155.1	155.6	156.6	157.2	157.9	158.3
Other meals and snacks (12/77 = 100)	153.0	158.6	159.5	159.4	160.7	160.8	161.0	153.7	159.1	160.0	159.9	161.2	161.2	161.4
<b>Alcoholic beverages</b>	210.9	217.2	217.1	218.4	218.9	218.6	218.1	213.0	219.8	219.7	221.3	221.8	221.5	221.2
Alcoholic beverages at home (12/77 = 100)	136.1	140.7	140.3	141.2	141.4	140.9	140.4	137.4	142.5	142.1	143.2	143.4	143.0	142.6
Beer and ale	212.6	224.8	224.4	225.4	226.1	225.9	225.2	211.7	223.6	223.2	224.8	225.3	225.2	224.8
Whiskey	150.2	152.1	151.6	153.7	153.5	152.9	152.4	150.7	152.6	152.1	154.2	154.0	153.4	152.9
Wine	235.6	237.1	234.8	235.7	237.1	234.8	232.1	243.3	245.2	242.4	243.7	245.5	242.3	239.9
Other alcoholic beverages (12/77 = 100)	120.2	121.7	122.4	122.5	122.3	121.5	121.4	120.1	121.8	122.4	122.3	122.1	121.5	121.3
Alcoholic beverages away from home (12/77 = 100)	144.2	146.1	147.3	148.4	148.7	149.9	150.4	145.3	147.1	148.5	149.6	149.8	150.9	151.5
<b>HOUSING</b>	316.3	324.5	324.8	326.4	326.8	327.0	327.4	316.8	323.1	324.3	325.3	325.2	324.5	324.2
<b>Shelter (CPI-U)</b>	335.9	345.3	346.6	348.5	349.8	351.1	351.8							
Renters' costs	100.0	103.1	103.7	104.4	104.8	105.0	105.1							
Rent, residential	230.8	237.1	238.2	239.5	240.4	241.3	242.0							
Other renters' costs	333.0	352.3	355.8	361.3	362.0	359.8	356.1							
Homeowners' costs <sup>2</sup>	100.0	102.7	103.0	103.5	103.9	104.3	104.5							
Owners' equivalent rent	100.0	102.7	103.0	103.5	103.8	104.2	104.5							
Household insurance	100.0	102.7	103.5	104.0	105.5	106.1	106.1							
Maintenance and repairs	337.8	346.1	347.9	346.6	351.1	353.4	354.7							
Maintenance and repair services	371.4	383.3	388.6	387.6	397.2	398.5	400.8							
Maintenance and repair commodities	258.5	262.6	261.2	259.9	259.5	262.3	262.6							
<b>Shelter (CPI-W)</b>								338.0	344.1	346.4	347.5	347.6	347.1	346.6
Rent, residential								230.3	236.5	237.6	238.9	239.8	240.7	241.3
Other renters' costs								330.7	350.4	354.0	358.6	359.3	357.3	352.9
Lodging while out of town								341.4	370.7	375.7	374.8	374.2	370.9	363.9
Tenants' insurance (12/77 = 100)								149.3	153.8	155.4	156.2	158.6	159.4	159.4
Homeownership								376.8	382.5	385.2	386.1	385.9	384.9	384.1
Home purchase								290.9	303.3	304.1	303.4	301.3	300.0	298.9
Financing, taxes, and insurance								495.7	491.3	496.6	500.0	500.6	499.2	497.6
Property insurance								412.1	430.8	430.8	434.9	437.4	438.0	437.2
Property taxes								228.8	235.1	237.1	238.5	239.1	239.6	240.7
Contracted mortgage interest costs								633.5	622.5	629.8	634.2	634.7	632.2	629.4
Mortgage interest rates								215.9	203.8	205.5	207.2	208.8	208.6	208.7
Maintenance and repairs								333.7	342.0	344.3	343.7	348.1	349.1	351.0
Maintenance and repair services								371.7	381.4	385.1	385.5	392.5	393.3	395.6
Maintenance and repair commodities								252.6	258.0	257.5	255.2	254.7	255.9	257.0
Paint and wallpaper, supplies, tools, and equipment (12/77 = 100)								146.5	149.2	147.6	145.8	145.7	147.3	149.1
Lumber, awnings, glass, and masonry (12/77 = 100)								121.3	125.8	126.8	125.3	124.2	123.8	123.7
Plumbing, electrical, heating, and cooling supplies (12/77 = 100)								136.2	138.7	139.5	140.7	141.3	139.1	138.4
Miscellaneous supplies and equipment (12/77 = 100)								141.2	143.3	143.3	142.2	141.9	144.0	143.7

## 20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers						Urban Wage Earners and Clerical Workers							
	1982	1983					1982	1983						
	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	
<b>Fuel and other utilities</b>	364.1	375.5	375.1	376.4	374.4	371.3	370.6	365.5	377.3	376.8	378.1	375.7	372.8	372.0
Fuels	464.0	477.7	476.5	478.3	474.4	468.1	467.4	463.9	477.9	476.6	478.3	474.0	467.8	467.2
Fuel oil, coal, and bottled gas	688.5	619.3	619.0	623.2	624.7	623.9	623.9	690.8	621.7	621.5	625.6	627.2	626.4	626.4
Fuel oil	708.7	627.2	626.5	631.2	632.6	631.5	631.5	710.6	629.5	628.9	633.7	635.1	633.9	633.9
Other fuels (6/78 = 100)	190.4	189.3	190.0	190.2	191.0	191.4	191.4	191.6	190.2	190.8	191.0	191.9	192.4	192.3
Gas (piped) and electricity	410.6	440.5	439.1	440.5	435.6	428.2	427.5	410.0	440.3	438.7	440.0	434.5	427.5	426.7
Electricity	319.6	341.1	340.7	342.3	339.2	331.8	329.8	318.7	341.6	341.2	342.6	338.8	330.8	329.0
Utility (piped) gas	549.6	593.0	589.8	590.5	582.4	576.3	578.2	547.6	589.5	585.8	586.4	578.3	574.0	575.7
<b>HOUSING</b>														
<b>Fuel and other utilities</b>														
Other utilities and public services	206.6	214.2	214.8	215.4	215.8	217.3	216.5	207.3	215.3	215.9	216.4	216.9	218.4	217.4
Telephone services	168.2	173.8	173.9	174.4	174.1	175.4	174.3	168.6	174.3	174.5	175.0	174.7	176.0	174.7
Local charges (12/77 = 100)	137.8	141.8	142.1	142.6	142.2	143.8	142.2	138.1	143.8	142.6	143.1	142.8	144.4	142.6
Interstate toll calls (12/77 = 100)	119.7	121.9	121.9	121.9	121.5	121.5	121.4	120.2	122.3	122.4	122.3	121.9	121.9	121.9
Intrastate toll calls (12/77 = 100)	111.5	118.2	118.3	118.6	119.0	119.8	119.7	111.3	118.2	118.3	118.7	119.1	119.8	119.8
Water and sewerage maintenance	335.8	353.5	355.9	356.8	361.7	363.6	364.3	338.9	357.7	360.2	361.0	366.2	367.8	368.5
<b>Household furnishings and operations</b>	235.7	238.9	238.0	238.9	239.4	239.9	240.5	232.3	235.8	234.8	235.8	236.2	236.7	237.3
Housefurnishings	195.3	198.1	196.7	197.6	198.0	198.4	198.8	193.2	196.1	194.7	195.6	196.0	196.4	196.9
Textile housefurnishings	222.0	227.3	226.1	231.2	228.8	229.6	230.3	224.9	231.1	229.6	234.6	232.0	233.0	233.1
Household linens (12/77 = 100)	132.7	134.4	133.4	138.1	136.0	135.7	135.6	134.0	135.6	134.5	139.0	137.0	136.4	136.2
Curtains, drapes, slipcovers, and sewing materials (12/77 = 100)	144.4	149.3	149.0	150.5	149.6	151.1	152.0	147.6	154.0	153.3	154.8	153.6	155.6	156.1
Furniture and bedding	215.4	220.5	217.2	217.9	219.8	220.1	221.3	211.6	217.6	214.3	215.1	216.6	217.1	218.3
Bedroom furniture (12/77 = 100)	147.4	156.5	151.3	152.5	152.9	152.6	154.9	143.4	153.0	148.2	148.9	149.0	149.5	151.3
Sofas (12/77 = 100)	118.2	117.7	117.3	117.6	118.8	119.8	120.2	118.8	118.0	117.6	118.1	119.2	120.0	120.3
Living room chairs and tables (12/77 = 100)	122.2	123.9	123.5	124.2	125.4	125.6	124.4	122.5	125.0	124.5	125.2	126.5	126.6	125.7
Other furniture (12/77 = 100)	140.4	141.1	139.8	139.4	141.2	141.4	142.3	135.6	137.1	135.6	135.8	137.2	137.1	138.2
Appliances including TV and sound equipment	151.5	150.9	150.6	151.0	151.2	151.0	150.9	151.4	151.2	150.8	151.2	151.7	151.6	151.7
Television and sound equipment	107.2	105.2	105.1	105.1	104.9	105.0	104.8	106.3	104.3	104.3	104.2	103.9	104.1	103.9
Television	102.6	100.1	100.1	99.6	99.1	98.8	99.0	101.4	99.0	99.0	98.3	97.8	97.4	97.6
Sound equipment (12/77 = 100)	112.4	110.8	110.6	111.1	111.0	111.6	111.0	111.4	109.8	109.7	110.2	110.0	110.7	110.1
Household appliances	186.1	188.6	188.0	189.2	190.3	189.2	189.4	186.7	189.0	188.0	189.1	190.5	190.1	190.5
Refrigerators and home freezers	193.3	192.7	191.4	192.4	194.0	193.0	195.8	199.1	199.2	197.2	198.0	200.0	198.9	201.7
Laundry equipment	141.0	143.0	142.0	142.7	142.7	144.1	144.4	141.4	143.5	142.8	143.6	144.1	145.2	145.1
Other household appliances (12/77 = 100)	123.2	125.6	125.4	126.2	127.0	125.9	125.5	121.5	123.6	123.4	124.2	125.2	124.6	124.2
Stoves, dishwashers, vacuums, and sewing machines (12/77 = 100)	121.5	124.0	123.7	125.4	125.9	125.8	124.5	120.1	122.6	122.1	123.6	124.1	124.6	123.5
Office machines, small electric appliances, and air conditioners (12/77 = 100)	125.1	127.3	127.2	127.3	128.3	126.2	126.6	123.0	124.8	124.8	124.9	126.4	124.6	124.9
Other household equipment (12/77 = 100)	139.2	142.0	141.2	141.0	141.3	142.1	142.3	137.1	139.7	138.9	138.8	138.9	139.7	140.1
Floor and window coverings, infants', laundry, cleaning, and outdoor equipment (12/77 = 100)	142.7	145.1	144.4	144.2	146.5	147.3	146.6	134.3	137.3	136.4	136.0	138.2	138.8	138.4
Clocks, lamps, and decor items (12/77 = 100)	131.0	133.6	132.3	132.9	134.0	135.5	134.1	126.6	129.3	128.3	128.4	129.3	131.0	129.6
Tableware, serving pieces, and nonelectric kitchenware (12/77 = 100)	145.1	149.1	148.7	147.7	145.6	146.2	147.4	141.2	144.9	144.4	143.6	141.7	142.4	143.6
Lawn equipment, power tools, and other hardware (12/77 = 100)	134.1	135.5	134.2	134.7	135.9	136.6	137.2	139.5	140.4	139.3	140.2	141.2	141.8	142.4
Housekeeping supplies	292.3	296.8	295.8	295.7	296.6	297.0	298.6	288.8	293.5	292.7	293.1	293.6	293.9	295.3
Soaps and detergents	285.3	294.6	294.0	296.1	295.2	296.7	295.9	281.5	290.3	290.2	292.0	291.1	292.7	291.8
Other laundry and cleaning products (12/77 = 100)	148.0	151.4	151.0	152.0	151.6	151.5	152.7	146.9	150.2	149.8	150.9	150.5	150.2	151.5
Cleansing and toilet tissue, paper towels and napkins (12/77 = 100)	148.6	148.1	148.1	148.0	147.8	148.2	148.6	148.5	148.2	148.1	148.2	148.0	148.3	148.6
Stationery, stationery supplies, and gift wrap (12/77 = 100)	137.9	140.3	139.5	139.5	139.5	140.9	141.7	141.0	143.2	142.5	142.6	142.6	144.0	144.7
Miscellaneous household products (12/77 = 100)	152.3	153.9	154.1	154.9	155.9	155.5	156.6	146.9	148.6	148.8	149.5	150.4	150.0	151.1
Lawn and garden supplies (12/77 = 100)	145.7	146.6	144.6	144.0	144.1	143.0	145.4	138.5	139.7	137.8	134.9	137.2	136.0	138.3
Housekeeping services	315.0	318.7	319.3	320.9	321.6	322.3	322.8	314.5	318.3	319.1	320.8	321.7	322.3	322.9
Postage	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5
Moving, storage, freight, household laundry, and drycleaning services (12/77 = 100)	158.6	162.2	162.8	165.9	167.1	168.1	168.4	158.7	162.3	163.1	166.0	167.3	168.2	168.5
Appliance and furniture repair (12/77 = 100)	140.2	144.0	144.9	145.4	145.8	147.1	147.1	138.5	142.2	143.1	143.6	144.0	144.3	145.2
<b>APPAREL AND UPKEEP</b>	193.6	195.0	197.3	200.4	200.7	200.7	199.3	192.8	194.0	196.3	199.3	199.8	199.7	198.1
<b>Apparel commodities</b>	182.3	182.8	185.3	188.5	188.7	188.6	186.9	181.9	182.4	184.7	188.0	188.4	188.2	186.3
Apparel commodities less footwear	178.4	179.3	181.9	185.3	185.4	185.2	183.4	177.8	178.7	181.2	184.6	185.0	184.5	182.5
Men's and boys'	187.4	188.2	188.3	190.8	192.1	193.0	191.8	187.6	188.1	188.3	191.1	192.5	193.4	192.1
Men's (12/77 = 100)	118.3	118.3	118.5	120.1	120.8	121.6	120.9	118.8	118.7	118.9	120.7	121.4	122.2	121.5
Suits, sport coats, and jackets (12/77 = 100)	108.7	110.7	111.4	112.3	113.7	114.8	112.9	101.7	103.3	104.4	105.5	106.9	107.7	105.8
Coats and jackets	103.2	98.2	99.5	104.4	105.7	105.5	104.4	105.5	100.7	101.7	107.5	108.9	108.8	107.6
Furnishings and special clothing (12/77 = 100)	141.5	145.3	144.8	145.4	145.7	147.3	147.8	137.9	141.3	140.8	141.6	141.9	143.6	144.1
Shirts (12/77 = 100)	126.5	120.9	121.6	125.6	125.1	125.2	125.7	129.2	124.2	124.7	128.6	127.8	127.8	128.5
Dungarees, jeans, and trousers (12/77 = 100)	111.9	112.8	112.3	112.4	113.1	113.9	112.9	117.5	118.4	118.1	118.2	119.1	120.1	118.8
Boys' (12/77 = 100)	120.7	123.0	122.6	124.1	125.4	125.2	123.9	119.0	120.9	120.7	122.4	123.9	123.8	122.4
Coats, jackets, sweaters, and shirts (12/77 = 100)	112.2	114.9	115.4	119.0	120.9	119.9	118.8	113.3	115.5	116.2	120.5	122.7	122.1	120.6
Furnishings (12/77 = 100)	132.4	134.9	134.2	135.1	136.2	137.6	137.0	128.3	130.4	129.9	130.7	131.9	133.3	132.0
Suits, trousers, sport coats, and jackets (12/77 = 100)	122.8	124.6	123.5	123.7	124.7	124.4	122.7	120.0	121.6	120.7	120.8	121.8	121.6	120.9
Women's and girls'	159.6	158.8	164.2	168.8	168.6	167.0	164.9	161.3	160.8	165.8	170.2	170.4	168.6	166.0
Women's (12/77 = 100)	105.5	105.5	109.5	112.8	112.3	110.9	109.5	106.8	107.0	1				

