



## Monthly Labor Review

U.S. Department of Labor  
Bureau of Labor Statistics  
November 1989

*In this issue:*  
**Outlook 2000**  
Five articles on the  
shape of the economy  
and occupations  
in the year 2000





U.S. Department of Labor  
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Bureau of Labor Statistics  
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## Monthly Labor Review

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Henry Lowenstern, *Editor-in-Chief*  
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### OUTLOOK 2000

#### Articles

- 3 **New labor force projections, spanning 1988 to 2000**  
Fast-growing segments include blacks, Hispanics, and the Asian and other group, but the overall labor force growth is expected to slow from its 1976–88 pace  
*Howard N Fullerton, Jr.*
- 13 **The aggregate structure of the economy**  
Foreign trade and productivity improves, emphasis on services continues, and gross national product growth slows in the coming decade  
*Norman C. Saunders*
- 25 **Industry output and employment: a slower trend for the nineties**  
Most of the new jobs expected by 2000 will be in service-producing industries, especially retail trade, health services, and business services  
*Valerie A. Personick*
- 42 **Projections of occupational employment, 1988–2000**  
Jobs are expected for workers at all educational levels, but those with the most education and training will benefit the most  
*George Silvestri and John Lukasiewicz*
- 66 **Projections summary and emerging issues**  
Educational requirements of jobs and productivity growth are expected to be important issues during the 1988–2000 period  
*Ronald E. Kutscher*

#### Departments

- 2 Labor month in review  
75 Significant decisions in labor cases  
78 Major agreements expiring next month  
79 Developments in industrial relations  
82 Book reviews  
87 Current labor statistics



Labor month  
in review



What will the U.S. labor market look like a decade from now? Every 2 years, the Bureau of Labor Statistics prepares projections designed to provide policymakers, educators, practitioners, and others with estimates of occupational demand and employment over the next decade. This issue of the *Monthly Labor Review* presents the Bureau's revised projections to the year 2000 in three possible alternatives, based on low, high, and moderate growth assumptions.

For ease of editorial presentation, the articles focus on the middle of these three projections. This should not be interpreted as suggesting any greater expectation that it is a more likely outcome. Past evaluations have shown that some elements of the projections will follow one growth path while other variables will follow another. Some will certainly fall outside the range shown here. It is impossible to predict which of these outcomes is the more likely, either overall or for any particular element in the projections.

### Assumptions

Users of the Bureau of Labor Statistics projections should keep in mind that developing economic projections is still very much an art filled with uncertainty. Many judgments must be made regarding the probable behavior of the future course of the U.S. economy.

The assumptions made by BLS cover a broad range. We may be reasonably certain about some of these assumptions, such as the size of the youth population cohort. Others, such as economic trends in our major trading partner countries, are not easily predictable. The role of anyone preparing projections is to examine reasonable alternative expectations for the assumptions.

### Alternatives

BLS goes further than identifying sensitive assumptions. The Bureau prepares alternative projections that encompass a wide range of assumptions, each of which may strongly

affect employment growth by industry and occupation in the coming decade. For example, net annual immigration, which has a large impact on population estimates, is subject to a considerable amount of uncertainty. BLS alternative projections for this variable range from 500,000 to 800,000 in the year 2000. The projection of women's labor force participation rates—which has been a major source of error in previous projections—assumes a range of 61.1 percent to 64.3 percent for the year 2000 in the current alternative scenarios.

The growth of gross national product per employee (a proxy for labor productivity) and the employment rate are also subject to a wide range of future expectations. Therefore, there is a range of more than a full percentage point in the BLS projections for annual growth in GNP per employee. As a result, the unemployment rate in the year 2000 ranges from 7.0 percent in the low-growth projection to 4.0 percent in the high-growth projection.

What effects do these alternative assumptions have on the projection results? Projected labor force growth to the year 2000 ranges from 1.0 percent to 1.6 percent annually, a range of 9 million persons in 2000. Real GNP growth between 1988 and 2000 ranges from 1.5 percent annually in the low-growth projection to 3.2 percent each year in the high-growth alternative, a difference of \$1.1 trillion in the year 2000. In like manner, total employment ranges from 127 million in the low-growth projection to 144 million in the high-growth projection.