20. Continued—Consumer Price Index—U.S. city average														
[1967 = 100 unless otherwise specified]														
General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
<b>APPAREL AND UPKEEP—Continued</b>														
<b>Apparel Commodities—Continued</b>														
Apparel commodities less footwear—Continued														
Women's—Continued														
Separates and sportswear (12/77 = 100)	97.1	96.3	99.4	102.5	103.9	102.0	98.9	97.9	96.9	99.7	102.9	104.2	102.4	99.4
Underwear, nightwear, and hosiery (12/77 = 100)	130.8	131.7	133.2	135.1	135.6	136.1	136.5	130.5	131.4	132.9	134.8	135.3	135.7	136.2
Suits (12/77 = 100)	82.8	81.0	87.3	94.3	89.9	85.7	81.7	99.7	99.8	108.1	115.0	112.6	105.8	100.2
Girls' (12/77 = 100)	109.5	106.2	107.7	104.5	111.4	111.8	110.2	109.2	106.6	106.8	108.3	110.4	110.8	108.8
Coats, jackets, dresses, and suits (12/77 = 100)	103.7	100.1	101.9	101.6	105.8	106.2	101.8	102.0	100.0	98.7	98.5	103.1	103.3	98.8
Separates and sportswear (12/77 = 100)	104.1	99.8	102.0	106.3	106.8	107.6	106.7	105.1	101.3	102.9	106.8	107.4	108.3	106.3
Underwear, nightwear, hosiery, and accessories (12/77 = 100)	129.1	127.7	127.8	128.4	129.0	128.7	130.5	128.0	126.8	126.7	127.0	127.6	127.5	129.1
Infants' and toddlers'	273.1	282.4	281.9	287.4	289.0	288.7	282.7	284.2	293.1	292.3	297.9	299.9	298.1	292.1
Other apparel commodities	210.1	215.9	216.2	217.4	215.5	216.6	215.6	199.2	204.6	204.6	205.9	204.0	205.2	204.2
Sewing materials and notions (12/77 = 100)	120.8	123.0	121.6	121.9	120.4	118.6	121.4	118.5	121.0	119.8	120.2	118.5	116.8	119.3
Jewelry and luggage (12/77 = 100)	142.2	146.7	147.5	148.5	147.4	149.2	147.0	133.5	137.4	138.0	139.0	138.0	140.0	137.8
Footwear	205.9	203.8	205.7	208.0	208.6	209.1	207.9	205.8	203.7	205.5	207.6	208.1	209.1	208.3
Men's (12/77 = 100)	132.0	132.8	132.3	134.8	135.0	135.8	134.7	133.7	134.7	134.2	136.7	136.9	137.6	136.6
Boys' and girls' (12/77 = 100)	129.0	128.9	130.3	130.4	131.1	131.8	132.9	131.5	131.0	132.6	132.9	133.2	134.0	135.2
Women's (12/77 = 100)	126.8	122.9	125.3	126.8	127.1	126.7	125.2	122.9	118.9	121.1	122.3	122.6	122.9	121.7
Apparel services	282.8	291.8	292.3	293.4	294.6	296.2	297.0	281.1	290.0	290.4	291.5	292.6	294.3	295.0
Laundry and drycleaning other than coin operated (12/77 = 100)	168.9	174.1	174.5	174.4	176.0	177.0	177.7	167.5	172.5	172.9	173.3	174.3	175.4	176.0
Other apparel services (12/77 = 100)	147.7	152.7	152.7	153.7	153.8	154.5	154.5	148.8	153.9	153.9	154.8	154.9	155.6	155.6
<b>TRANSPORTATION</b>	294.8	300.4	302.4	303.7	305.7	306.3	306.3	296.3	301.9	304.1	305.5	306.9	308.2	308.2
Private	290.4	296.0	298.0	299.2	300.4	301.7	301.8	293.1	298.6	300.8	302.2	303.6	304.9	305.0
New cars	200.1	201.4	202.1	202.7	204.3	206.2	207.0	199.9	201.0	201.7	202.3	203.8	205.7	206.5
Used cars	312.6	329.6	336.8	343.9	350.4	356.1	357.6	312.6	329.6	336.8	343.9	350.4	356.1	357.6
Gasoline	381.3	389.3	389.5	387.1	382.4	378.1	375.2	383.0	390.6	391.0	388.8	384.3	380.1	377.0
Automobile maintenance and repair	323.1	329.8	331.0	332.3	333.5	335.2	335.4	323.8	330.4	331.7	333.0	334.1	335.6	335.9
Body work (12/77 = 100)	161.4	166.6	167.1	167.7	169.0	169.5	169.6	160.2	165.6	166.0	166.5	167.8	168.2	168.3
Automobile drive train, brake, and miscellaneous mechanical repair (12/77 = 100)	154.3	158.3	158.9	160.7	161.9	163.4	163.6	158.3	162.2	162.8	164.5	165.7	167.2	167.4
Maintenance and servicing (12/77 = 100)	149.9	152.0	152.8	152.6	152.5	152.7	152.8	149.2	151.3	152.2	151.9	151.7	151.9	152.0
Power plant repair (12/77 = 100)	154.2	157.3	157.5	158.4	159.1	160.2	160.1	153.7	156.6	156.9	157.8	158.5	159.5	159.5
Other private transportation	259.6	258.6	260.0	260.8	263.3	265.6	266.8	261.6	259.4	261.1	261.8	264.4	266.6	267.9
Other private transportation commodities	214.3	209.6	208.9	208.3	208.1	209.2	208.4	216.9	212.1	211.2	210.9	210.7	211.7	211.4
Motor oil, coolant, and other products (12/77 = 100)	153.3	155.3	153.5	154.2	152.7	152.9	153.3	152.3	154.1	152.6	153.2	152.2	151.7	152.3
Automobile parts and equipment (12/77 = 100)	136.5	132.7	132.4	131.9	131.9	132.7	132.4	138.4	134.5	134.1	133.8	133.8	134.6	134.3
Tires	190.0	183.5	183.4	181.7	181.7	183.1	182.7	193.7	187.2	186.9	185.4	185.4	187.0	186.5
Other parts and equipment (12/77 = 100)	133.8	132.3	131.6	132.9	133.0	133.0	132.9	133.9	132.1	131.3	132.8	132.8	132.9	132.7
Other private transportation services	274.2	274.1	276.0	277.3	280.5	283.1	284.8	276.0	274.5	276.8	277.8	281.1	283.7	285.4
Automobile insurance	288.8	302.4	302.9	303.8	309.4	312.8	315.0	288.2	302.0	302.5	303.4	308.8	312.1	314.3
Automobile finance charges (12/77 = 100)	173.8	151.7	155.4	156.4	157.2	159.1	160.0	173.0	151.1	155.0	155.8	156.8	158.7	159.7
Automobile rental, registration, and other fees (12/77 = 100)	139.3	145.6	146.0	146.9	147.1	147.3	147.5	140.1	146.9	147.2	147.9	148.2	148.3	148.6
State registration	183.8	194.8	194.6	195.3	195.4	195.4	195.6	183.4	194.7	194.5	195.2	195.2	195.2	195.4
Drivers' licenses (12/77 = 100)	132.8	152.9	153.0	153.0	154.0	154.5	154.5	133.1	153.4	153.4	154.4	154.4	154.8	154.8
Vehicle inspection (12/77 = 100)	128.5	139.0	139.0	139.8	139.8	139.8	139.8	129.8	139.8	139.8	140.5	140.5	140.5	140.5
Other vehicle-related fees (12/77 = 100)	155.2	157.9	158.8	160.5	160.2	160.5	160.7	163.2	165.5	166.3	167.8	167.6	167.7	167.9
Public	355.6	363.2	365.0	366.6	368.2	370.3	369.0	348.0	354.4	355.7	357.2	358.5	359.9	359.0
Airline fare	408.8	418.8	420.7	423.3	426.6	431.6	428.5	405.9	415.9	417.1	419.5	422.5	427.2	424.4
Intercity bus fare	377.7	404.2	412.8	415.1	417.7	416.0	405.5	379.3	404.1	412.7	415.3	417.6	416.9	402.6
Intracity mass transit	317.7	322.6	323.7	324.6	324.8	324.3	324.5	316.7	320.7	321.6	322.5	323.0	322.5	322.7
Taxi fare	300.8	301.0	302.4	303.5	303.1	304.7	307.6	310.5	311.0	311.8	312.7	312.2	313.5	316.7
Intercity train fare	351.3	361.3	364.5	364.8	365.4	364.8	370.7	351.9	362.3	365.2	365.4	365.6	365.6	371.3
<b>MEDICAL CARE</b>	344.3	357.7	360.0	361.2	362.9	364.9	366.2	341.8	355.6	357.9	359.2	360.9	362.9	364.3
Medical care commodities	213.7	224.2	225.4	226.3	227.5	228.9	229.9	214.0	224.5	225.8	226.7	227.8	229.1	230.1
Prescription drugs	202.8	214.5	215.7	216.7	218.6	220.8	222.3	203.9	215.6	216.9	218.0	219.9	222.1	223.1
Anti-infective drugs (12/77 = 100)	150.9	157.2	157.9	158.1	158.6	159.1	161.2	153.1	159.2	160.1	160.3	160.8	161.5	163.5
Tranquillizers and sedatives (12/77 = 100)	165.8	177.6	179.1	179.9	182.8	186.9	188.4	165.5	177.2	178.7	179.7	182.6	186.7	188.3
Circulatories and diuretics (12/77 = 100)	144.9	154.0	155.4	155.8	158.1	159.9	160.6	144.8	153.9	155.4	155.7	157.9	159.7	160.3
Hormones, diabetic drugs, biologicals, and prescription medical supplies (12/77 = 100)	185.5	198.1	199.2	200.0	201.9	204.0	205.0	187.0	199.8	201.1	201.9	204.0	206.1	207.1
Pain and symptom control drugs (12/77 = 100)	166.2	175.1	175.7	177.5	178.7	180.5	181.1	168.0	176.8	177.5	179.4	180.6	182.4	183.0
Supplements, cough and cold preparations, and respiratory agents (12/77 = 100)	154.2	162.3	162.6	163.8	164.2	164.7	165.7	154.5	162.5	162.9	164.1	164.5	165.1	166.2
Nonprescription drugs and medical supplies (12/77 = 100)	149.7	155.9	156.7	157.3	157.5	157.9	158.3	150.3	156.7	157.5	159.1	158.3	158.8	159.1
Eyeglasses (12/77 = 100)	133.0	135.8	136.2	137.7	137.3	137.8	137.7	131.8	134.6	135.1	136.7	136.2	136.6	136.5
Internal and respiratory over-the-counter drugs	241.3	253.5	255.0	255.6	256.1	256.4	257.5	242.2	254.9	256.3	256.9	257.4	257.7	258.8
Nonprescription medical equipment and supplies (12/77 = 100)	145.2	150.3	151.0	151.2	151.8	152.7	152.6	146.3	151.3	152.4	152.3	153.0	154.1	154.0



**20. Continued—Consumer Price Index—U.S. city average**

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers						Urban Wage Earners and Clerical Workers							
	1982	1983					1982	1983						
	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
<b>Medical care services</b>	373.4	387.2	389.8	391.0	392.9	395.0	396.3	370.1	384.4	387.0	388.3	390.2	392.3	393.8
Professional services	309.4	324.2	326.0	327.6	329.7	331.7	332.9	309.5	324.6	326.5	328.0	330.1	332.0	333.3
Physicians' services	336.6	353.9	354.9	356.5	358.5	360.5	362.0	339.9	357.6	358.8	360.5	362.3	364.3	365.9
Dental services	290.1	303.8	306.5	308.3	310.7	312.9	314.0	288.0	301.6	304.3	306.1	308.5	310.7	311.8
Other professional services (12/77 = 100)	147.6	153.0	154.0	154.3	155.4	155.9	156.2	144.4	149.6	150.5	150.8	151.8	152.5	152.7
Other medical care services	450.8	463.3	466.9	467.8	469.3	471.5	473.0	446.3	459.4	462.9	463.9	465.6	467.9	469.5
Hospital and other medical services (12/77 = 100)	183.2	193.8	196.7	197.8	199.4	201.0	202.2	181.5	191.9	194.6	195.7	197.3	199.0	200.1
Hospital room	588.5	619.1	627.6	633.8	638.0	641.9	643.5	581.3	611.2	619.5	626.1	630.2	633.9	635.9
Other hospital and medical care services (12/77 = 100)	178.7	189.9	193.0	193.3	195.1	197.1	198.8	177.5	188.4	191.2	191.4	193.3	195.4	197.0
<b>ENTERTAINMENT</b>	240.1	246.0	246.6	247.5	249.1	249.5	249.5	236.5	242.5	243.1	244.1	245.4	245.7	245.8
<b>Entertainment commodities</b>	241.8	246.7	248.0	248.0	249.3	249.0	248.7	236.0	241.4	242.5	242.6	243.7	243.4	243.1
Reading materials (12/77 = 100)	154.3	158.5	160.9	161.2	163.4	162.9	162.3	153.8	158.0	160.2	160.5	162.8	162.3	161.8
Newspapers	294.7	302.7	303.5	304.0	306.9	307.7	308.2	294.8	302.7	303.4	303.9	307.0	307.8	308.3
Magazines, periodicals, and books (12/77 = 100)	159.3	163.6	168.4	168.6	171.7	170.2	168.6	159.2	163.6	168.5	168.8	172.0	170.4	168.7
Sporting goods and equipment (12/77 = 100)	131.6	134.2	134.1	134.6	134.5	134.7	135.0	124.3	128.3	128.3	128.9	128.6	128.7	129.1
Sport vehicles (12/77 = 100)	133.3	137.1	136.4	137.4	137.3	137.8	138.5	122.0	127.8	127.8	128.5	128.2	128.5	129.2
Indoor and warm weather sport equipment (12/77 = 100)	120.0	118.6	118.5	118.6	118.6	118.1	117.4	117.7	116.4	116.6	116.3	116.4	116.0	115.3
Bicycles	197.1	199.8	199.9	200.1	199.9	198.6	198.2	198.5	200.7	200.7	200.9	200.7	199.3	199.0
Other sporting goods and equipment (12/77 = 100)	130.6	132.8	133.1	134.6	134.0	134.5	134.8	130.0	132.7	132.9	134.5	133.8	134.4	134.7
Toys, hobbies, and other entertainment (12/77 = 100)	136.8	139.0	139.3	138.8	139.3	139.1	138.8	135.6	137.7	138.0	137.7	138.1	137.8	137.6
Toys, hobbies, and music equipment (12/77 = 100)	135.5	137.7	137.7	136.7	137.3	136.7	136.6	132.0	134.0	133.9	133.0	133.5	132.8	132.9
Photographic supplies and equipment (12/77 = 100)	129.7	131.6	131.6	131.0	131.9	131.7	130.2	130.8	132.7	132.8	132.1	133.0	132.7	131.2
Pet supplies and expenses (12/77 = 100)	144.2	146.6	147.5	148.5	148.5	148.8	148.9	145.1	147.6	148.6	149.6	149.6	149.9	150.1
<b>Entertainment services</b>	238.2	245.4	245.0	247.2	249.2	250.5	251.1	238.5	245.8	245.4	247.8	249.7	251.0	251.7
Fees for participant sports (12/77 = 100)	148.9	151.8	152.2	154.4	155.6	156.4	156.9	150.0	152.8	153.2	155.5	156.9	157.7	158.1
Admissions (12/77 = 100)	137.3	146.4	145.4	145.2	145.8	146.6	147.2	136.4	145.4	144.5	144.2	144.8	145.6	146.3
Other entertainment services (12/77 = 100)	129.6	130.6	129.8	131.0	132.6	133.3	133.0	130.6	131.4	130.7	132.3	133.6	134.4	134.0
<b>OTHER GOODS AND SERVICES</b>	276.6	287.5	289.0	294.4	296.8	298.1	298.6	274.0	286.4	288.0	292.0	294.1	295.5	295.9
<b>Tobacco products</b>	272.3	294.6	297.7	298.0	299.0	299.9	299.9	271.9	294.3	297.5	297.8	298.8	299.7	299.6
Cigarettes	279.0	302.8	306.1	306.4	307.4	308.2	308.0	278.0	301.7	305.2	305.5	306.5	307.3	307.0
Other tobacco products and smoking accessories (12/77 = 100)	143.8	150.5	150.9	151.2	151.4	152.7	153.9	143.9	150.5	150.9	151.2	151.4	152.7	153.9
<b>Personal care</b>	254.8	261.3	262.1	263.0	263.3	265.6	266.3	252.5	259.4	260.1	260.9	261.5	263.7	264.4
Toilet goods and personal care appliances	252.2	262.3	261.9	262.4	263.0	265.7	266.3	253.1	263.0	262.6	263.0	263.9	266.6	267.1
Products for the hair, hairpieces, and wigs (12/77 = 100)	146.8	152.5	152.8	153.0	152.7	154.5	154.0	146.2	151.7	151.9	152.0	151.9	153.6	153.1
Dental and shaving products (12/77 = 100)	156.2	162.6	160.0	160.8	163.1	166.7	167.3	154.6	160.8	158.5	159.1	161.2	165.1	165.6
Cosmetics, bath and nail preparations, manicure and eye makeup implements (12/77 = 100)	142.2	148.8	148.6	148.3	147.7	148.9	149.8	143.0	149.5	149.2	148.9	148.9	150.1	151.1
Other toilet goods and small personal care appliances (12/77 = 100)	143.2	147.9	148.9	149.9	150.5	150.5	150.7	147.0	151.6	152.4	153.4	154.1	154.1	154.4
Personal care services	258.0	261.5	263.3	264.6	264.6	266.6	267.4	252.4	256.4	258.1	259.3	259.6	261.4	262.1
Beauty parlor services for women	262.1	264.3	266.5	268.1	267.5	269.8	270.7	254.7	257.5	259.7	261.1	260.7	262.9	203.7
Haircuts and other barbershop services for men (12/77 = 100)	141.6	145.1	145.6	146.0	146.8	147.5	147.8	140.4	143.9	144.4	144.8	145.6	146.3	146.7
<b>Personal and educational expenses</b>	320.5	327.2	328.1	344.6	350.9	351.3	352.1	321.7	329.4	330.5	345.6	352.4	352.9	353.7
Schoolbooks and supplies	283.3	294.2	294.6	306.6	308.5	308.8	308.9	287.0	298.3	298.8	310.8	312.9	313.0	313.0
Personal and educational services	329.1	335.1	336.2	353.5	360.6	361.0	361.9	330.3	337.3	338.6	354.3	362.0	352.9	363.6
Tuition and other school fees	167.2	168.0	168.2	178.6	182.9	182.9	182.9	167.7	168.5	168.8	178.4	183.3	183.3	183.3
College tuition (12/77 = 100)	166.8	167.8	168.0	180.7	182.7	182.7	182.8	166.9	167.9	168.0	180.5	182.6	182.6	182.7
Elementary and high school tuition (12/77 = 100)	168.7	168.9	169.2	170.9	183.9	183.9	183.9	169.7	169.9	170.3	172.7	184.9	184.9	184.9
Personal expenses (12/77 = 100)	175.4	187.9	189.8	192.6	193.4	194.6	196.8	175.2	188.3	190.4	193.0	193.9	195.2	197.3
<b>Special indexes:</b>														
Gasoline, motor oil, coolant, and other products	377.0	384.3	384.5	382.3	377.8	373.7	370.9	378.5	385.4	385.9	383.9	379.5	375.5	372.5
Insurance and finance								414.7	411.4	415.6	418.2	419.7	419.8	419.4
Utilities and public transportation	326.0	343.6	343.6	344.7	343.0	340.7	339.8	325.1	343.1	342.9	343.8	341.8	339.4	338.5
Housekeeping and home maintenance services	354.0	358.9	360.1	361.6	363.4	364.2	364.9	354.4	361.7	364.2	365.2	369.7	370.4	372.0

<sup>1</sup>Excludes motor oil, coolant, and other products as of January 1983.