### Reevaluation

The alternative projections provide our users with a range of results, a range that encompasses reasonable economic futures. In addition, the Bureau regularly reviews the sensitivity of the projections at all levels of detail to variations in the major assumptions and periodically publishes those results. Once actual data becomes available, BLS prepares and publishes careful assessments of the projections to identify sources of error and better approaches to future projection efforts.



## New labor force projections, spanning 1988 to 2000

*The labor force is expected to expand at an annual rate of 1.2 percent, a much slower pace than in 1976-88; fast-growing segments include blacks, Hispanics, and the Asian and other group*

Howard N Fullerton, Jr.

The growth of the U.S. labor force is expected to slow perceptibly between 1988 and 2000, according to new projections by the Bureau of Labor Statistics. Under the moderate of three alternative projections, the labor force is estimated to grow 1.2 percent annually, compared with the 1976-88 growth rate of 2.0 percent.

The labor force is projected to total 141 million persons in 2000, a net addition of 19 million. In contrast, the work force grew by 25 million between 1976 and 1988. Under the alternative projections, the work force in 2000 varies between a low of 137.5 million and a high of 144.0 million.

Women were only 40 percent of the labor force as recently as 1976; by 2000, they are projected to be 47 percent. The proportion of youths (those 16 to 24 years) dropped from 24 percent of the labor force in 1976 to 19 percent in 1988 and is projected to fall further to 16 percent in 2000. The decline during the 1976-88 period reflected the end of the entry of the baby-boomers, while the projected decrease during the 1988-2000 period reflects fewer births in the 1970's. The proportion of workers in the broad age span, 24 to 54, is projected to increase by 2 percent by the year 2000. The older population, which is growing, is projected to account for the same share of the labor force in 2000 as in 1988. (See table 1.)

The proportion of blacks in the labor force is projected to rise to 12 percent by 2000, compared with 10 percent in 1976 and 11 percent in 1988. The increase stems from population growth. Hispanics are projected to increase their share of the labor force from 7 percent in 1988 to 10 percent by 2000, reflecting increases in population and labor force participation. The proportion of the Asian and other group<sup>1</sup> is expected to rise from 3 percent in 1988 to 4 percent in 2000, also the result of rapid population increase.

There are two major factors that determine labor force growth: changes in population and in labor force participation rates. The BLS projections are based on Bureau of Census population projections and BLS projections of future trends in labor force participation.<sup>2</sup> The process of making projections is not exact; to indicate the possible range of uncertainty, BLS and the Census Bureau prepare alternative projections.<sup>3</sup> This article focuses mainly on the middle or moderate projection. It presents BLS's second look at the 2000 labor force.<sup>4</sup> (See table 2.)

### Population

*Assumptions.* Population projections are determined by the interplay of three assumptions crucial to population change: the future paths of births, of deaths, and of net immigration. The

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Bureau of the Census' middle projection of population is used in the middle labor force projections. It is based on the following assumptions about these major factors needed to project population change:

**Net immigration.** The Bureau of Census assumes in its middle scenario that both immigration and emigration will be high. Documented immigration is assumed to total 560,000 annually; emigration totals 160,000 annually. The net immigration (immigration less emigration) reflects an assumption that the Immigration Reform and Control Act, which was not fully implemented until the end of 1988, will reduce the level of undocumented immigration. The number of illegal, or undocumented, aliens is projected to drop from 200,000 in 1988 to 100,000 in 1998. Net immigrants as a whole were projected to total 600,000 in 1988 and to decline to 500,000 by 1998. For certain projections, especially labor force composition by age, this assumption is the most critical.<sup>5</sup>

**Fertility.** In the long run, the fertility assumptions are the most crucial for a national population projection. These assumptions do not affect the estimated working age population in 2000, because persons 16 and older are already in the population.