**21. Consumer Price Index for All Urban Consumers: Cross classification of region and population size class by expenditure category and commodity and service group**

[December 1977 = 100]

Category and group	Size class A (1.25 million or more)			Size class B (385,000-1,250 million)			Size class C (75,000-385,000)			Size class D (75,000 or less)		
	1983			1983			1983			1983		
	Aug.	Oct.	Dec.	Aug.	Oct.	Dec.	Aug.	Oct.	Dec.	Aug.	Oct.	Dec.
<b>Northeast</b>												
<b>EXPENDITURE CATEGORY</b>												
All items	155.0	156.5	157.2	161.5	163.1	163.7	165.5	167.1	168.3	160.0	161.6	162.3
Food and beverages	147.5	148.2	148.8	147.4	147.3	146.7	151.6	150.7	151.9	147.7	146.6	147.6
Housing	159.6	160.5	161.7	169.7	171.4	172.6	176.7	178.4	179.5	164.2	166.3	166.4
Apparel and upkeep	123.2	125.5	122.7	125.8	130.0	129.5	128.6	132.3	133.0	128.8	131.9	134.1
Transportation	164.2	165.8	166.5	171.4	173.4	174.2	169.5	172.0	172.9	169.7	171.9	172.5
Medical care	164.4	166.5	168.3	167.1	167.3	170.7	171.2	171.4	174.2	171.9	172.6	177.5
Entertainment	144.3	145.8	145.9	139.6	142.8	140.3	143.8	146.2	149.0	149.3	153.0	152.3
Other goods and services	160.3	166.9	167.9	162.8	167.1	167.7	165.9	170.5	172.3	166.7	171.3	171.8
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities	150.1	151.2	151.4	156.0	157.4	157.1	155.4	156.4	157.0	153.9	154.7	155.5
Commodities less food and beverages	<sup>c</sup> 151.6	153.0	152.9	159.8	162.1	162.0	156.8	158.9	159.2	156.3	158.3	159.0
Services	161.3	163.2	164.4	169.8	171.8	173.6	181.7	184.2	186.3	169.2	171.9	172.7
<b>North Central Region</b>												
<b>EXPENDITURE CATEGORY</b>												
All items	166.6	167.3	167.6	162.2	162.6	163.6	159.6	161.1	161.6	160.7	162.1	162.8
Food and beverages	144.5	144.6	145.2	143.6	142.8	143.8	145.0	144.8	144.7	151.9	153.2	152.9
Housing	186.3	185.6	185.8	171.7	170.3	171.5	165.7	167.8	169.0	165.2	165.9	167.0
Apparel and upkeep	119.5	122.3	120.3	128.9	131.8	131.2	129.9	131.6	132.3	125.4	129.2	127.5
Transportation	167.4	168.8	168.9	168.6	170.1	171.6	169.8	171.8	172.1	167.8	169.4	170.8
Medical care	168.4	169.8	172.4	172.4	173.1	173.9	167.5	167.6	168.0	175.4	175.5	177.6
Entertainment	143.3	144.3	144.2	131.8	134.7	133.6	148.4	149.9	148.4	136.6	138.9	139.1
Other goods and services	158.1	162.9	163.8	170.4	175.8	177.4	158.3	161.1	161.7	169.3	172.4	172.3
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities	154.7	155.6	155.6	153.1	153.7	154.2	151.5	152.7	152.6	151.3	153.0	152.9
Commodities less food and beverages	159.7	161.2	160.9	157.1	158.4	158.7	154.5	156.5	156.3	151.0	153.0	153.0
Services	184.3	184.6	185.2	176.8	176.9	178.6	172.8	174.7	176.2	175.6	176.5	178.3
<b>South</b>												
<b>EXPENDITURE CATEGORY</b>												
All items	162.4	163.3	163.5	162.9	164.9	164.9	162.3	163.5	163.7	162.8	165.1	165.7
Food and beverages	150.9	151.4	151.9	149.9	150.5	149.8	147.8	148.3	148.5	150.7	151.4	152.3
Housing	169.7	169.6	169.3	168.4	171.0	170.9	169.5	169.6	169.4	171.9	173.9	174.6
Apparel and upkeep	131.8	130.7	130.5	126.2	129.0	128.7	124.1	126.5	126.7	111.3	116.3	116.0
Transportation	168.7	171.1	171.5	172.2	174.2	174.4	170.3	172.4	172.5	167.3	170.4	170.2
Medical care	170.0	171.7	173.6	169.0	172.4	174.0	180.0	182.3	182.7	184.2	187.8	189.9
Entertainment	140.7	143.4	142.9	154.4	153.7	154.6	146.2	148.1	150.0	146.4	148.6	147.5
Other goods and services	162.1	166.2	166.6	164.9	168.5	169.1	161.6	166.2	167.5	162.9	164.0	167.3
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities	155.0	155.5	155.9	155.6	157.2	156.9	153.7	154.8	154.8	153.2	155.4	155.6
Commodities less food and beverages	156.8	157.3	157.7	157.9	160.1	160.1	156.4	157.9	157.8	154.2	157.1	157.1
Services	172.7	174.1	174.0	173.9	176.6	176.9	175.6	177.1	177.5	177.1	179.6	180.8
<b>West</b>												
<b>EXPENDITURE CATEGORY</b>												
All items	162.7	163.5	164.0	162.5	163.8	164.0	155.2	155.9	156.3	162.2	163.9	164.0
Food and beverages	150.9	151.9	152.7	152.8	153.6	154.4	148.3	149.4	150.2	154.1	154.9	156.0
Housing	168.3	170.0	169.4	165.4	168.1	167.2	152.9	154.2	153.9	163.2	164.9	164.4
Apparel and upkeep	123.3	122.8	122.7	126.9	127.6	127.9	122.8	125.0	123.4	142.4	146.2	144.4
Transportation	173.0	172.0	174.2	174.4	174.3	175.3	170.6	169.9	171.1	167.8	169.8	171.1
Medical care	177.3	<sup>c</sup> 177.4	178.0	175.8	175.6	176.5	180.0	<sup>c</sup> 180.6	180.9	179.2	179.0	178.9
Entertainment	139.8	141.3	142.6	146.7	146.8	147.5	148.7	147.4	148.8	158.5	160.6	161.2
Other goods and services	165.0	168.0	168.8	165.5	168.4	170.0	161.2	164.6	166.2	173.4	175.3	174.5
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities	152.6	152.4	153.5	155.2	155.7	156.3	153.3	153.4	154.3	152.4	153.8	154.3
Commodities less food and beverages	153.6	152.7	153.9	156.4	156.8	157.2	155.4	155.0	156.0	151.7	153.4	153.6
Services	175.9	177.8	177.8	172.6	174.9	174.7	157.6	159.1	158.8	176.6	178.6	178.3

c = corrected.

## 22. Consumer Price Index—U.S. city average, and selected areas

[1967 = 100 unless otherwise specified]

Area <sup>1</sup>	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1982	1983						1982	1983					
	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
U.S. city average <sup>2</sup>	292.4	299.3	300.3	301.8	302.6	303.1	303.5	292.0	298.2	299.5	300.8	301.3	301.4	301.5
Anchorage, Alaska (10/67 = 100)	...	265.8	...	<sup>c</sup> 267.9	...	270.4	...	...	257.5	...	260.8	...	264.0	...
Atlanta, Ga.	296.1	...	303.9	...	304.4	...	307.3	297.8	...	304.3	...	306.3	...	309.7
Baltimore, Md.	...	300.4	...	302.9	...	304.7	...	...	297.4	...	299.5	...	302.4	...
Boston, Mass.	...	289.1	...	290.6	...	294.0	...	...	288.0	...	288.6	...	292.5	...
Buffalo, N.Y.	277.8	...	285.9	...	288.5	...	288.2	275.1	...	285.1	...	<sup>c</sup> 286.8	...	285.6
Chicago, Ill.-Northwestern Ind.	293.1	299.6	301.6	303.0	<sup>c</sup> 302.3	303.9	303.9	291.8	296.4	297.4	299.1	294.5	295.7	294.2
Cincinnati, Ohio-Ky.-Ind.	...	312.4	...	314.6	...	316.8	...	...	308.0	...	311.2	...	316.0	...
Cleveland, Ohio	317.6	...	327.3	...	332.5	...	330.7	315.0	...	317.6	...	317.6	...	314.9
Dallas-Ft. Worth, Tex.	303.3	...	315.9	...	318.5	...	317.6	299.4	...	309.0	...	314.7	...	313.5
Denver-Boulder, Colo.	...	335.8	...	339.4	...	339.8	...	...	331.7	...	337.3	...	338.4	...
Detroit, Mich.	292.6	298.4	298.8	299.2	298.2	299.9	300.1	288.7	303.8	303.7	304.6	298.9	301.8	301.3
Honolulu, Hawaii	269.9	...	273.5	...	276.4	...	278.4	271.0	...	278.2	...	285.9	...	288.2
Houston, Tex.	318.1	...	324.0	...	324.3	...	320.7	316.1	...	321.6	...	322.4	...	317.9
Kansas City, Mo.-Kansas	290.6	...	301.3	...	303.3	...	303.0	288.6	...	299.3	...	303.9	...	300.0
Los Angeles-Long Beach, Anaheim, Calif.	285.3	294.5	295.2	296.4	297.0	296.5	297.7	288.0	293.2	293.7	296.7	299.0	297.8	299.9
Miami, Fla. (11/77 = 100)	...	160.8	...	162.9	...	164.0	...	...	162.8	...	164.3	...	164.9	...
Milwaukee, Wis.	...	310.1	...	313.9	...	312.5	...	...	325.0	...	329.1	...	328.9	...
Minneapolis-St. Paul, Minn.-Wis.	306.1	...	316.2	...	316.8	...	317.5	306.1	...	308.5	...	312.7	...	312.5
New York, N.Y.-Northeastern N.J.	281.8	289.1	289.5	292.1	292.9	293.9	294.3	280.3	286.1	288.4	288.1	288.7	287.3	288.2
Northeast, Pa. (Scranton)	...	283.4	...	297.2	...	288.5	...	...	286.5	...	290.0	...	290.9	...
Philadelphia, Pa.-N.J.	281.6	288.3	289.9	291.4	291.2	291.7	291.8	281.0	291.1	293.3	294.2	294.2	294.8	294.3
Pittsburgh, Pa.	302.1	...	310.2	...	313.7	...	314.3	301.7	...	304.2	...	304.7	...	302.6
Portland, Oreg.-Wash.	...	291.5	...	293.3	...	293.9	...	...	286.4	...	288.2	...	289.6	...
St. Louis, Mo.-Ill.	...	299.3	...	302.0	...	299.6	...	...	296.7	...	299.1	...	299.3	...
San Diego, Calif.	...	335.2	...	340.4	...	342.3	...	...	320.0	...	<sup>c</sup> 323.9	...	323.7	...
San Francisco-Oakland, Calif.	293.9	...	306.0	...	305.7	...	307.3	293.6	...	301.6	...	301.4	...	306.1
Seattle-Everett, Wash.	...	306.3	...	308.8	...	309.5	...	...	294.2	...	297.7	...	299.0	...
Washington, D.C.-Md.-Va.	...	296.8	...	297.0	...	298.6	...	...	300.0	...	300.9	...	302.7	...

<sup>1</sup>The areas listed include not only the central city but the entire portion of the Standard Metropolitan Statistical Area, as defined for the 1970 Census of Population, except that the Standard Consolidated Area is used for New York and Chicago.

<sup>2</sup>Average of 85 cities.

c = corrected.

**23. Producer Price Indexes, by stage of processing**

[1967 = 100]

Commodity grouping	Annual average 1983	1983												1984
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. <sup>1</sup>	Oct.	Nov.	Dec.	Jan.
<b>FINISHED GOODS</b>														
Finished goods	285.2	283.9	284.1	283.4	283.1	284.2	285.0	285.7	286.1	285.1	287.9	286.8	287.1	289.4
Finished consumer goods	284.6	283.5	283.7	282.7	282.3	283.6	284.6	285.2	285.7	285.1	287.1	285.8	286.1	288.8
Finished consumer foods	261.8	258.4	261.0	261.1	262.9	262.6	261.2	260.7	260.7	<sup>r</sup> 263.0	264.3	261.8	264.0	272.2
Crude	259.5	232.9	240.8	247.9	265.8	267.2	251.2	247.1	259.9	<sup>r</sup> 267.4	289.8	272.8	269.1	309.2
Processed	259.9	258.5	260.7	260.1	260.5	260.1	260.0	259.8	258.7	<sup>r</sup> 260.5	259.9	258.7	261.5	266.7
Nondurable goods less foods	335.3	336.6	333.7	332.0	328.7	332.0	335.7	337.7	338.6	338.6	337.9	336.6	335.3	335.0
Durable goods	233.1	231.7	232.9	231.9	232.2	232.9	233.1	233.4	233.8	<sup>r</sup> 229.2	235.4	235.3	235.7	235.9
Consumer nondurable goods less food and energy	231.4	228.3	228.9	229.4	230.1	230.3	230.7	232.0	232.7	<sup>r</sup> 233.0	233.3	233.7	233.7	235.8
Capital equipment	287.3	285.2	285.6	285.6	286.2	286.5	286.7	287.2	287.7	<sup>r</sup> 285.1	290.9	290.3	290.5	291.5
<b>INTERMEDIATE MATERIALS</b>														
Intermediate materials, supplies, and components	312.4	309.2	309.9	309.5	308.7	309.7	311.3	312.8	314.0	<sup>r</sup> 315.5	316.0	315.7	315.8	316.6
Materials and components for manufacturing	293.3	288.6	291.1	290.2	291.0	291.9	292.4	294.1	294.7	<sup>r</sup> 296.7	296.4	296.1	297.0	298.6
Materials for food manufacturing	258.4	250.9	254.1	252.8	255.1	257.0	257.0	257.4	260.5	<sup>r</sup> 269.4	264.0	260.4	262.5	268.3
Materials for nondurable manufacturing	279.9	277.0	277.0	276.6	277.3	277.7	279.7	281.1	<sup>r</sup> 282.7	283.5	284.1	284.7	287.0	
Materials for durable manufacturing	319.3	312.0	319.2	315.7	316.6	318.4	319.0	320.9	320.9	<sup>r</sup> 323.1	322.2	321.1	322.6	322.9
Components for manufacturing	280.3	276.8	277.6	278.3	278.9	279.4	280.3	281.6	281.5	281.8	282.2	282.5	283.1	284.0
Materials and components for construction	301.7	296.5	298.8	299.6	300.9	301.2	302.4	302.9	303.7	<sup>r</sup> 303.1	303.5	304.0	304.6	305.4
Processed fuels and lubricants	566.8	577.9	565.4	564.2	543.3	547.8	562.0	567.9	572.0	<sup>r</sup> 573.4	579.9	574.0	568.5	562.4
Manufacturing industries	481.9	485.2	475.5	480.6	460.4	462.9	475.9	480.9	485.1	<sup>r</sup> 487.2	498.7	493.4	488.8	482.8
Nonmanufacturing industries	641.1	659.4	644.6	637.2	615.9	622.2	637.5	644.1	648.0	<sup>r</sup> 648.8	650.4	643.9	637.6	631.5
Containers	286.6	285.0	285.3	285.2	284.8	285.8	285.9	286.1	286.3	<sup>r</sup> 287.1	288.3	289.3	289.5	291.5
Supplies	277.0	273.1	273.5	273.9	275.5	275.6	275.6	276.2	277.9	<sup>r</sup> 280.2	280.4	281.0	281.0	282.5
Manufacturing industries	269.9	267.4	267.8	268.1	268.6	268.9	269.8	270.1	270.5	<sup>r</sup> 270.8	271.8	271.9	272.6	274.0
Nonmanufacturing industries	280.9	276.4	276.8	277.1	279.3	279.3	278.8	279.6	282.0	<sup>r</sup> 285.3	285.1	286.0	285.6	287.1
Feeds	225.5	206.5	207.4	207.7	219.8	218.1	213.4	216.2	230.7	<sup>r</sup> 249.6	245.6	249.6	244.0	244.5
Other supplies	292.7	290.9	291.2	291.6	291.9	292.2	292.5	291.9	293.0	<sup>r</sup> 293.4	293.9	294.2	294.8	296.5
<b>CRUDE MATERIALS</b>														
Crude materials for further processing	323.6	313.9	320.2	321.6	325.8	325.8	323.3	320.6	327.1	<sup>r</sup> 328.5	324.5	324.1	327.8	333.7
Foodstuffs and feedstuffs	252.3	239.6	249.3	249.1	256.8	256.5	252.1	248.4	256.4	<sup>r</sup> 257.2	253.9	252.0	256.2	264.2
Nonfood materials	477.2	473.6	473.0	477.7	474.6	475.4	476.8	476.2	479.6	<sup>r</sup> 482.5	476.7	479.5	482.1	483.6
Nonfood materials except fuel	372.0	368.0	366.0	366.8	367.0	369.0	370.5	371.6	375.6	<sup>r</sup> 378.1	375.3	377.7	379.6	380.3
Manufacturing industries	381.6	377.6	375.1	375.9	376.1	378.3	379.9	381.6	385.7	<sup>r</sup> 388.3	385.1	387.8	389.7	390.5
Construction	271.1	267.5	269.1	269.3	270.0	270.3	271.3	270.9	271.0	<sup>r</sup> 272.5	272.6	272.9	274.6	273.9
Crude fuel	931.5	930.7	937.7	961.8	941.6	935.9	936.7	927.8	926.9	<sup>r</sup> 931.0	911.2	915.2	921.4	927.0
Manufacturing industries	1,094.8	1,093.8	1,103.9	1,134.3	1,107.6	1,100.9	1,102.3	1,090.4	1,088.9	<sup>r</sup> 1,093.9	1,067.9	1,072.4	1,079.9	1,087.7
Nonmanufacturing industries	816.2	815.5	820.0	839.2	824.0	819.1	819.4	813.0	812.5	<sup>r</sup> 816.1	800.9	804.6	810.0	813.7
<b>SPECIAL GROUPINGS</b>														
Finished goods excluding foods	290.9	290.3	289.6	288.7	287.7	289.3	290.8	291.8	292.5	290.3	293.7	293.0	292.6	292.9
Finished consumer goods excluding foods	291.3	291.4	290.3	288.9	287.3	289.4	291.6	292.6	293.5	<sup>r</sup> 291.4	293.8	293.0	292.5	292.5
Finished consumer goods less energy	249.9	247.1	248.7	248.6	249.5	249.7	249.4	249.9	250.2	<sup>r</sup> 249.7	252.2	251.4	252.4	256.0
Intermediate materials less foods and feeds	317.2	314.6	315.2	314.8	313.6	314.6	316.4	318.0	318.7	<sup>r</sup> 319.5	320.4	320.1	320.3	320.9
Intermediate materials less energy	295.1	290.5	292.4	292.1	293.2	293.9	294.4	295.6	296.5	<sup>r</sup> 298.1	298.1	298.2	298.8	300.3
Intermediate foods and feeds	247.8	236.4	238.8	238.0	243.6	244.4	242.8	244.0	250.9	<sup>r</sup> 263.2	258.2	257.1	256.6	260.7
Crude materials less agricultural products	538.4	536.0	535.1	539.7	536.1	536.2	537.5	536.8	540.0	<sup>r</sup> 542.9	537.4	540.4	543.8	546.6
Crude materials less energy	246.5	232.5	241.4	242.7	248.6	249.0	246.2	243.9	251.2	<sup>r</sup> 252.5	249.1	248.5	252.3	258.5

<sup>1</sup>Data for September 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

## 24. Producer Price Indexes, by commodity groupings

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1983	1983												1984
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. <sup>1</sup>	Oct.	Nov.	Dec.	Jan.
	<b>All commodities</b>	303.1	299.9	300.9	300.6	300.6	301.5	302.4	303.2	304.7	305.3	306.3	305.6	306.1	308.1
	<b>All commodities (1957-59 = 100)</b>	321.6	318.2	319.3	318.9	318.9	319.9	320.8	321.7	323.3	323.9	325.0	324.2	324.7	326.9
	<b>Farm products and processed foods and feeds</b>	253.9	245.8	250.4	250.6	254.7	254.7	252.5	251.5	255.5	<sup>2</sup> 259.1	257.9	256.0	257.8	264.4
	<b>Industrial commodities</b>	315.8	313.9	313.9	313.5	312.4	313.6	315.3	316.5	317.3	<sup>3</sup> 317.1	318.7	318.3	318.4	319.2
	<b>FARM PRODUCTS AND PROCESSED FOODS AND FEEDS</b>														
01	Farm products	248.2	233.2	240.7	241.5	250.5	250.4	247.4	244.3	253.5	<sup>2</sup> 256.4	255.2	251.0	254.0	263.3
01-1	Fresh and dried fruits and vegetables	261.7	227.6	227.8	234.9	266.6	260.1	264.4	258.2	270.4	<sup>2</sup> 276.0	307.6	274.7	273.0	290.4
01-2	Grains	240.4	206.3	222.4	227.4	243.8	242.2	241.5	236.7	251.8	<sup>2</sup> 258.0	253.7	257.5	243.6	245.5
01-3	Livestock	243.1	242.3	251.1	251.4	260.6	258.0	251.7	240.7	242.2	231.5	229.4	220.5	238.2	250.7
01-4	Live poultry	206.5	177.1	200.1	177.8	170.8	186.9	199.3	214.5	221.4	242.2	208.5	238.5	241.2	252.6
01-5	Plant and animal fibers	227.0	201.7	206.4	217.0	213.6	223.8	229.7	230.4	240.7	<sup>2</sup> 238.7	234.5	243.6	244.1	229.3
01-6	Fluid milk	282.0	284.5	284.3	282.9	280.8	279.8	278.6	278.7	281.7	284.4	284.1	283.2	281.4	279.1
01-7	Eggs	( <sup>2</sup> )	170.0	170.0	170.0	170.0	185.1	169.3	177.2	189.5	200.1	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	282.4
01-8	Hay, hayseeds, and oilseeds	246.8	212.4	217.9	217.8	226.3	227.3	213.3	227.3	262.8	297.8	288.8	287.6	282.2	287.3
01-9	Other farm products	282.1	279.9	281.2	280.3	279.2	281.0	284.4	282.5	285.7	287.3	283.7	283.5	276.9	280.2
02	Processed foods and feeds	256.0	251.7	254.7	254.5	256.0	256.1	254.3	254.4	255.5	<sup>2</sup> 259.6	258.3	257.6	258.8	263.9
02-1	Cereal and bakery products	260.9	257.3	256.8	256.9	258.8	259.1	260.3	261.4	262.8	<sup>2</sup> 263.6	264.6	264.7	264.9	266.1
02-2	Meats, poultry, and fish	249.4	252.3	261.0	260.7	259.1	257.8	250.2	247.3	243.2	<sup>2</sup> 242.9	239.6	235.7	242.1	256.9
02-3	Dairy products	250.6	250.7	250.9	250.7	251.0	250.9	250.4	250.4	250.4	<sup>2</sup> 250.6	251.0	251.2	249.2	248.5
02-4	Processed fruits and vegetables	277.1	274.8	274.3	274.9	273.7	275.3	277.1	277.1	278.3	<sup>2</sup> 278.6	280.0	279.8	281.5	285.3
02-5	Sugar and confectionery	292.8	282.1	286.4	283.7	287.4	289.9	296.0	296.4	298.9	<sup>2</sup> 300.2	297.7	297.6	297.4	299.0
02-6	Beverages and beverage materials	263.6	260.1	261.3	262.0	263.0	263.6	263.0	263.7	263.9	<sup>2</sup> 264.3	265.1	266.1	266.5	268.4
02-7	Fats and oils	239.6	201.7	205.3	206.0	214.6	220.0	219.3	222.2	245.6	<sup>2</sup> 303.5	287.4	277.6	271.7	278.7
02-8	Miscellaneous processed foods	254.4	248.8	249.3	248.5	249.9	249.9	251.5	255.0	252.7	<sup>2</sup> 258.4	259.7	264.0	265.8	266.7
02-9	Prepared animal feeds	228.5	211.6	212.3	212.4	222.8	221.3	217.1	220.0	233.0	<sup>2</sup> 249.3	247.7	250.9	245.7	246.0
	<b>INDUSTRIAL COMMODITIES</b>														
03	Textile products and apparel	204.9	202.7	202.6	203.4	203.5	204.3	204.7	205.3	206.0	<sup>2</sup> 206.2	206.4	207.0	207.2	208.0
03-1	Synthetic fibers (12/75 = 100)	156.8	156.7	153.1	153.9	153.8	155.6	155.9	158.3	157.5	<sup>2</sup> 158.0	160.4	159.5	158.2	159.2
03-2	Processed yarns and threads (12/75 = 100)	138.3	134.7	135.0	135.8	136.0	137.4	137.6	138.5	140.2	<sup>2</sup> 140.3	140.7	141.3	142.4	142.3
03-3	Gray fabrics (12/75 = 100)	146.9	144.4	144.3	145.1	145.8	146.2	145.8	146.1	146.7	<sup>2</sup> 147.3	148.9	150.2	151.7	152.8
03-4	Finished fabrics (12/75 = 100)	123.1	122.2	122.3	122.4	123.1	122.8	122.5	122.4	123.6	<sup>2</sup> 123.4	123.8	123.9	124.3	125.0
03-81	Apparel	197.1	194.4	195.0	196.1	195.8	196.5	197.9	198.4	198.7	<sup>2</sup> 198.7	197.8	198.7	198.4	198.7
03-82	Textile housefurnishings	235.6	236.5	234.3	234.2	234.2	237.6	235.2	234.8	234.5	<sup>2</sup> 235.3	238.5	233.9	234.7	236.6
04	Hides, skins, leather, and related products	271.4	266.7	264.3	264.9	267.4	269.4	271.2	272.3	274.7	<sup>2</sup> 274.4	274.7	277.3	278.3	280.1
04-2	Leather	330.8	314.4	312.8	316.2	320.5	326.6	335.9	337.9	343.4	<sup>2</sup> 339.4	337.1	340.2	342.6	346.4
04-3	Footwear	250.1	251.5	247.7	248.1	250.0	248.7	249.9	249.9	250.9	<sup>2</sup> 251.6	251.2	251.4	251.3	251.7
04-4	Other leather and related products	253.7	250.8	251.0	250.9	251.0	251.7	251.7	253.5	253.7	<sup>2</sup> 253.5	256.9	257.6	258.1	258.9
05	Fuels and related products and power	665.9	683.6	668.6	658.0	644.8	651.9	665.5	668.7	671.7	<sup>2</sup> 672.3	672.7	667.1	662.1	655.8
05-1	Coal	536.8	535.6	533.4	538.6	538.0	535.2	534.1	534.8	536.6	<sup>2</sup> 537.9	536.7	539.8	542.4	541.0
05-2	Coke	447.8	450.9	450.9	447.3	447.3	438.4	438.4	431.6	453.9	453.9	453.5	453.5	453.5	418.3
05-3	Gas fuels <sup>3</sup>	1,147.9	1,147.3	1,154.7	1,180.0	1,156.1	1,156.7	1,155.1	1,148.9	1,145.9	<sup>2</sup> 1,147.0	1,130.7	1,124.2	1,125.6	1,126.8
05-4	Electric power	418.0	410.8	410.8	411.4	409.2	412.2	419.4	426.4	427.2	<sup>2</sup> 427.9	423.9	419.0	417.6	420.9
05-61	Crude petroleum <sup>4</sup>	681.5	719.7	692.9	678.0	678.0	678.0	677.9	675.7	675.1	<sup>2</sup> 675.7	676.1	676.0	674.8	676.0
05-7	Petroleum products, refined <sup>5</sup>	686.4	720.6	692.8	666.6	645.9	659.3	684.2	688.7	694.9	<sup>2</sup> 695.3	702.4	694.7	684.8	669.7
06	Chemicals and allied products	292.9	289.3	290.5	289.8	291.3	291.1	290.8	293.7	294.4	<sup>2</sup> 295.9	296.4	296.4	296.6	298.5
06-1	Industrial chemicals <sup>6</sup>	342.9	339.3	340.1	338.8	338.7	338.8	338.5	347.0	347.6	<sup>2</sup> 345.6	348.6	346.3	345.1	347.7
06-21	Prepared paint	264.7	264.7	264.7	264.7	264.7	264.7	264.7	265.2	265.4	264.5	264.1	264.4	264.9	265.7
06-22	Paint materials	305.6	301.5	299.5	298.4	299.8	300.2	299.5	300.5	305.7	<sup>2</sup> 316.2	316.6	314.5	315.5	316.3
06-3	Drugs and pharmaceuticals	226.2	218.6	222.2	222.9	225.1	225.2	225.2	227.6	227.3	<sup>2</sup> 227.4	229.7	230.6	231.4	233.3
06-4	Fats and oils, inedible	283.7	242.0	253.4	262.2	278.3	287.1	276.9	260.9	278.1	<sup>2</sup> 329.0	319.5	320.9	319.0	334.4
06-5	Agricultural chemicals and chemical products	280.7	283.2	283.3	284.2	282.8	282.4	280.6	278.1	277.1	276.0	276.8	281.1	282.5	279.2
06-6	Plastic resins and materials	290.2	283.8	283.1	282.1	285.4	288.0	289.1	291.3	293.7	<sup>2</sup> 302.6	297.5	296.6	298.3	304.2
06-7	Other chemicals and allied products	273.7	272.8	274.4	272.0	274.7	272.0	272.4	274.2	274.2	<sup>2</sup> 274.3	273.9	274.4	274.5	275.9
07	Rubber plastic products	243.4	242.9	242.3	241.8	243.0	243.2	243.1	243.4	243.7	<sup>2</sup> 243.2	245.1	243.8	244.1	244.1
07-1	Rubber and rubber products	266.6	269.6	268.3	267.1	267.0	267.0	265.6	265.2	265.1	<sup>2</sup> 263.9	267.1	264.8	265.1	265.6
07-11	Crude rubber	280.9	271.1	274.3	281.2	281.3	280.6	280.2	283.2	284.6	<sup>2</sup> 284.4	284.3	282.8	282.4	282.9
07-12	Tires and tubes	245.4	259.1	250.5	246.6	246.5	246.3	243.7	242.4	242.8	242.5	242.7	242.7	243.0	242.9
07-13	Miscellaneous rubber products	286.0	284.5	289.6	285.8	285.7	286.0	285.9	285.7	284.5	<sup>2</sup> 281.6	289.9	284.2	284.8	286.2
07-2	Plastic products (6/78 = 100)	135.3	133.0	133.1	133.2	134.6	134.8	135.5	136.0	136.4	<sup>2</sup> 136.6	137.0	136.8	136.9	136.7
08	Lumber and wood products	307.3	293.3	303.1	305.8	307.2	308.0	314.8	314.6	313.9	<sup>2</sup> 305.6	306.1	306.0	308.8	309.2
08-1	Lumber	353.1	326.8	344.7	349.3	354.2	358.6	372.8	373.1	366.6	<sup>2</sup> 346.6	345.8	346.0	351.5	353.2
08-2	Millwork	302.3	293.7	300.7	304.0	302.8	299.0	294.9	296.3	306.6	<sup>2</sup> 305.9	307.1	308.2	308.5	308.5
08-3	Plywood	244.1	235.3	239.5	238.9	239.4	241.1	255.5	252.5	246.2	<sup>2</sup> 242.2	246.5	244.7	247.1	248.3
08-4	Other wood products	230.6	232.0	233.2	231.6	230.8	231.1	229.6	229.7	229.3	<sup>2</sup> 229.4	229.6	229.7	230.4	229.8

See footnotes at end of table.