**Mortality.** Mortality changes have little effect upon the working-age population. However, the current population projection is not as optimistic as earlier projections about mortality at the older ages.

**Hispanic origin.** There is no Hispanic population projection available from the Bureau of the Census that is consistent with this current population projection. BLS has decided to use the high immigration scenario from the Census Bureau's most recent Hispanic population projection.<sup>6</sup> The assumptions for this projection are for Hispanics to have yearly net immigration of 361,000 and fertility that is slightly higher than the overall white population.<sup>7</sup> Future direction and magnitude of immigration, both documented and undocumented, are highly uncertain at this time. As a consequence, projections of the Hispanic population, because they are strongly affected by immigration, are subject to more uncertainty than the overall population.

**Population changes, 1988–2000.** The overall U.S. population, which increased by 1 percent annually between 1976 and 1988, is projected to grow 0.7 percent to 2000. This slowing reflects an anticipated drop in births as well as the slight decline in net migration. The increase will not occur uniformly across age, race, or Hispanic origin groups. (See table 3.)

As a consequence of the end of the baby boom in 1965, the numbers of youth in the population—and thus in the labor force—will drop. However, the children of the baby-boom generation will enter the labor force during the 1990's, but not before the number of youth continues to drop. The following tabulation gives the year when the numbers of various groups of youth reach their trough and the drop in the population until then:

**Table 1. Civilian labor force by sex, age, race, and Hispanic origin, 1976, 1988, and moderate growth projection to 2000**

[Numbers in thousands]

Group	Level			Change		Percent change		Percent distribution			Growth rate	
	1976	1988	2000	1976–88	1988–2000	1976–88	1988–2000	1976	1988	2000	1976–88	1988–2000
Total, 16 and over	96,158	121,669	141,134	25,211	19,465	26.5	16.0	100.0	100.0	100.0	2.0	1.2
16 to 24	23,339	22,535	22,456	-804	-79	-3.4	-0.4	24.3	18.5	15.9	-0.3	0.0
25 to 54	58,502	84,041	101,267	25,539	17,226	43.7	20.5	60.8	69.1	71.8	3.1	1.6
55 and over	14,319	15,094	17,411	775	2,317	5.4	15.4	14.9	12.4	12.3	0.4	1.2
Men, 16 and over	57,174	66,927	74,324	9,753	7,397	17.1	11.1	59.5	55.0	52.7	1.3	0.9
Women, 16 and over	38,983	54,742	66,810	15,759	12,068	40.4	22.0	40.5	45.0	47.3	2.9	1.7
White, 16 and over	84,768	104,756	118,981	19,988	14,225	23.6	13.6	88.2	86.1	84.3	1.8	1.1
Black, 16 and over	9,549	13,205	16,465	3,656	3,260	38.3	24.7	9.9	10.9	11.7	2.7	1.9
Asian and other, 16 and over <sup>1</sup>	1,827	3,708	5,688	1,881	1,980	103.0	53.4	1.9	3.0	4.0	6.1	3.6
Hispanic, 16 and over <sup>2</sup>	4,279	8,980	14,321	4,701	5,341	109.9	59.5	4.4	7.4	10.1	6.4	4.0

<sup>1</sup> The "Asian and other" group includes American Indians, Alaskan Natives, Asians, and Pacific Islanders. The historic data are derived by subtracting "Black" from the "Black and other" group; projections are made directly.

<sup>2</sup> Persons of Hispanic origin may be of any race.

Age	Year of trough	Annual rate of decline, 1988 to trough	Annual rate of increase, from trough to 2000
16 .....	1990	-3.9	1.4
16 and 17 ...	1991	-3.6	1.5
16 to 19 ....	1992	-2.7	1.7
18 and 19 ...	1993	-2.3	1.9
20 and 21 ...	1995	-1.4	1.9
16 to 24 ....	1996	-1.2	1.3
18 to 24 ....	1996	-1.5	1.3
20 to 24 ....	1997	-1.5	1.5
22 to 24 ....	1998	-1.8	1.4

The number of 16-year-olds will begin rising soon, following a 4-percent annual drop in numbers between 1988 and 1990. The number ages 22 to 24 will not reach a low for almost a decade. By the turn of the century, the entire youth population will be increasing. Those hiring teenagers should anticipate only a short period before the numbers begin turning up; those hiring college graduates may expect a decline in numbers lasting until the end of the century. Nationwide, the number at the usual age to enter college will start increasing in 1993.