**24. Continued—Producer Price Indexes, by commodity groupings**

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1983	1983												1984
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. <sup>1</sup>	Oct.	Nov.	Dec.	Jan.
<b>INDUSTRIAL COMMODITIES—Continued</b>															
09	Pulp, paper, and allied products . . . . .	297.7	293.6	294.2	294.8	295.4	296.0	297.0	297.8	298.8	<sup>2</sup> 299.9	300.4	302.0	302.7	307.6
09-1	Pulp, paper, and products, excluding building paper and board . . . . .	271.0	269.8	268.7	268.7	268.5	268.7	269.2	270.2	271.1	<sup>2</sup> 273.1	273.0	276.3	276.8	280.0
09-11	Woodpulp . . . . .	346.6	346.6	345.7	343.0	342.5	343.2	344.9	345.8	346.4	<sup>2</sup> 345.4	348.6	352.6	351.3	364.4
09-12	Wastepaper . . . . .	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	183.3	( <sup>2</sup> )	194.4	( <sup>2</sup> )	210.2	211.5	
09-13	Paper . . . . .	281.9	279.3	278.8	278.4	278.5	279.0	279.5	279.2	280.9	<sup>2</sup> 286.0	286.6	287.9	288.9	294.3
09-14	Paperboard . . . . .	250.5	243.3	244.1	246.3	248.1	248.7	249.4	249.7	250.1	<sup>2</sup> 254.0	255.5	257.9	259.5	262.2
09-15	Converted paper and paperboard products . . . . .	265.4	265.0	265.1	265.1	264.2	264.1	264.5	264.1	264.7	<sup>2</sup> 265.0	266.5	267.8	268.0	269.4
09-2	Building paper and board . . . . .	250.0	241.1	241.4	244.2	247.0	249.3	255.7	256.2	252.1	252.8	254.7	254.7	250.5	251.9
10	Metals and metal products . . . . .	307.1	300.3	304.7	304.4	304.6	306.1	306.3	307.3	308.2	<sup>2</sup> 310.7	310.7	310.3	311.4	312.7
10-1	Iron and steel . . . . .	343.3	333.3	339.9	341.6	341.5	340.9	341.3	342.1	343.2	<sup>2</sup> 348.1	348.2	349.2	350.6	354.1
10-17	Steel mill products . . . . .	352.6	343.7	351.1	349.8	349.7	349.8	350.1	350.8	351.7	<sup>2</sup> 358.1	358.1	359.1	359.5	362.8
10-2	Nonferrous metals . . . . .	276.0	267.0	275.8	270.6	271.8	277.7	275.7	278.4	279.8	<sup>2</sup> 282.0	279.8	275.6	278.0	276.1
10-3	Metal containers . . . . .	335.2	327.9	331.1	331.4	331.9	337.1	337.4	336.5	336.6	<sup>2</sup> 338.5	338.3	338.2	338.2	344.5
10-4	Hardware . . . . .	290.0	287.2	287.9	288.2	288.6	288.5	291.5	292.1	292.2	<sup>2</sup> 292.5	290.0	291.5	291.9	292.5
10-5	Plumbing fixtures and brass fittings . . . . .	289.1	280.6	283.5	285.6	287.7	289.1	290.8	290.4	290.2	<sup>2</sup> 292.4	292.7	293.7	293.6	293.9
10-6	Heating equipment . . . . .	243.4	240.7	240.7	241.1	242.3	242.7	243.0	244.9	245.1	<sup>2</sup> 246.6	245.0	245.2	245.6	247.3
10-7	Fabricated structural metal products . . . . .	303.3	303.6	302.8	303.7	302.5	302.1	302.0	302.2	303.0	<sup>2</sup> 304.3	304.4	305.0	304.9	306.5
10-8	Miscellaneous metal products . . . . .	283.8	279.1	279.0	280.4	280.7	280.8	283.4	283.7	284.0	<sup>2</sup> 284.3	288.2	289.1	289.3	289.9
11	Machinery and equipment . . . . .	286.4	283.3	284.3	284.7	285.4	286.0	286.2	287.4	287.4	<sup>2</sup> 287.9	287.8	288.1	288.8	289.6
11-1	Agricultural machinery and equipment . . . . .	326.3	322.4	323.3	323.5	323.9	326.4	326.4	327.1	327.3	<sup>2</sup> 328.5	327.9	329.7	329.8	330.9
11-2	Construction machinery and equipment . . . . .	351.9	348.3	349.3	349.6	350.9	352.3	352.5	352.8	352.9	<sup>2</sup> 353.5	353.5	353.7	353.7	354.3
11-3	Metalworking machinery and equipment . . . . .	326.2	324.1	325.2	325.5	326.2	326.7	327.0	326.6	326.5	<sup>2</sup> 326.6	326.5	326.6	327.7	328.3
11-4	General purpose machinery and equipment . . . . .	368.2	307.4	307.9	307.5	308.2	308.4	308.4	308.5	307.9	308.1	308.3	308.4	309.3	310.3
11-6	Special industry machinery and equipment . . . . .	337.1	331.8	332.6	333.6	334.5	335.8	336.7	338.0	339.0	<sup>2</sup> 339.8	340.5	340.9	341.7	341.0
11-7	Electrical machinery and equipment . . . . .	240.0	235.2	237.2	237.5	238.4	238.5	238.8	241.7	241.7	<sup>2</sup> 242.9	242.5	242.7	243.7	244.6
11-9	Miscellaneous machinery . . . . .	274.5	272.9	272.7	273.7	274.2	275.3	275.0	275.2	275.3	275.4	274.9	275.0	275.2	276.3
12	Furniture and household durables . . . . .	213.9	210.7	212.5	212.3	212.8	213.6	214.0	214.8	214.9	<sup>2</sup> 215.4	215.1	215.4	215.3	216.3
12-1	Household furniture . . . . .	234.7	231.9	232.6	231.1	231.8	234.4	235.0	235.4	236.3	<sup>2</sup> 236.6	237.1	237.1	237.3	238.2
12-2	Commercial furniture . . . . .	286.5	281.1	282.2	285.1	286.2	285.9	286.9	287.5	286.5	<sup>2</sup> 287.3	287.9	290.3	290.5	290.8
12-3	Floor coverings . . . . .	185.0	182.2	182.1	182.0	182.2	181.4	181.4	186.6	188.9	<sup>2</sup> 189.5	188.1	187.9	187.8	189.0
12-4	Household appliances . . . . .	206.8	203.9	204.9	205.0	206.3	207.5	207.5	207.8	207.7	<sup>2</sup> 208.0	207.6	207.7	208.1	209.4
12-5	Home electronic equipment . . . . .	86.2	87.3	87.0	87.0	86.6	86.4	86.5	85.9	85.5	85.8	85.8	85.8	84.6	84.3
12-6	Other household durable goods . . . . .	312.5	302.8	314.8	312.9	312.0	312.7	314.3	314.8	313.9	<sup>2</sup> 314.5	313.1	312.9	313.1	315.9
13	Nonmetallic mineral products . . . . .	325.3	321.5	322.3	322.0	324.1	324.1	324.5	325.1	326.3	327.2	327.9	328.9	329.2	328.8
13-11	Flat glass . . . . .	229.7	229.7	229.7	229.7	229.7	229.7	229.7	229.8	229.7	<sup>2</sup> 229.5	229.5	230.1	230.0	229.5
13-2	Concrete ingredients . . . . .	314.0	307.2	310.0	308.5	312.8	313.7	314.2	314.0	316.4	<sup>2</sup> 317.2	318.8	316.7	317.0	312.9
13-3	Concrete products . . . . .	301.8	299.4	300.1	300.4	301.0	301.1	301.6	302.3	302.7	<sup>2</sup> 303.5	303.3	303.6	303.7	305.6
13-4	Structural clay products, excluding refractories . . . . .	277.6	264.9	264.3	270.7	275.7	277.6	281.5	282.4	282.4	<sup>2</sup> 282.4	282.8	283.4	283.5	283.7
13-5	Refractories . . . . .	341.6	337.7	337.7	337.7	338.2	338.2	336.8	338.2	339.4	<sup>2</sup> 340.2	345.6	354.3	354.3	355.0
13-6	Asphalt roofing . . . . .	383.0	393.7	380.4	374.7	384.0	380.0	379.6	385.3	383.4	<sup>2</sup> 387.2	385.0	384.2	380.6	381.4
13-7	Gypsum products . . . . .	284.9	263.1	267.4	265.9	271.9	275.7	273.8	276.0	289.3	<sup>2</sup> 297.8	304.3	313.9	321.4	328.5
13-8	Glass containers . . . . .	352.6	356.6	355.8	354.1	353.5	351.8	351.8	351.6	351.3	<sup>2</sup> 351.1	351.1	351.1	351.0	351.0
13-9	Other nonmetallic minerals . . . . .	480.1	471.5	476.1	476.4	478.7	478.5	479.5	479.7	481.9	<sup>2</sup> 482.5	482.7	486.9	487.4	485.4
14	Transportation equipment (12/68 = 100) . . . . .	256.7	256.3	255.8	255.2	255.6	255.8	256.1	256.2	256.8	<sup>2</sup> 250.4	261.2	260.6	260.7	261.7
14-1	Motor vehicles and equipment . . . . .	256.8	257.0	256.3	255.4	255.9	256.2	256.7	256.6	256.8	<sup>2</sup> 249.1	261.1	260.3	260.4	261.0
14-4	Railroad equipment . . . . .	352.5	350.8	350.5	350.3	350.0	350.4	350.1	351.3	351.0	<sup>2</sup> 350.7	355.4	355.4	357.3	359.2
15	Miscellaneous products . . . . .	289.5	285.7	288.8	287.4	287.4	287.1	288.0	291.5	292.0	<sup>2</sup> 291.4	291.2	291.4	292.5	295.3
15-1	Toys, sporting goods, small arms, ammunition . . . . .	225.2	222.7	225.3	225.7	226.3	226.0	225.9	224.3	224.5	<sup>2</sup> 224.8	225.3	225.7	225.8	228.0
15-2	Tobacco products . . . . .	365.3	356.2	356.4	353.8	354.1	353.8	352.1	373.4	376.7	<sup>2</sup> 376.9	376.7	376.7	377.0	389.4
15-3	Notions . . . . .	280.1	280.5	280.6	280.6	280.3	280.3	280.3	280.3	279.7	279.7	279.7	279.6	280.1	281.4
15-4	Photographic equipment and supplies . . . . .	215.8	210.0	211.8	216.6	216.6	216.6	216.5	216.5	216.6	<sup>2</sup> 216.6	217.1	217.1	217.1	( <sup>2</sup> )
15-5	Mobile homes (12/74 = 100) . . . . .	163.2	161.8	161.7	162.9	162.3	162.4	163.1	163.5	163.7	<sup>2</sup> 164.3	164.2	164.3	164.7	162.4
15-9	Other miscellaneous products . . . . .	351.5	350.8	359.8	350.5	350.3	349.2	353.4	353.7	352.9	<sup>2</sup> 349.6	347.9	348.4	352.3	350.2

<sup>1</sup>Data for September 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

<sup>2</sup>Not available.

<sup>3</sup>Prices for natural gas are lagged 1 month.

<sup>4</sup>Includes only domestic production.

<sup>5</sup>Most prices for refined petroleum products are lagged 1 month.

<sup>6</sup>Some prices for industrial chemicals are lagged 1 month.

r = revised.

## 25. Producer Price Indexes, for special commodity groupings

[1967 = 100 unless otherwise specified]

Commodity grouping	Annual average 1983	1983												1984
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. <sup>1</sup>	Sept.	Oct.	Nov.	Dec.	Jan.
All commodities—less farm products	306.7	304.4	304.9	304.5	303.8	304.8	306.0	307.1	308.0	<sup>r</sup> 308.3	309.5	309.1	309.4	310.8
All foods	257.5	252.4	255.7	255.8	258.2	258.2	256.6	256.2	257.1	<sup>r</sup> 260.7	261.1	258.0	260.0	268.3
Processed foods	258.8	255.8	259.3	258.9	259.5	259.6	257.9	257.7	257.6	<sup>r</sup> 260.9	259.3	258.1	260.1	266.2
Industrial commodities less fuels	279.2	275.4	277.0	276.9	277.6	278.2	278.7	279.8	280.4	<sup>r</sup> 280.0	281.8	281.9	282.5	284.0
Selected textile mill products (Dec. 1975 = 100)	138.1	136.7	136.8	137.2	137.4	137.7	137.4	143.0	139.0	<sup>r</sup> 139.1	139.2	139.2	139.5	140.3
Hosiery	144.7	141.7	144.5	144.5	144.5	144.5	144.5	144.5	145.6	145.6	145.6	145.6	145.6	145.8
Underwear and nightwear	223.7	223.3	222.6	223.8	223.4	223.5	222.7	223.3	223.5	<sup>r</sup> 224.5	224.2	224.5	224.8	227.0
Chemicals and allied products, including synthetic rubber and fibers and yarns	283.5	280.8	281.4	280.7	281.8	281.6	281.5	284.6	285.0	<sup>r</sup> 285.6	286.4	286.3	286.4	288.0
Pharmaceutical preparations	224.8	215.8	219.4	220.3	223.3	223.5	223.6	226.3	226.0	<sup>r</sup> 227.1	229.5	230.5	231.8	234.1
Lumber and wood products, excluding millwork	321.6	300.7	314.3	317.2	320.8	324.3	338.8	338.1	331.5	<sup>r</sup> 316.5	317.4	316.9	321.5	323.0
Steel mill products, including fabricated wire products	351.0	343.1	349.9	348.4	348.4	348.5	348.7	349.3	350.1	<sup>r</sup> 355.9	355.8	356.9	357.4	360.4
Finished steel mill products, excluding fabricated wire products	351.4	342.1	349.8	348.3	348.4	348.5	348.8	349.4	350.3	<sup>r</sup> 357.1	357.2	358.2	358.7	362.1
Finished steel mill products, including fabricated wire products	349.7	341.6	348.5	347.0	347.0	347.1	347.4	347.9	348.7	<sup>r</sup> 354.8	354.8	355.9	356.4	359.5
Special metals and metal products	292.5	288.6	290.9	290.3	290.7	291.7	292.0	292.6	293.5	291.5	296.5	296.0	296.6	297.7
Fabricated metal products	294.2	291.1	291.3	292.3	292.2	292.6	294.0	294.2	294.7	<sup>r</sup> 295.5	296.7	297.5	297.6	299.1
Copper and copper products	196.6	190.7	201.5	198.9	200.9	206.7	201.3	201.6	201.2	<sup>r</sup> 198.2	190.5	183.0	184.9	182.1
Machinery and motive products	279.8	277.8	278.2	278.1	278.7	279.2	279.4	280.1	280.4	<sup>r</sup> 277.7	282.6	282.5	283.0	283.9
Machinery and equipment, except electrical	313.6	311.3	311.9	312.2	312.9	313.8	313.9	314.2	314.2	<sup>r</sup> 314.3	314.5	314.8	315.3	316.1
Agricultural machinery, including tractors	341.5	337.0	337.7	337.8	338.2	341.7	341.8	342.7	342.8	<sup>r</sup> 344.0	343.2	346.0	346.0	346.7
Metalworking machinery	357.1	354.6	355.7	355.6	356.3	358.0	357.8	357.8	357.5	<sup>r</sup> 357.1	357.2	357.3	360.0	359.8
Total tractors	369.9	365.6	365.6	365.7	366.1	370.5	370.6	370.7	370.0	372.5	372.6	375.2	373.8	374.0
Agricultural machinery and equipment less parts	330.0	325.9	326.6	326.8	327.1	330.1	330.2	331.0	331.2	<sup>r</sup> 332.6	331.9	333.9	333.8	334.8
Farm and garden tractors less parts	347.5	342.2	342.2	342.2	342.2	348.8	348.8	348.8	347.5	350.6	350.7	354.7	351.9	352.2
Agricultural machinery, excluding tractors less parts	336.9	333.1	334.4	334.5	335.2	336.2	336.4	338.0	339.2	<sup>r</sup> 338.9	337.3	339.2	341.4	342.5
Construction materials	297.7	290.3	294.6	295.0	296.1	296.8	298.6	310.6	299.8	<sup>r</sup> 299.9	300.4	300.6	301.4	302.3

<sup>1</sup>Data for September 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

## 26. Producer Price Indexes, by durability of product

[1967 = 100]

Commodity grouping	Annual average 1982	1983												1984
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Total durable goods	286.7	282.6	284.8	284.6	285.3	286.0	286.7	287.4	287.8	<sup>r</sup> 286.8	289.2	289.2	289.9	290.7
Total nondurable goods	315.8	313.3	313.4	313.0	312.4	313.5	314.5	315.4	317.8	<sup>r</sup> 319.7	319.5	318.3	318.5	321.6
Total manufactures	295.7	293.5	293.9	293.2	292.7	293.7	295.0	296.1	296.9	<sup>r</sup> 297.2	298.8	298.4	298.7	300.0
Durable	287.3	283.7	285.7	285.3	286.0	286.7	287.3	288.0	288.3	<sup>r</sup> 287.2	289.7	289.6	290.3	291.1
Nondurable	304.4	303.8	302.5	301.4	299.7	301.0	303.1	304.5	305.9	<sup>r</sup> 307.8	308.3	307.5	307.5	309.4
Total raw or slightly processed goods	339.9	330.4	335.2	337.3	340.4	340.9	339.0	338.3	343.8	<sup>r</sup> 345.9	343.6	341.0	342.5	348.9
Durable	249.6	224.2	235.4	243.3	244.1	246.1	249.4	249.9	256.8	<sup>r</sup> 260.7	260.6	259.4	264.1	267.7
Nondurable	345.5	337.2	341.5	343.2	346.5	346.8	344.6	343.7	349.1	<sup>r</sup> 351.0	348.6	346.0	347.1	353.8

<sup>1</sup>Data for September 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

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**27. Producer Price Indexes for the output of selected SIC industries**

[1967 = 100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1983	1983												1984
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept. <sup>1</sup>	Oct.	Nov.	Dec.	Jan.
<b>MINING</b>															
1011	Iron ores (12/75 = 100)	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1
1092	Mercury ores (12/75 = 100)	269.7	306.2	289.5	285.4	272.9	268.7	254.1	237.5	231.2	243.3	283.3	287.5	277.0	275.8
1311	Crude petroleum and natural gas	921.7	945.2	931.2	934.4	922.1	921.8	924.2	916.6	915.8	920.0	908.0	910.2	910.2	915.1
1455	Kaolin and ball clay (6/76 = 100)	164.3	153.6	156.3	158.4	164.3	164.3	164.3	164.3	164.3	164.3	171.7	172.9	172.9	172.9
<b>MANUFACTURING</b>															
2021	Creamery butter	275.8	275.5	275.6	275.6	275.6	275.6	275.6	275.6	276.1	278.4	278.1	278.2	269.5	267.3
2044	Rice milling	193.4	191.3	183.0	183.0	188.9	191.3	194.5	193.7	198.1	201.1	196.7	199.6	199.6	199.6
2067	Chewing gum	326.8	326.0	326.0	326.1	326.1	326.1	327.2	327.2	327.3	327.3	327.3	327.4	327.5	327.9
2074	Cottonseed oil mills	204.5	157.5	173.4	167.1	186.8	186.2	179.2	192.4	220.6	262.9	256.5	233.2	223.3	229.2
2083	Malt	234.1	232.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6	241.6	241.6	241.6
2091	Canned and cured seafoods (12/73 = 100)	174.0	182.8	179.2	177.9	177.7	175.7	173.4	173.7	169.4	169.8	170.2	169.2	169.6	169.0
2098	Macaroni and spaghetti	256.8	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	258.6	261.9	261.9
2251	Women's hosiery, except socks (12/75 = 100)	122.5	118.3	118.5	122.6	122.7	122.7	122.7	122.7	122.9	122.9	122.9	123.0	123.0	123.1
2261	Finishing plants, cotton (6/76 = 100)	135.3	135.3	136.0	136.1	139.8	138.0	132.9	132.8	133.8	133.5	134.2	134.0	137.1	138.5
2262	Finishing plants, synthetics, silk (6/76 = 100)	126.6	125.7	126.7	126.2	127.2	126.9	125.9	125.1	127.2	125.8	127.2	127.3	127.4	128.8
2284	Thread mills (6/76 = 100)	164.9	157.9	161.9	165.6	165.7	165.7	165.7	165.7	165.7	166.1	166.1	166.1	166.1	166.1
2298	Cordage and twine (12/77 = 100)	139.3	142.6	142.7	142.8	137.6	137.6	137.6	137.6	137.6	139.0	139.0	139.0	139.0	139.1
2361	Children's dresses and blouses (12/77 = 100)	116.6	117.0	117.0	115.5	115.5	115.5	117.0	117.0	117.0	117.0	117.0	117.0	117.0	118.2
2381	Fabric dress and work gloves	293.3	288.8	288.8	288.8	291.0	291.7	291.7	296.3	296.3	296.3	296.3	296.3	296.6	295.2
2394	Canvas and related products (12/77 = 100)	147.2	148.7	148.7	146.2	146.2	146.2	146.2	146.2	146.2	146.2	146.2	148.5	148.5	151.3
2448	Wood pallets and skids (12/75 = 100)	149.2	144.6	145.2	145.7	146.9	148.5	149.5	150.9	151.3	151.0	151.4	151.9	153.6	154.0
2521	Wood office furniture	281.6	271.4	273.4	279.6	282.5	282.5	282.5	283.5	283.6	283.6	284.7	284.7	284.7	286.3
2654	Sanitary food containers	266.6	261.7	261.7	265.1	265.2	265.2	265.2	267.1	267.1	267.8	270.6	270.6	270.6	270.6
2655	Fiber cans, drums, and similar products (12/75 = 100)	186.5	183.8	183.8	183.8	185.6	185.6	185.9	187.7	187.7	187.7	187.8	189.5	189.5	189.6
2911	Petroleum refining (6/76 = 100)	254.1	267.2	257.4	250.4	240.6	246.0	254.0	255.4	257.2	256.8	258.0	254.5	251.0	245.5
2952	Asphalt felts and coating (12/75 = 100)	166.5	171.4	165.8	163.2	166.9	165.1	164.9	167.4	166.4	168.0	167.1	167.0	165.5	165.9
3251	Brick and structural clay tile	332.6	315.7	315.6	328.3	332.2	333.8	334.6	336.4	336.4	336.4	339.4	339.5	340.8	341.0
3253	Ceramic wall and floor tile (12/75 = 100)	145.1	140.7	140.7	140.7	140.7	142.4	149.6	149.6	149.6	149.6	146.8	146.8	146.8	146.8
3255	Clay refractories	356.1	351.1	351.1	351.2	352.2	352.2	349.4	352.1	354.4	355.9	366.0	368.6	368.6	369.3
3259	Structural clay products, n.e.c.	230.4	219.0	215.7	215.7	232.7	234.7	234.7	234.8	234.9	234.9	235.7	235.7	235.7	235.6
3261	Vitreous plumbing fixtures	278.1	272.1	273.3	275.1	275.3	276.1	276.9	277.0	277.0	281.3	283.7	284.5	285.4	285.6
3263	Fine earthenware food utensils	365.8	365.7	365.7	365.7	365.7	365.9	366.5	366.5	366.5	366.5	364.3	366.2	366.2	375.9
3269	Pottery products, n.e.c. (12/75 = 100)	186.2	186.5	186.6	186.6	186.6	186.6	186.6	186.6	186.6	186.6	183.8	187.0	187.0	188.7
3274	Lime (12/75 = 100)	185.8	187.3	185.5	185.1	187.8	185.2	186.2	187.1	187.6	186.3	186.2	186.2	182.8	183.0
3297	Nonclay refractories (12/74 = 100)	205.3	203.7	203.6	203.6	203.8	203.6	203.6	203.7	203.8	203.8	204.0	212.9	212.9	213.1
3482	Small arms ammunition (12/75 = 100)	182.5	175.1	175.1	181.6	181.6	181.6	181.6	181.6	181.6	181.6	187.6	187.6	187.6	196.6
3623	Welding apparatus, electric (12/72 = 100)	241.9	243.6	244.0	243.4	243.3	243.1	242.3	243.5	243.5	243.6	238.7	239.0	239.7	241.0
3648	Lighting equipment, n.e.c. (12/75 = 100)	172.8	171.4	171.5	171.6	172.6	172.6	173.1	173.4	173.4	173.5	173.7	173.9	172.6	173.5
3671	Electron tubes, receiving type	435.4	431.6	432.0	431.9	432.1	432.1	432.2	432.5	432.5	432.8	432.9	432.8	469.8	490.4
3942	Dolls (12/75 = 100)	137.4	137.1	136.8	136.8	137.7	137.7	137.7	137.7	137.7	137.7	137.3	137.3	137.3	137.2
3944	Games, toys, and children's vehicles	237.3	235.3	243.4	241.8	242.2	242.2	242.2	236.1	236.2	236.3	232.1	231.9	232.0	235.4
3955	Carbon paper and inked ribbons (12/75 = 100)	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.3	139.3	139.3	144.3
3995	Burial caskets (6/76 = 100)	153.5	147.0	152.1	152.1	152.1	152.1	152.1	155.4	155.4	155.4	156.0	156.0	156.0	156.0
3996	Hard surface floor coverings (12/75 = 100)	161.3	159.2	159.2	159.2	159.7	159.6	159.6	162.2	163.4	163.5	163.5	163.5	163.5	165.2

<sup>1</sup>Data for September 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

NOTE: Indexes which were deleted may now be found in Table 4 of the BLS monthly report, *Producer Prices and Price Indexes*.



## PRODUCTIVITY DATA

PRODUCTIVITY DATA are compiled by the Bureau of Labor Statistics from establishment data and from estimates of compensation and output supplied by the U.S. Department of Commerce and the Federal Reserve Board.

### Definitions

**Output** is the constant dollar gross domestic product produced in a given period. Indexes of **output per hour of labor input**, or labor productivity, measure the value of goods and services produced per hour of labor. **Compensation per hour** includes wages and salaries of employees plus employers' contributions for social insurance and private benefit plans. The data also include an estimate of wages, salaries, and supplementary payments for the self-employed, except for nonfinancial corporations, in which there are no self-employed. **Real compensation per hour** is compensation per hour adjusted by the Consumer Price Index for All Urban Consumers.

**Unit labor cost** measures the labor compensation cost required to produce one unit of output and is 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 the current dollar gross domestic product and dividing by output. In these tables, **unit nonlabor costs** contain all

the components of unit nonlabor payments except unit profits. **Unit profits** include corporate profits and inventory valuation adjustments per unit of output.

The **implicit price deflator** is derived by dividing the current dollar estimate of gross product by the constant dollar estimate, making the deflator, in effect, a price index for gross product of the sector reported.

**Hours of all persons** describes the labor input of payroll workers, self-employed persons, and unpaid family workers. **Output per all employee hour** describes labor productivity in nonfinancial corporations where there are no self-employed.

### Notes on the data

In the business sector and the nonfarm business sector, the basis for the output measure employed in the computation of output per hour is Gross Domestic Product rather than Gross National Product. Computation of hours includes estimates of nonfarm and farm proprietor hours.

Output data are supplied by the Bureau of Economic Analysis, U.S. Department of Commerce, and the Federal Reserve Board. Quarterly manufacturing output indexes are adjusted by the Bureau of Labor Statistics to annual estimates of output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

**28. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years, 1950-83**

[1977 = 100]

Item	1950	1955	1960	1965	1970	1975	1976	1978	1979	1980	1981	1982	1983 <sup>P</sup>
<b>Business sector:</b>													
Output per hour of all persons . . . . .	50.4	58.3	65.2	78.3	86.2	94.5	97.6	100.6	99.4	98.9	101.3	101.2	103.8
Compensation per hour . . . . .	20.0	26.4	33.9	41.7	58.2	85.5	92.9	108.6	118.7	131.2	143.9	155.1	163.1
Real compensation per hour . . . . .	50.5	59.6	69.5	80.1	90.8	96.3	98.9	100.9	99.1	96.5	95.9	97.4	99.2
Unit labor costs . . . . .	39.8	45.2	52.1	53.3	67.5	90.5	95.1	108.0	119.5	132.7	142.1	153.3	157.1
Unit nonlabor payments . . . . .	43.4	47.6	50.6	57.6	63.2	90.4	94.0	106.7	112.8	119.0	136.2	136.9	145.6
Implicit price deflator . . . . .	41.0	46.0	51.6	54.7	66.0	90.4	94.7	107.5	117.2	128.1	140.1	147.7	153.2
<b>Nonfarm business sector:</b>													
Output per hour of all persons . . . . .	56.3	62.7	68.3	80.5	86.8	94.7	97.8	100.6	99.1	98.4	100.3	100.2	103.4
Compensation per hour . . . . .	21.8	28.3	35.7	42.8	58.7	86.0	93.0	108.6	118.4	130.7	143.5	154.7	163.5
Real compensation per hour . . . . .	55.0	64.0	73.0	82.2	91.5	96.8	99.0	100.9	98.9	96.1	95.6	97.1	99.4
Unit labor costs . . . . .	38.8	45.1	52.3	53.2	67.6	90.8	95.1	108.0	119.5	132.8	143.0	154.4	158.1
Unit nonlabor payments . . . . .	42.7	47.8	50.4	58.0	63.8	88.5	93.5	105.3	110.4	118.5	135.0	137.0	146.1
Implicit price deflator . . . . .	40.1	46.0	51.6	54.8	66.3	90.0	94.6	107.1	116.5	128.1	140.4	148.6	154.1
<b>Nonfinance corporations:</b>													
Output per hour of all persons . . . . .	( <sup>1</sup> )	( <sup>1</sup> )	68.0	81.9	87.4	95.5	98.2	100.9	100.7	99.8	102.3	102.8	( <sup>1</sup> )
Compensation per hour . . . . .	( <sup>1</sup> )	( <sup>1</sup> )	37.0	43.9	59.4	86.1	92.9	108.5	118.7	130.9	143.6	154.8	( <sup>1</sup> )
Real compensation per hour . . . . .	( <sup>1</sup> )	( <sup>1</sup> )	75.8	84.3	92.7	96.9	98.9	100.7	99.1	96.3	95.7	97.2	( <sup>1</sup> )
Unit labor costs . . . . .	( <sup>1</sup> )	( <sup>1</sup> )	54.4	53.5	68.0	90.2	94.6	107.5	117.8	131.2	140.3	150.6	( <sup>1</sup> )
Unit nonlabor payments . . . . .	( <sup>1</sup> )	( <sup>1</sup> )	54.6	60.8	63.1	90.8	95.0	104.2	106.9	117.4	134.4	137.6	( <sup>1</sup> )
Implicit price deflator . . . . .	( <sup>1</sup> )	( <sup>1</sup> )	54.5	56.1	66.3	90.4	94.7	106.4	114.1	126.4	138.3	146.1	( <sup>1</sup> )
<b>Manufacturing:</b>													
Output per hour of all persons . . . . .	49.4	56.4	60.0	74.5	79.1	93.4	97.5	100.8	101.5	101.7	105.3	106.5	113.6
Compensation per hour . . . . .	21.5	28.8	36.7	42.8	57.6	85.4	92.3	108.3	118.8	132.7	145.8	158.2	167.1
Real compensation per hour . . . . .	54.0	65.1	75.1	82.3	89.8	96.2	98.3	100.6	99.2	97.6	97.2	99.3	101.6
Unit labor costs . . . . .	43.4	51.0	61.1	57.5	72.7	91.5	94.6	107.4	117.0	130.5	138.5	148.5	147.1
Unit nonlabor payments . . . . .	54.3	58.5	61.1	69.3	65.0	87.3	93.7	102.5	99.9	97.7	110.2	109.2	( <sup>1</sup> )
Implicit price deflator . . . . .	46.6	53.2	61.1	61.0	70.5	90.3	94.4	106.0	112.0	120.9	130.2	137.0	( <sup>1</sup> )

<sup>1</sup> Not available.

c = corrected.

p = preliminary.

**29. Annual changes in productivity, hourly compensation, unit costs, and prices, 1972-83**

Item	Year											Annual rate of change	
	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983 <sup>p</sup>	1950-83 <sup>p</sup>	1972-83 <sup>p</sup>
<b>Business sector:</b>													
Output per hour of all persons	2.6	-2.4	2.2	3.3	2.4	0.6	-1.2	-0.5	2.4	-0.1	2.6	2.2	0.9
Compensation per hour	8.0	9.4	9.6	8.6	7.7	8.6	9.4	10.5	9.7	7.7	5.2	6.6	8.6
Real compensation per hour	1.6	-1.4	0.5	2.6	1.2	0.9	-1.7	-2.6	-0.6	1.5	1.9	2.1	0.3
Unit labor costs	5.3	12.1	7.3	5.1	5.1	8.0	10.7	11.1	7.1	7.9	2.5	4.3	7.4
Unit nonlabor payments	5.9	4.4	15.1	4.0	6.4	6.7	5.8	5.5	14.4	0.5	6.4	3.7	6.6
Implicit price deflator	5.5	9.5	9.8	4.7	5.6	7.5	9.0	9.2	9.4	5.4	3.7	4.1	7.2
<b>Nonfarm business sector:</b>													
Output per hour of all persons	2.4	-2.5	2.0	3.2	2.2	0.6	-1.5	-0.7	1.9	-0.1	3.1	1.9	1.0
Compensation per hour	7.6	9.4	9.6	8.1	7.5	8.6	9.0	10.4	9.8	7.8	5.6	6.3	8.6
Real compensation per hour	1.3	-1.4	0.4	2.2	1.0	0.9	-2.0	-2.8	-0.6	1.6	2.3	1.8	0.2
Unit labor costs	5.0	12.2	7.5	4.8	5.2	8.0	10.7	11.1	7.7	7.9	2.4	4.3	7.5
Unit nonlabor payments	1.3	5.9	16.7	5.7	6.9	5.3	4.8	7.4	13.9	1.4	6.7	3.8	6.8
Implicit price deflator	3.8	10.2	10.3	5.1	5.7	7.1	8.8	10.0	9.6	5.8	3.7	4.2	7.6
<b>Nonfinancial corporations:</b>													
Output per hour of all employees	2.4	-3.7	2.9	2.9	1.8	0.9	-0.2	-0.9	2.5	0.5	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Compensation per hour	7.5	9.4	9.6	7.9	7.6	8.5	9.4	10.3	9.7	7.8	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Real compensation per hour	1.2	-1.5	0.4	2.0	1.1	0.7	-1.7	-2.8	-0.6	1.6	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Unit labor costs	4.9	13.6	6.5	4.9	5.7	7.5	9.6	11.3	7.0	7.3	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Unit nonlabor payments	1.5	7.1	20.1	4.6	5.3	4.2	2.6	9.8	14.5	2.4	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Implicit price deflator	3.8	11.4	10.9	4.8	5.6	6.4	7.2	10.8	9.4	5.7	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
<b>Manufacturing:</b>													
Output per hour of all persons	5.4	-2.4	2.0	4.4	2.5	0.8	0.7	0.2	3.5	1.2	6.6	2.6	2.3
Compensation per hour	7.2	10.6	11.9	8.0	8.3	8.3	9.7	11.7	9.9	8.5	5.6	6.4	9.1
Real compensation per hour	0.9	-0.3	2.5	2.1	1.8	0.6	-1.4	-1.6	-0.4	2.2	2.3	1.9	0.8
Unit labor costs	1.7	13.3	8.8	3.4	5.7	7.4	9.0	11.5	6.1	7.2	-0.9	3.8	6.6
Unit nonlabor payments	-3.3	-1.8	25.9	7.4	6.7	2.5	-2.6	-2.2	12.8	-0.9	( <sup>1</sup> )	2.2	4.1
Implicit price deflator	0.3	9.0	13.1	4.6	6.0	6.0	5.7	7.9	7.7	5.2	( <sup>1</sup> )	3.4	6.5

<sup>1</sup> Not available.

p = preliminary.