The number of children under 5 is projected to decline steadily between 1988 and 2000. This reflects the aging of the baby boom; these women will not be in the age groups with high birth rates. Children 5 to 13 are projected to increase by 2.5 million between 1988 and 1996, then decline by a half million. This age group is part of the "echo" to the baby boom. Enrollment in elementary and middle schools should remain strong for most of the rest of this century. Persons of high school age (14 to 17 years) are projected to drop by three-quarters of a million by 1990, before rising by 2 million through 2000. This suggests that educational planners should start preparing for an increase in high school students. Those employing teenagers should anticipate increases in the near future.

These changes, taken with the younger labor force ages, suggest that for the rest of the century, the population between ages 5 and 24 will be increasing, although with timing that varies by age group. The observed scarcities of young workers are therefore likely to end before the end of the century.

### Increases in the older population

The population over age 55 is projected to grow rapidly. This reflects past immigration as well as the aging of those born between the birth dearth of the early 1930's and the baby boom. The population 85 and over is projected to grow

**Table 2. Civilian labor force participation rate by sex, age, race, and Hispanic origin, 1976, 1988, and moderate growth projection to 2000**

Group	Participation			Growth rate	
	1976	1988	2000	1976-88	1988-2000
Total, 16 and over .....	61.6	65.9	69.0	0.6	0.4
16 to 24 .....	65.3	68.4	71.3	.4	.3
25 to 54 .....	74.9	82.9	87.1	.9	.4
55 and over .....	33.9	30.0	30.6	-1.0	.2
Men, 16 and over .....	77.5	76.2	75.9	-.1	.0
16 to 24 .....	72.9	72.4	73.2	-.1	.1
25 to 54 .....	94.2	93.6	93.0	-.1	-.1
55 and over .....	47.8	39.9	38.9	-1.5	-.2
Women, 16 and over .....	47.3	56.6	62.6	1.5	.8
16 to 24 .....	58.0	64.5	69.4	.9	.6
25 to 54 .....	56.8	72.7	81.4	2.1	.9
55 and over .....	23.0	22.3	24.0	-.3	.6
White, 16 and over .....	61.8	66.2	69.5	.6	.4
Black, 16 and over .....	58.9	63.8	66.5	.7	.3
Asian and other, 16 and over <sup>1</sup> .....	62.8	64.8	65.5	.3	.1
Hispanic, 16 and over <sup>2</sup> .....	60.7	67.4	69.9	.9	.3

<sup>1</sup> The "Asian and other" group includes American Indians, Alaskan Natives, Asians, and Pacific Islanders. The historic data are derived by subtracting "Black" from the "Black and other" group; projections are made directly.

<sup>2</sup> Persons of Hispanic origin may be of any race.

most rapidly. Among the older age groups, only the 65 to 74 age group is projected to increase at a rate less than the overall population, a consequence of the low birth rates of the early 1930's. The following tabulation gives growth rates for the population 55 and over from 1976 to 2000:

	1976-88	1988-2000
55 to 64 .....	0.6	0.8
65 to 74 .....	1.9	.2
75 to 84 .....	2.4	2.0
85 and over .....	3.7	3.8

The drop between 1976 and 1988 in the share of those ages 55 to 64 is a reflection of the drop in births over the 1924-35 period. This decline is the explanation for the decrease in share of those 65 to 74 in 2000.