**30. Quarterly indexes of productivity, hourly compensation, unit costs, and prices, seasonally adjusted**

[1977 = 100]

Item	Annual average		Quarterly indexes										
			1981			1982				1983			
	1982	1983	II	III	IV	I	II	III	IV	I	II	III	IV <sup>p</sup>
<b>Business sector:</b>													
Output per hour of all persons	101.2	103.8	101.1	102.3	101.2	101.1	100.7	101.1	101.9	102.5	<sup>r</sup> 103.9	<sup>r</sup> 104.2	104.8
Compensation per hour	155.1	163.1	142.2	145.5	148.2	151.6	153.9	156.5	158.7	160.7	162.1	<sup>r</sup> 163.6	166.4
Real compensation per hour	97.4	99.2	96.1	95.6	95.6	97.1	97.4	97.1	98.0	99.4	99.2	<sup>r</sup> 98.9	99.5
Unit labor costs	153.3	157.1	140.7	142.3	146.4	149.9	152.9	154.7	155.6	156.9	<sup>r</sup> 156.0	<sup>r</sup> 156.9	158.8
Unit nonlabor payments	136.9	145.6	133.4	139.9	140.2	137.0	137.0	136.3	137.4	140.8	<sup>r</sup> 145.7	<sup>r</sup> 147.6	148.1
Implicit price deflator	147.7	153.2	138.2	141.5	144.3	145.5	147.5	148.5	149.4	151.5	<sup>r</sup> 152.5	<sup>r</sup> 153.8	155.2
<b>Nonfarm business sector:</b>													
Output per hour of all persons	100.2	103.4	100.1	101.1	99.9	100.0	99.9	100.4	100.8	101.7	<sup>r</sup> 103.5	<sup>r</sup> 104.0	104.3
Compensation per hour	154.7	163.5	141.8	145.1	147.7	151.3	153.5	156.1	158.3	161.0	162.7	<sup>r</sup> 164.2	166.0
Real compensation per hour	97.1	99.4	95.8	95.3	95.4	96.9	97.1	96.9	97.8	99.5	99.6	<sup>r</sup> 99.3	99.3
Unit labor costs	154.4	158.1	141.6	143.5	147.8	151.3	153.6	155.4	157.1	158.3	<sup>r</sup> 157.2	<sup>r</sup> 157.8	159.2
Unit nonlabor payments	137.0	146.1	132.2	138.3	139.5	136.4	137.7	136.5	137.2	140.7	<sup>r</sup> 145.7	<sup>r</sup> 148.3	149.4
Implicit price deflator	148.6	154.1	138.4	141.8	145.0	146.4	148.3	149.1	150.5	152.4	<sup>r</sup> 153.4	<sup>r</sup> 154.7	155.9
<b>Nonfinancial corporations:</b>													
Output per hour of all employees	102.8	( <sup>1</sup> )	102.1	103.0	102.2	102.4	102.3	103.2	103.4	104.3	105.9	<sup>r</sup> 107.0	( <sup>1</sup> )
Compensation per hour	154.8	( <sup>1</sup> )	142.0	145.0	147.8	151.7	153.7	156.1	158.1	160.4	161.6	<sup>r</sup> 162.8	( <sup>1</sup> )
Real compensation per hour	97.2	( <sup>1</sup> )	95.9	95.2	95.4	97.2	97.2	96.9	97.7	99.2	98.9	<sup>r</sup> 98.5	( <sup>1</sup> )
Total unit costs	153.5	( <sup>1</sup> )	141.1	143.6	147.7	150.9	153.1	153.8	156.3	156.7	155.3	<sup>r</sup> 154.5	( <sup>1</sup> )
Unit labor costs	150.6	( <sup>1</sup> )	139.0	140.7	144.6	148.1	150.2	151.1	152.9	153.9	152.5	<sup>r</sup> 152.1	( <sup>1</sup> )
Unit nonlabor costs	161.8	( <sup>1</sup> )	147.0	151.9	156.6	158.9	161.2	161.3	165.9	164.7	163.1	<sup>r</sup> 161.2	( <sup>1</sup> )
Unit profits	88.9	( <sup>1</sup> )	100.3	108.6	104.2	90.8	90.3	91.2	83.0	96.1	115.0	<sup>r</sup> 131.5	( <sup>1</sup> )
Implicit price deflator	146.1	( <sup>1</sup> )	136.4	139.6	142.7	144.0	145.9	146.6	147.9	149.7	150.7	<sup>r</sup> 151.8	( <sup>1</sup> )
<b>Manufacturing:</b>													
Output per hour of all persons	106.5	113.6	105.4	106.1	104.4	105.1	105.3	107.8	108.1	110.2	112.6	<sup>r</sup> 115.9	117.5
Compensation per hour	158.2	167.1	144.3	147.0	150.5	155.1	157.1	159.6	161.4	165.5	166.4	<sup>r</sup> 167.5	169.0
Real compensation per hour	99.3	101.6	97.5	96.5	97.1	99.4	99.1	99.7	99.7	102.3	101.8	<sup>r</sup> 101.3	101.0
Unit labor costs	148.5	147.1	136.9	138.5	144.1	147.6	149.1	148.1	149.3	150.2	147.8	<sup>r</sup> 144.5	143.8

<sup>1</sup> Not available.

r = revised.

p = preliminary.

**31. Percent change from preceding quarter and year in productivity, hourly compensation, unit costs, and prices, seasonally adjusted at annual rate**

Item	Quarterly percent change at annual rate						Percent change from same quarter a year ago					
	II 1982 to III 1982	III 1982 to IV 1982	IV 1982 to I 1983	I 1983 to II 1983	II 1983 to III 1983	III 1982 to IV 1983 <sup>p</sup>	III 1981 to III 1982	IV 1981 to IV 1982	I 1982 to I 1983	II 1982 to II 1983	III 1982 to III 1983	IV 1982 to IV 1983 <sup>p</sup>
<b>Business sector:</b>												
Output per hour of all persons . . . . .	1.7	3.3	2.0	<sup>r</sup> 5.9	<sup>r</sup> 1.2	2.2	-1.1	0.7	1.3	3.1	<sup>r</sup> 3.1	2.8
Compensation per hour . . . . .	6.7	5.7	5.4	3.5	<sup>r</sup> 3.6	7.1	7.5	7.1	6.1	5.3	<sup>r</sup> 4.5	4.9
Real compensation per hour . . . . .	-1.0	3.7	5.8	-0.7	<sup>r</sup> 1.1	2.2	1.6	2.5	2.4	1.9	<sup>r</sup> 1.9	1.5
Unit labor costs . . . . .	5.0	2.3	3.3	<sup>r</sup> -2.2	<sup>r</sup> 2.3	4.8	8.7	6.3	4.7	<sup>r</sup> 2.1	1.4	2.0
Unit nonlabor payments . . . . .	-2.0	3.2	10.5	<sup>r</sup> 14.4	5.4	1.5	-2.6	-2.0	2.8	<sup>r</sup> 6.3	<sup>r</sup> 8.3	7.9
Implicit price deflator . . . . .	2.7	2.6	5.5	<sup>r</sup> 2.8	3.3	3.7	4.9	3.5	4.1	<sup>r</sup> 3.4	<sup>r</sup> 3.6	3.8
<b>Nonfarm business sector:</b>												
Output per hour of all persons . . . . .	2.3	1.3	3.7	<sup>r</sup> 7.1	<sup>r</sup> 2.3	1.0	-0.6	0.8	1.7	<sup>r</sup> 3.6	3.6	3.5
Compensation per hour . . . . .	7.2	5.8	6.8	4.3	<sup>r</sup> 3.8	4.5	7.6	7.2	6.4	6.0	<sup>r</sup> 5.2	4.9
Real compensation per hour . . . . .	-0.6	3.7	7.2	0.1	<sup>r</sup> -0.9	-0.2	1.7	2.6	2.7	2.6	<sup>r</sup> 2.5	1.5
Unit labor costs . . . . .	4.7	4.4	3.0	<sup>r</sup> -2.6	<sup>r</sup> 1.5	3.5	8.3	6.3	4.6	<sup>r</sup> 2.3	<sup>r</sup> 1.5	1.3
Unit nonlabor payments . . . . .	-3.4	2.0	10.6	<sup>r</sup> 15.2	<sup>r</sup> 7.3	2.9	-1.3	-1.6	3.1	<sup>r</sup> 5.9	<sup>r</sup> 8.7	8.9
Implicit price deflator . . . . .	2.2	3.7	5.3	<sup>r</sup> 2.7	<sup>r</sup> 3.3	3.3	5.2	3.7	4.1	<sup>r</sup> 3.4	3.7	3.6
<b>Nonfinancial corporations:</b>												
Output per hour of all employees . . . . .	3.8	0.6	3.4	6.5	<sup>r</sup> 4.2	( <sup>1</sup> )	0.2	1.2	1.8	3.6	<sup>r</sup> 3.7	( <sup>1</sup> )
Compensation per hour . . . . .	6.4	5.4	6.0	2.9	<sup>r</sup> 3.0	( <sup>1</sup> )	7.6	7.0	5.8	5.2	<sup>r</sup> 4.3	( <sup>1</sup> )
Real compensation per hour . . . . .	-1.3	3.4	6.4	-1.2	<sup>r</sup> -1.7	( <sup>1</sup> )	1.7	2.4	2.1	1.7	<sup>r</sup> 1.7	( <sup>1</sup> )
Total units costs . . . . .	1.8	6.7	1.0	-3.5	<sup>r</sup> -2.1	( <sup>1</sup> )	7.1	5.8	3.8	1.4	0.4	( <sup>1</sup> )
Unit labor costs . . . . .	2.4	4.8	2.5	-3.4	<sup>r</sup> -1.1	( <sup>1</sup> )	7.4	5.7	3.9	1.5	0.6	( <sup>1</sup> )
Unit nonlabor costs . . . . .	0.1	11.9	-2.8	-3.8	<sup>r</sup> -4.7	( <sup>1</sup> )	6.2	6.0	3.7	1.2	<sup>r</sup> -0.1	( <sup>1</sup> )
Unit profits . . . . .	3.8	-31.4	79.9	104.7	<sup>r</sup> 71.0	( <sup>1</sup> )	-16.1	-20.3	5.8	27.3	<sup>r</sup> 44.2	( <sup>1</sup> )
Implicit price deflator . . . . .	1.9	3.6	5.1	2.5	<sup>r</sup> 3.1	( <sup>1</sup> )	5.0	3.6	4.0	3.3	<sup>r</sup> 3.6	( <sup>1</sup> )
<b>Manufacturing:</b>												
Output per hour of all persons . . . . .	9.6	1.2	8.0	9.0	<sup>r</sup> 12.2	5.7	1.6	-3.5	4.8	6.9	<sup>r</sup> 7.5	8.7
Compensation per hour . . . . .	6.5	4.5	10.7	2.1	<sup>r</sup> -2.7	3.6	8.6	7.3	6.7	5.9	4.9	4.7
Real compensation per hour . . . . .	-1.2	2.5	11.1	-2.1	<sup>r</sup> 1.9	-1.2	2.6	2.7	3.0	2.5	<sup>r</sup> 2.3	1.3
Unit labor costs . . . . .	-2.8	3.3	2.5	-6.4	<sup>r</sup> -8.4	-2.0	6.9	-3.6	1.8	-0.9	<sup>r</sup> -2.4	-3.7

<sup>1</sup>Not available.

<sup>r</sup> = revised.

<sup>p</sup> = preliminary

## WAGE AND COMPENSATION DATA

DATA FOR THE EMPLOYMENT COST INDEX are reported to the Bureau of Labor Statistics by a sample of 2,000 private nonfarm establishments and 750 State and local government units selected to represent total employment in those sectors. On average, each reporting unit provides wage and compensation information on five well-specified occupations.

**Data on negotiated wage and benefit changes** are obtained from contracts on file at the Bureau, direct contact with the parties, and secondary sources.

### Definitions

The **Employment Cost Index (ECI)** is a quarterly measure of the average change in the cost of employing labor. The rate of total compensation, which comprises wages, salaries, and employer costs for employee benefits, is collected for workers performing specified tasks. Employment in each occupation is held constant over time for all series produced in the ECI, except those by region, bargaining status, and area. As a consequence, only changes in compensation are measured. Industry and occupational employment data from the 1970 Census of Population are used in deriving constant weights for the ECI. While holding total industry and occupational employment fixed, in the estimation of indexes by region, bargaining status, and area, the employment in those measures is allowed to vary over time in accord with changes in the sample. The rate of change (in percent) is available for wages and salaries, as well as for total compensation. Data are collected for the pay period including the 12th day of the survey months of March, June, September, and December. The statistics are neither annualized nor adjusted for seasonal influence.

**Wages and salaries** consist of earnings before payroll deductions, excluding premium pay for overtime, work on weekends and holidays, and shift differentials. Production bonuses, incentive earnings, commissions, and cost-of-living adjustments are included; nonproduction bonuses are included with other supplemental pay items in the benefits category; and payments-in-kind, free room and board, and tips are excluded. *Benefits* include supplemental pay, insurance, retirement and savings plans, and hours-related and legally required benefits.

**Data on negotiated wage changes** apply to private nonfarm industry collective bargaining agreements covering 1,000 workers or more. Data on compensation changes apply only to those agreements covering 5,000 workers or more. *First-year* wage or compensation changes refer to average negotiated changes for workers covered by settlements reached in the period

and implemented within the first 12 months after the effective date of the agreement. *Changes over the life of the agreement* refer to all adjustments specified in the contract, expressed as an average annual rate. These measures exclude wage changes that may occur under cost-of-living adjustment clauses, that are triggered by movements in the Consumer Price Index. *Wage-rate changes* are expressed as a percent of straight-time hourly earnings; *compensation changes* are expressed as a percent of total wages and benefits.

**Effective wage adjustments** reflect all negotiated changes implemented in the reference period, regardless of the settlement date. They include changes from settlements reached during the period, changes deferred from contracts negotiated in an earlier period, and cost-of-living adjustments. The data also reflect contracts providing for no wage adjustment in the period. Effective adjustments and each of their components are prorated over all workers in bargaining units with at least 1,000 workers.

### Notes on the data

The Employment Cost Index data series began in the fourth quarter of 1975, with the quarterly percent change in wages and salaries in the private nonfarm sector. Data on employer costs for employee benefits were included in 1980, to produce a measure of the percent change in employers' cost for employees' total compensation. State and local government units were added to the ECI coverage in 1981, providing a measure of total compensation change in the civilian nonfarm economy.

Data for the broad white-collar, blue-collar, and service worker groups, and the manufacturing, nonmanufacturing, and service industry groups are presented in the ECI. Additional occupation and industry detail are provided for the wages and salaries component of total compensation in the private nonfarm sector. For State and local government units, additional industry detail is shown for both total compensation and its wages and salaries component.

Historical indexes (June 1981 = 100) of the quarterly rates of changes presented in the ECI are also available.

For a more detailed discussion of the ECI, see chapter 11, "The Employment Cost Index," of the BLS *Handbook of Methods* (Bulletin 2134-1), and the *Monthly Labor Review* articles: "Employment Cost Index: a measure of change in the 'price of labor,'" July 1975; "How benefits will be incorporated into the Employment Cost Index," January 1978; and "The Employment Cost Index: recent trends and expansion," May 1982.

Additional data for the ECI and other measures of wage and compensation changes appear in *Current Wage Developments*, a monthly publication of the Bureau.

### 32. Employment Cost Index, by occupation and industry group

[June 1981 = 100]

Series	1981	1982				1983				Percent change		
		Dec.	March	June	Sept.	Dec.	March	June	Sept.	Dec.	3 months ended	12 months ended
											December 1983	
<b>Civilian workers<sup>1</sup></b> .....	104.5	106.3	107.5	110.1	111.4	113.2	114.5	116.5	117.8	1.1	5.7	
Workers, by occupational group												
White-collar workers .....	104.9	106.5	107.7	110.7	111.9	113.7	114.9	117.6	118.9	1.1	6.3	
Blue-collar workers .....	104.1	105.7	107.1	109.2	110.5	112.3	113.6	114.8	115.8	.9	4.8	
Service workers .....	104.2	107.2	108.3	110.8	112.4	114.3	115.1	116.7	119.1	2.1	6.0	
Workers, by industry division												
Manufacturing .....	104.0	106.0	107.2	109.3	110.4	112.5	113.5	115.0	116.0	.9	5.1	
Nonmanufacturing .....	104.8	106.4	107.7	110.5	111.8	113.5	114.9	117.2	118.6	1.2	6.1	
Services .....	107.1	108.2	109.2	113.5	115.0	116.6	117.1	121.1	122.6	1.2	6.6	
Public administration <sup>2</sup> .....	106.0	108.1	109.1	112.8	113.6	116.2	117.0	119.8	121.4	1.3	6.9	
<b>Private industry workers</b> .....	104.0	105.8	107.2	109.3	110.7	112.6	113.9	115.6	117.0	1.2	5.7	
Workers, by occupational group												
White-collar workers .....	104.0	105.8	107.2	109.5	110.8	112.8	114.2	116.5	117.9	1.2	6.4	
Blue-collar workers .....	104.0	105.6	107.0	109.0	110.3	112.1	113.5	114.6	115.7	1.0	4.9	
Service workers .....	103.1	106.7	107.9	109.6	111.8	113.8	114.6	115.1	117.9	2.4	5.5	
Workers, by industry division												
Manufacturing .....	104.0	106.0	107.2	109.3	110.4	112.5	113.5	115.0	116.0	.9	5.1	
Nonmanufacturing .....	103.9	105.7	107.1	109.3	110.8	112.6	114.2	116.0	117.5	1.3	6.0	
<b>State and local government workers</b> .....	107.4	108.8	109.3	114.3	115.1	116.5	117.1	120.8	122.0	1.0	6.0	
Workers, by occupational group												
White-collar workers .....	107.8	109.1	109.5	114.9	115.8	117.0	117.5	121.5	122.6	.9	5.9	
Blue-collar workers .....	105.9	108.2	108.9	112.7	113.0	114.9	115.8	118.0	119.2	1.0	5.5	
Workers, by industry division												
Services .....	107.9	109.0	109.4	114.9	115.9	116.8	117.4	121.7	122.6	.7	5.8	
Schools .....	107.9	108.9	109.1	114.8	115.8	116.6	116.9	121.9	122.6	.6	5.9	
Elementary and secondary .....	108.3	109.3	109.5	115.6	116.6	117.2	117.4	123.3	123.9	.5	6.3	
Hospitals and other services <sup>3</sup> .....	107.8	109.5	110.3	115.3	116.0	117.5	118.8	121.1	122.6	1.2	5.7	
Public administration <sup>2</sup> .....	106.0	108.1	109.1	112.8	113.6	116.2	117.0	119.8	121.4	1.3	6.9	

<sup>1</sup> Excludes farm, household, and Federal workers.

<sup>2</sup> Consists of legislative, judicial, administrative, and regulatory activities.

<sup>3</sup> Includes, for example, library, social, and health services.

**33. Employment Cost Index, wages and salaries, by occupation and industry group**

[June 1981 = 100]

Series	1981	1982				1983				Percent change		
		Dec.	March	June	Sept.	Dec.	March	June	Sept.	Dec.	3 months ended	12 months ended
											December 1983	
<b>Civilian workers<sup>1</sup></b>	104.4	106.3	107.3	109.7	110.9	112.2	113.4	115.3	116.5	1.0	5.0	
Workers, by occupational group												
White-collar workers	104.7	106.7	107.6	110.4	111.4	113.0	114.2	116.7	117.9	1.0	5.8	
Blue-collar workers	104.0	105.5	106.7	108.6	109.8	110.8	112.0	113.1	114.0	.8	3.8	
Service workers	103.6	106.8	107.9	110.1	111.8	113.2	113.9	115.1	117.4	2.0	5.0	
Workers, by industry division												
Manufacturing	104.0	105.9	107.0	108.8	109.8	111.0	112.0	113.3	114.5	1.1	4.3	
Nonmanufacturing	104.5	106.5	107.5	110.1	111.3	112.7	114.0	116.1	117.4	1.1	5.5	
Services	106.6	108.6	109.5	113.2	114.4	115.8	116.3	120.1	121.3	1.0	6.0	
Public administration <sup>2</sup>	105.5	107.5	108.4	111.9	112.6	114.6	115.4	118.2	119.4	1.0	6.0	
<b>Private industry workers</b>	103.8	105.9	107.1	109.0	110.3	111.6	112.9	114.5	115.8	1.1	5.0	
Workers, by occupational group												
White-collar workers	103.9	106.2	107.3	109.4	110.6	112.2	113.6	115.9	117.2	1.1	6.0	
Professional and technical workers	105.5	108.0	109.4	111.8	112.9	114.8	115.9	119.9	120.4	.4	6.6	
Managers and administrators	102.8	105.8	107.2	108.5	109.3	112.0	114.0	114.8	115.7	.8	5.9	
Salesworkers	101.9	102.2	101.8	104.5	106.2	105.7	107.1	108.4	111.2	2.6	4.7	
Clerical workers	104.2	107.0	108.3	110.3	111.6	113.4	114.6	116.7	118.3	1.4	6.0	
Blue-collar workers	103.9	105.4	106.6	108.5	109.7	110.7	111.9	112.9	113.9	.9	3.8	
Craft and kindred workers	104.3	106.2	107.6	109.6	111.2	112.2	113.4	114.3	115.4	1.0	3.8	
Operatives, except transport	104.1	105.4	106.6	108.3	109.3	110.0	111.1	112.3	113.6	1.2	3.9	
Transport equipment operatives	102.7	103.2	104.1	106.0	106.9	108.0	110.3	110.7	110.2	-.5	3.1	
Nonfarm laborers	103.3	104.1	105.1	106.5	107.8	109.0	109.8	110.8	112.1	1.2	4.0	
Service workers	102.7	106.7	107.9	109.3	111.4	112.9	113.5	113.7	116.5	2.5	4.6	
Workers, by industry division												
Manufacturing	104.0	105.9	107.0	108.8	109.8	111.0	112.0	113.3	114.5	1.1	4.3	
Durables	104.5	106.3	107.4	109.0	110.3	111.1	111.8	112.9	114.4	1.3	3.7	
Nondurables	103.1	105.3	106.3	108.5	109.1	110.9	112.3	113.9	114.6	.6	5.0	
Nonmanufacturing	103.8	105.9	107.1	109.1	110.5	112.0	113.4	115.2	116.5	1.1	5.4	
Construction	104.3	105.9	107.3	109.1	109.7	110.4	112.1	112.2	112.9	.6	2.9	
Transportation and public utilities	103.6	105.7	106.9	109.5	111.1	112.9	114.7	115.7	116.8	1.0	5.1	
Wholesale and retail trade	102.3	103.9	105.8	106.5	107.2	108.5	110.8	111.5	112.3	.7	4.8	
Wholesale trade	103.4	106.3	108.9	109.0	109.8	111.8	114.1	115.7	116.5	.7	6.1	
Retail trade	101.9	103.0	104.5	105.5	106.1	107.2	109.4	109.9	110.6	.6	4.2	
Finance, insurance, and real estate	102.3	103.7	102.4	106.1	109.0	110.6	111.1	113.5	116.9	3.0	7.2	
Services	105.8	108.8	110.0	112.5	114.3	116.0	116.6	120.4	121.9	1.2	6.6	
<b>State and local government workers</b>	107.0	108.2	108.7	113.5	114.0	115.1	115.7	119.2	120.0	.7	5.3	
Workers, by occupational group												
White-collar workers	107.5	108.5	108.9	114.2	114.6	115.6	116.1	119.8	120.6	.7	5.2	
Blue-collar workers	105.5	107.5	107.9	111.5	112.0	113.3	114.3	116.4	116.9	.4	4.4	
Workers, by industry division												
Services	107.6	108.4	108.8	114.2	114.6	115.5	115.9	119.8	120.6	.7	5.2	
Schools	107.7	108.3	108.5	114.2	114.5	115.2	115.4	119.9	120.6	.6	5.3	
Elementary and secondary	107.9	108.7	108.8	114.9	115.1	115.6	115.8	121.1	121.7	.5	5.7	
Hospitals and other services <sup>3</sup>	107.3	108.8	109.5	114.3	114.9	116.5	117.7	119.7	120.6	.8	5.0	
Public administration <sup>2</sup>	105.5	107.5	108.4	111.9	112.6	114.6	115.4	118.2	119.4	1.0	6.0	

<sup>1</sup>Excludes farm, household, and Federal workers.

<sup>2</sup>Consists of legislative, judicial, administrative, and regulatory activities.

<sup>3</sup>Includes, for example, library, social and health services.

### 34. Employment Cost Index, private industry workers, by bargaining status, region, and area size

[June 1981 = 100]

Series	1981	1982				1983				Percent change	
		Dec.	March	June	Sept.	Dec.	March	June	Sept.	Dec.	3 months ended
<b>COMPENSATION</b>											
Workers, by bargaining status <sup>1</sup>											
Union .....	104.8	106.5	108.4	110.6	112.3	114.5	116.0	117.8	118.8	0.8	5.8
Manufacturing .....	104.6	106.3	108.0	110.3	111.8	114.0	114.8	116.3	117.2	.8	4.8
Nonmanufacturing .....	105.0	106.8	108.7	111.0	112.8	114.9	117.1	119.2	120.4	1.0	6.7
Nonunion .....	103.5	105.3	106.5	108.5	109.7	111.5	112.8	114.4	115.9	1.3	5.7
Manufacturing .....	103.5	105.7	106.6	108.4	109.2	111.2	112.3	113.8	114.9	1.0	5.2
Nonmanufacturing .....	103.5	105.2	106.4	108.6	109.9	111.6	113.0	114.7	116.4	1.5	5.9
Workers, by region <sup>1</sup>											
Northeast .....									117.5	1.3	5.2
South .....									117.1	1.3	5.9
North Central .....									114.7	.7	5.6
West .....									120.0	1.7	6.3
Workers, by area size <sup>1</sup>											
Metropolitan areas .....	104.1	105.7	107.2	109.4	110.9	112.9	114.2	116.0	117.4	1.2	5.9
Other areas .....	103.2	106.2	107.0	108.6	109.1	110.8	112.3	113.4	114.5	1.0	4.9
<b>WAGES AND SALARIES</b>											
Workers, by bargaining status <sup>1</sup>											
Union .....	105.0	106.5	108.1	110.3	111.8	112.9	114.2	116.0	116.9	0.8	4.6
Manufacturing .....	104.7	105.9	107.3	109.5	110.8	111.4	112.3	113.7	114.8	1.0	3.6
Nonmanufacturing .....	105.2	107.0	108.8	111.1	112.7	114.3	116.0	118.3	118.9	.5	5.5
Nonunion .....	103.2	105.6	106.5	108.3	109.5	110.9	112.2	113.7	115.2	1.3	5.2
Manufacturing .....	103.3	105.9	106.7	108.2	109.1	110.7	111.8	113.0	114.2	1.1	4.7
Nonmanufacturing .....	103.2	105.5	106.4	108.3	109.6	111.0	112.4	114.0	115.6	1.4	5.5
Workers, by region <sup>1</sup>											
Northeast .....	104.4	106.1	106.7	109.7	111.5	112.0	113.6	115.3	116.6	1.1	4.6
South .....	102.8	105.7	107.4	108.8	109.8	111.4	112.5	114.3	115.7	1.2	5.4
North Central .....	103.3	104.7	106.1	107.6	108.6	110.1	111.5	112.8	113.6	.7	4.6
West .....	105.1	107.9	108.6	110.7	112.0	114.1	114.9	116.5	118.5	1.7	5.8
Workers by area size <sup>1</sup>											
Metropolitan areas .....	104.0	105.9	107.1	109.1	110.5	111.9	113.2	114.9	116.2	1.1	5.2
Other areas .....	103.1	106.0	106.8	108.3	108.8	110.1	111.4	112.3	113.4	1.0	4.2

<sup>1</sup>The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see BLS *Handbook of Methods*, Bulletin 1910.

**35. Wage and compensation change, major collective bargaining settlements, 1979 to date**  
 [In percent]

Measure	Annual average					Quarterly average								
	1979	1980	1981	1982	1983 <sup>p</sup>	1981	1982				1983 <sup>p</sup>			
						IV	I	II	III	IV	I	II	III	IV
Total compensation changes, covering 5,000 workers or more, all industries:														
First year of contract . . . . .	9.0	10.4	10.2	3.2	3.4	11.0	1.9	2.6	6.2	3.3	-1.6	4.5	4.9	5.0
Annual rate over life of contract . . . . .	6.6	7.1	8.3	2.8	3.0	5.8	1.2	2.1	4.7	4.8	1.4	3.7	4.3	3.0
Wage rate changes covering at least 1,000 workers, all industries:														
First year of contract . . . . .	7.4	9.5	9.8	3.8	2.6	9.0	3.0	3.4	5.4	3.8	-1.2	2.7	3.7	4.4
Annual rate over life of contract . . . . .	6.0	7.1	7.9	3.6	2.8	5.7	2.8	3.2	4.5	4.8	2.2	2.8	3.6	2.8
Manufacturing:														
First year of contract . . . . .	6.9	7.4	7.2	2.8	0.3	6.6	2.5	1.8	5.1	4.1	-3.4	1.3	3.4	3.4
Annual rate over life of contract . . . . .	5.4	5.4	6.1	2.6	2.1	5.4	2.7	1.7	3.9	4.5	.9	1.6	3.5	3.4
Nonmanufacturing (excluding construction):														
First year of contract . . . . .	7.6	9.5	9.8	4.3	5.0	9.6	2.7	6.6	5.5	3.6	3.5	6.0	5.9	4.8
Annual rate over life of contract . . . . .	6.2	6.6	7.3	4.1	3.7	5.6	2.1	6.1	4.8	5.2	5.4	5.3	4.4	2.7
Construction:														
First year of contract . . . . .	8.8	13.6	13.5	6.5	1.5	11.4	8.6	6.2	6.3	3.4	.7	1.7	1.5	1.4
Annual rate over life of contract . . . . .	8.3	11.5	11.3	6.3	2.3	11.7	8.2	6.3	5.9	2.9	2.4	2.1	2.9	2.4

p = preliminary.

**36. Effective wage adjustments in collective bargaining units covering 1,000 workers or more, 1979 to date**

Measure	Year					Year and quarter								
	1979	1980	1981	1982	1983 <sup>p</sup>	1981	1982				1983 <sup>p</sup>			
						IV	I	II	III	IV	I	II	III	IV
Average percent adjustment (including no change):														
All industries . . . . .	9.1	9.9	9.5	6.8	3.9	1.5	1.0	2.0	2.4	1.3	0.3	1.3	1.2	1.0
Manufacturing . . . . .	9.6	10.2	9.4	5.2	2.6	1.9	.9	1.0	1.7	1.5	-.5	1.0	1.1	.9
Nonmanufacturing . . . . .	8.8	9.7	9.5	7.9	4.8	1.1	1.1	2.7	2.9	1.2	.9	1.5	1.2	1.2
From settlements reached in period . . . . .	3.0	3.6	2.5	1.7	.8	.4	.2	.4	.5	.6	-.2	.3	.2	.6
Deferred from settlements reached in earlier period . . . . .	3.0	3.5	3.8	3.6	2.5	.4	.6	1.4	1.3	.4	.4	1.0	.8	.3
From cost-of-living clauses . . . . .	3.1	2.8	3.2	1.4	.6	.6	.3	.2	.6	.3	.1	.1	.2	.2
Total number of workers receiving wage change (in thousands) <sup>1</sup> . . . . .	—	—	8,648	7,852	6,461	3,225	2,878	3,423	3,760	3,441	2,880	3,070	2,972	2,777
From settlements reached in period . . . . .	—	—	2,270	1,907	2,286	604	204	511	620	825	444	550	588	976
Deferred from settlements reached in earlier period . . . . .	—	—	6,267	4,846	3,251	882	1,001	1,594	2,400	860	812	1,406	1,310	666
From cost-of-living clauses . . . . .	—	—	4,593	3,830	2,268	2,179	1,920	1,568	2,251	1,970	1,945	1,311	1,181	1,191
Number of workers receiving no adjustments (in thousands) . . . . .	—	—	145	483	1,315	5,568	5,457	4,912	4,575	4,895	4,860	4,707	4,804	4,999

<sup>1</sup>The total number of workers who received adjustments does not equal the sum of workers that received each type of adjustment, because some workers received more than one type of adjustment during the period.  
 p = preliminary.



## WORK STOPPAGE DATA

WORK STOPPAGES include all known strikes or lockouts involving 1,000 workers or more and lasting a full shift or longer. Data are based largely on newspaper accounts and cover all workers idle one shift or more in establishments directly involved in a stoppage. They do not measure the indirect or secondary effect on other establishments whose employees are idle owing to material or service shortages.

Estimates of days idle as a percent of estimated working time measure only the impact of larger strikes (1,000 workers or more). Formerly, these estimates measured the impact of strikes involving 6 workers or more; that is, the impact of virtually *all* strikes. Due to budget stringencies, collection of data on strikes involving fewer than 1,000 workers was discontinued with the December 1981 data.

37. Work stoppages involving 1,000 workers or more, 1947 to date							
Month and year	Number of stoppages		Workers involved		Days idle		
	Beginning in month or year	In effect during month	Beginning in month or year (in thousands)	In effect during month (in thousands)	Number (in thousands)	Percent of estimated working time	
1947	270		1,629		25,720	—	
1948	245		1,435		26,127	.22	
1949	262		2,537		43,420	.38	
1950	424		1,698		30,390	.26	
1951	415		1,462		15,070	.12	
1952	470		2,746		48,820	.38	
1953	437		1,623		18,130	.14	
1954	265		1,075		16,630	.13	
1955	363		2,055		21,180	.16	
1956	287		1,370		26,840	.20	
1957	279		887		10,340	.07	
1958	332		1,587		17,900	.13	
1959	245		1,381		60,850	.43	
1960	222		896		13,260	.09	
1961	195		1,031		10,140	.07	
1962	211		793		11,760	.08	
1963	181		512		10,020	.07	
1964	246		1,183		16,220	.11	
1965	268		999		15,140	.10	
1966	321		1,300		16,000	.10	
1967	381		2,192		31,320	.18	
1968	392		1,855		35,567	.20	
1969	412		1,576		29,397	.16	
1970	381		2,468		52,761	.29	
1971	298		2,516		35,538	.19	
1972	250		975		16,764	.09	
1973	317		1,400		16,260	.08	
1974	424		1,796		31,809	.16	
1975	235		965		17,563	.09	
1976	231		1,519		23,962	.12	
1977	298		1,212		21,258	.10	
1978	219		1,006		23,774	.11	
1979	235		1,021		20,409	.09	
1980	187		795		20,844	.09	
1981	145		729		16,908	.07	
1982	96		656		9,061	.04	
1983	81		909		17,461	.08	
1983	January	1	3	1.6	38.0	794.8	.04
	February	5	7	14.0	50.4	844.4	.05
	March	5	10	10.5	54.9	1,131.5	.05
	April	2	9	2.8	52.4	789.5	.04
	May	12	17	24.9	34.2	488.5	.03
	June	16	25	63.3	81.2	689.1	.03
	July	10	23	64.5	99.8	1,270.1	.07
	August	7	19	615.8	669.7	8,673.2	.41
	September	7	19	20.8	49.5	567.1	.03
	October	12	19	68.4	84.7	1,143.3	.06
	November	4	12	22.8	41.5	605.0	.03
	December	—	8	—	30.9	464.2	.02
1984 <sup>p</sup>	January	4	10	18.3	32.4	470.1	.02

p = preliminary.

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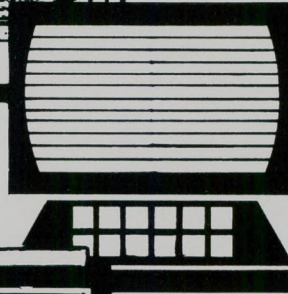
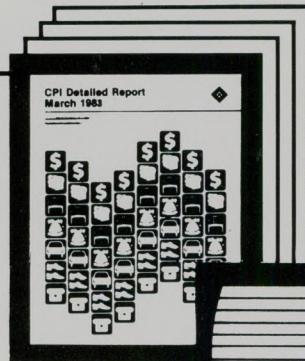
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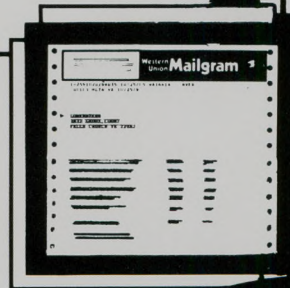


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