The baby-boom group, which was born between 1946 and 1964, is entirely in the prime age (25 to 54) work force in 1989 for the first time. The year 2000 will be the last year the entire baby boom is in this age group. The baby-boom group will steadily decline as a share of the population:

Age	Level (thousands)	Percent of population	
1976 .....	12-30	75,139	34.5
1988 .....	24-42	77,664	31.5
2000 .....	36-54	76,947	28.7

**Labor force participation rate changes**

BLS projected labor force participation rates—the second important factor affecting the size of the labor force of the future—for 100 groups by age, sex, and race or Hispanic origin. Recent trends have changed the assumptions of labor force participation rates for older workers, young women, and black men. A review of some of the factors affecting their changing labor force participation rates follows.

The drop in participation by older men, 8 percentage points between 1976 and 1988, is expected virtually to stop, amounting to only 1 point over the next 12 years. That overall change masks important differences among various age groups. The most remarkable change is in participation of men 55 to 64, which fell 7.3 percent over the 1977–88 period, but which is projected to rise by 1.1 percentage points over the 1988–2000 period. The following tabulation shows the changes in labor force participation rates, 1976–88, and the projected changes for older workers:

	1976–85	1985–88	1988–2000
<b>Men</b>			
55 to 59 . . . . .	-.5	-.1	0.0
60 and 61 . . . . .	-.8	-.9	-.1
62 to 64 . . . . .	-1.9	-.5	-.1
65 to 69 . . . . .	-2.0	1.9	-.2
70 to 74 . . . . .	-2.8	.9	-.4
75 and over . . . . .	-3.1	1.9	-.8

Women	1976–85	1985–88	1988–2000
55 to 59 . . . . .	.5	1.9	.9
60 and 61 . . . . .	.3	1.1	.6
62 to 64 . . . . .	.0	-.1	.2
65 to 69 . . . . .	-1.1	4.5	.8
70 to 74 . . . . .	.3	-.4	1.2
75 and over . . . . .	-2.2	2.9	-.7

The sharp change in projected participation reflects the changes in labor force participation among some groups between 1985 and 1988. For men 65 and older, participation rates increased for each of the white, black, and Asian and other groups. Given the century long history of decreases and only the three years of increases, it does not seem prudent to project rising participation at these ages.<sup>8</sup> At the same time, lower participation decreases or participation rate increases for men ages 65 and over cannot be sustained unless the downward trend in participation moderates for men in the 55 to 64 age group. However, this seems consistent with the 1985–88 patterns for men 55 to 64.

Participation rates for older women, which fell modestly, are projected to increase. The Bureau anticipates that participation will continue to increase at ages below 75. For women 55 to 61, the projections assume that participation will increase in a manner consistent with the 1976–88 period as a whole. Women have less access to pension plans and in general have been working fewer years than men the same age. Their participation is much lower than men

**Table 3. Civilian noninstitutional population by sex, age, race, and Hispanic origin, 1976, 1988, and moderate growth projection to 2000**

[Numbers in thousands]

Group	Level			Change		Growth rate	
	1976	1988	2000	1976–88	1988–2000	1976–88	1988–2000
Total, 16 and over . . . . .	156,150	184,613	204,613	28,463	20,000	1.4	.9
16 to 24 . . . . .	35,722	32,960	31,515	-2,762	-1,445	-.7	-.4
25 to 54 . . . . .	78,158	101,398	116,229	23,240	14,831	2.2	1.1
55 and over . . . . .	42,271	50,253	56,869	7,982	6,616	1.5	1.0
<b>Men, 16 and over . . . . .</b>	<b>73,759</b>	<b>87,857</b>	<b>97,879</b>	<b>14,098</b>	<b>10,022</b>	<b>1.5</b>	<b>.9</b>
16 to 24 . . . . .	17,481	16,233	15,509	-1,248	-724	-.6	-.4
25 to 54 . . . . .	37,780	49,570	57,145	11,790	7,575	2.3	1.2
55 and over . . . . .	18,499	22,052	25,225	3,553	3,173	1.5	1.1
<b>Women, 16 and over . . . . .</b>	<b>82,390</b>	<b>96,756</b>	<b>106,734</b>	<b>14,366</b>	<b>9,978</b>	<b>1.3</b>	<b>.8</b>
16 to 24 . . . . .	18,241	16,727	16,006	-1,514	-721	-.7	-.4
25 to 54 . . . . .	40,378	51,828	59,084	11,450	7,256	2.1	1.1
55 and over . . . . .	23,772	28,201	31,644	4,429	3,443	1.4	1.0
White, 16 and over . . . . .	137,106	158,194	171,171	21,088	12,977	1.2	.7
Black, 16 and over . . . . .	16,216	20,692	24,754	4,476	4,062	2.1	1.5
Asian and other, 16 and over <sup>1</sup> . . . . .	2,910	5,725	8,688	2,815	2,963	5.8	3.5
Hispanic, 16 and over <sup>2</sup> . . . . .	7,051	13,325	20,490	6,274	7,165	5.4	.0

<sup>1</sup> The "Asian and other" group includes American Indians, Alaskan Natives, Asians, and Pacific Islanders. The historic data are derived by subtracting "Black" from the "Black and other"

group; projections are made directly.

<sup>2</sup> Persons of Hispanic origin may be of any race.



of this age. As a consequence, the activity rate for women 62 to 64 is projected to rise between 1988 and 2000.

The growth of the younger women's labor force participation rates began to slow in the early 1980's. The following tabulation indicates the significantly lower growth in young women's labor force activity rates since 1985:

	Growth rate (in percent)		
	1976-85	1985-88	1988-2000
20 to 24 .....	1.1	0.4	0.6
25 to 29 .....	2.1	1.0	.9
30 to 34 .....	2.1	1.0	1.8

This pronounced slowing in the growth rate of younger women's labor force participation, if sustained as BLS projects, implies a greater proportion of older women in the labor force.<sup>9</sup> The growth in labor force activity rates was cut by more than half over the most recent period. The lower growth rate may indicate the approach of women to their maximum participation rates for these groups. The changed trends are for women of childbearing ages—should participation not rise as sharply as in the late 1970's, the demand for child care could be muted. However, the slower growth in participation of women at younger ages over the 1985-88 period may reflect the difficulties in child care arrangements experienced by young parents. BLS is projecting that participation growth will be significantly greater than in the past few years only for women 30 to 34—the projected growth is closer to the 1976-85 rate of change.

Recently, the labor force participation rates of black men, 25 to 54, have begun to rise, or at least to decrease much more slowly. For this projection, their participation rate is expected to rise. The following tabulation gives the historical and projected percentage point change in labor force participation for prime working age black men:

	1976-85	1985-88	1988-2000
25 to 34 .....	-2.1	0.5	0.3
35 to 44 .....	-.1	-1.6	.8
45 to 54 .....	.6	.5	.1

White men are experiencing rising participation at the younger ages and a slower decline in participation for the older years (65 and older—three groups). The decrease in participation for the pre-retirement years—55 to 64—is projected to continue.

### Labor force changes

The overall labor force, which was 83 million in 1970, is projected to be 70 percent larger in 2000—the effect of increased population and

increased labor force participation. But growth has been decelerating. Between 1970 and 1980, the labor force grew by 2.6 percent annually and between 1980 and 1988, by 1.6 percent. The rate of increase is projected to slow 1.2 percent over the 1988-2000 period.<sup>10</sup> Here is the labor force by major age groups (in thousands):

	1970	1980	1988	2000
Total .....	82,771	106,940	121,669	141,134
16 to 24 ...	17,846	25,300	22,535	22,456
25 to 54 ...	50,421	66,600	84,041	101,267
55 and over	14,505	15,039	15,094	17,411
Growth rates:	1970-80	1980-80	1988-2000	
Total .....	2.6	1.6	1.2	
16 to 24 .....	3.6	-1.4	.0	
25 to 54 .....	2.8	3.0	1.6	
55 and over ...	.4	.0	1.2	

This tabulation indicates that all groups contributed to labor force growth in the 1970's. The baby-boom generation accounted for much of the growth. The baby-boomers entered the prime working years during the 1980's and will be flowing through the prime working age bracket during the 1990's. By 2000, they will be poised to leave the prime working years.

### Sex and age

The number of women in the labor force is projected to grow by 12.0 million from 1988, totaling 67 million in 2000. This represents an annual rate of growth of 1.7 percent, compared with the 2.9 percent of the 1976-88 period, when the young women of the baby boom were entering the labor force. With the growth shown in these projections, women would account for 47 percent of the labor force in 2000, up from 41 percent in 1976 and 45 percent in 1988.

Men are projected to remain a majority of the labor force, even though the number is not changing as dynamically as that of women. The male labor force is projected to grow by 7.4 million, or 11 percent, over the 1988-2000 period. (This compares with 22 percent for women during the same period.) Different components of the male labor force are growing at different rates; the younger male labor force is projected to decrease in size between 1988 and 2000, but actually to increase between 1995 and 2000.

*Age composition.* There are projected to be more than 100 million prime age (those ages 25 to 54) workers in 2000. (See table 4.) The number of young workers is projected to decline, continuing a trend which began in 1979. Older workers should increase their numbers, as those born in the late 1930's and early 1940's reach ages over 55.

The youth labor force (those 16 to 24) is projected to be the same size in 2000 as in 1988. As would be expected from the discussion of the changing size of the youth population, this masks a variety of changes for various age groups. The teenage labor force is projected to drop until 1992, then rise over the rest of the decade. By 1995, the teenage labor force would still be smaller than in 1988, about 200,000 less. It would climb by a million between 1995 and 2000, with a net increase of 800,000 for the entire 1988–2000 period. The following tabulation gives the changes in the youth labor force projected 1988 to 2000 (in thousands):

Youth, ages	1988–95	1995–2000	1988–2000
16–24 . . . . .	-1,379	1,299	-80
16 to 19 . . . . .	-216	1,006	790
20 and 21 . . . . .	-354	629	275
22 to 24 . . . . .	-809	-336	-1,145

The 22-to-24 labor force is projected to decline until 1998, with a modest recovery in 1999 and 2000. This labor force would drop by more than

a million through 2000. The number of younger women (16 to 24) is projected to increase by a third of a million, as their growing participation offsets their decline in population.

Prime age workers would account for 72 percent of the labor force in 2000, up from 69 percent in 1988. This reflects the underlying demographic changes—the baby-boom generation will still be in the prime working ages—but between 1995 and 2000, the echo of the baby boom (their children) will begin entering the labor force. The prime age work force (25 to 54) grew by 3 percent annually between 1976 and 1988; this growth is projected to slow to a 1.6-percent rate between 1988 and 2000.

Over the 1988–2000 period, the fastest growing group among men is expected to be those ages 45 to 54, the consequence of the aging of the baby-boom generation. The participation of this group is less than that of younger men. Because baby-boom men would still be in their prime working years in 2000, the prime age male labor force is projected to be a greater proportion of the labor force than in 1988. The

Table 4. Civilian labor force and participation rates by sex, age, race, and Hispanic origin, 1976 and 1988, and moderate growth projection to 2000

Group	Participation rate (percent)			Level (in thousands)			Change (in thousands)		Percent change		Growth rate	
	1976	1988	2000	1976	1988	2000	1976–88	1988–2000	1976–88	1988–2000	1976–88	1988–2000
Total, 16 and over . . . . .	61.6	65.9	69.0	96,158	121,669	141,134	25,511	19,465	26.5	16.0	2.0	1.2
Men, 16 and over . . . . .	77.5	76.2	75.9	57,174	66,927	74,324	9,753	7,397	17.1	11.1	1.3	.9
16 to 19 . . . . .	59.3	56.9	59.0	4,886	4,159	4,422	-727	263	-14.9	6.3	-1.3	.5
20 to 24 . . . . .	85.1	85.0	86.5	7,866	7,594	6,930	-272	-664	-3.5	-8.7	-3.3	-.8
25 to 34 . . . . .	95.2	94.3	94.1	14,784	19,742	16,572	4,958	-3,170	33.5	-16.1	2.4	-1.4
35 to 44 . . . . .	95.4	94.5	94.3	10,500	16,074	20,188	5,574	4,114	53.1	25.6	3.6	1.9
45 to 54 . . . . .	91.6	90.9	90.5	10,293	10,566	16,395	273	5,829	2.7	55.2	.2	3.7
55 to 64 . . . . .	74.3	67.0	68.1	7,020	6,831	7,796	-189	965	-2.7	14.1	-.2	1.1
65 and over . . . . .	20.2	16.5	14.7	1,826	1,960	2,021	134	61	7.3	3.1	.6	.3
Women, 16 and over . . . . .	47.3	56.6	62.6	38,983	54,742	66,810	15,759	12,068	40.4	22.0	2.9	1.7
16 to 19 . . . . .	49.8	53.6	59.6	4,170	3,872	4,399	-298	527	-7.1	13.6	-.6	1.1
20 to 24 . . . . .	65.0	72.7	77.9	6,418	6,910	6,705	492	-205	7.7	-3.0	.6	-.3
25 to 34 . . . . .	57.3	72.7	82.4	9,419	15,761	15,105	6,342	-656	67.3	-4.2	4.4	-.4
35 to 44 . . . . .	57.8	75.2	84.9	6,817	13,361	18,584	6,544	5,223	96.0	39.1	5.8	2.8
45 to 54 . . . . .	55.0	69.0	76.5	6,689	8,537	14,423	1,848	5,886	27.6	68.9	2.1	4.5
55 to 64 . . . . .	41.0	43.5	49.0	4,402	4,977	6,140	575	1,163	13.1	23.4	1.0	1.8
65 and over . . . . .	8.2	7.9	7.6	1,069	1,324	1,454	255	130	23.9	9.8	1.8	0.8
Whites, 16 and over . . . . .	61.8	66.2	69.5	84,767	104,756	118,981	19,989	14,225	23.6	13.6	1.8	1.1
Men . . . . .	78.4	76.9	76.6	51,033	58,317	63,288	7,284	4,971	14.3	8.5	1.1	.7
Women . . . . .	46.9	56.4	62.9	33,735	46,439	55,693	12,704	9,254	37.7	19.9	2.7	1.5
Blacks, 16 and over . . . . .	58.9	63.8	66.5	9,565	13,205	16,465	3,640	3,260	38.1	24.7	2.7	1.9
Men . . . . .	69.7	71.0	71.4	5,105	6,596	8,007	1,491	1,411	29.2	21.4	2.2	1.6
Women . . . . .	50.0	58.0	62.5	4,460	6,609	8,458	2,149	1,849	48.2	28.0	3.3	2.1
Asian and other, 16 and over <sup>1</sup> . . . . .	62.8	65.0	65.5	1,826	3,709	5,688	1,883	1,979	103.1	53.4	6.1	3.6
Men . . . . .	74.9	74.4	74.6	1,036	2,015	3,029	979	1,014	94.5	50.3	5.7	3.5
Women . . . . .	51.6	56.5	57.5	790	1,694	2,659	904	965	114.4	57.0	6.6	3.8
Hispanics, 16 and over <sup>2</sup> . . . . .	60.7	67.4	69.9	4,279	8,982	14,321	4,703	5,339	109.9	59.4	6.4	4.0
Men . . . . .	79.6	81.9	80.3	2,625	5,409	8,284	2,784	2,875	106.1	53.2	6.2	3.6
Women . . . . .	44.1	53.2	59.4	1,654	3,573	6,037	1,919	2,464	116.0	69.0	6.6	4.5

<sup>1</sup> The "Asian and other" group includes American Indians, Alaskan Natives, Asians, and Pacific Islanders. The historic data are derived by subtracting "Black" from the "Black and other" group; projections are made directly.

<sup>2</sup> Persons of Hispanic origin may be of any race.

labor force of men ages 45 to 54 is projected to grow 5.8 million.

The youngest segment within the prime working age group, those 25 to 34, will contract in size between 1988 and 2000, after reaching a high of 35.9 million in 1990. This change represents the effects of the "baby bust" on the labor force. This group would not increase until after 2000.

The group with by far the largest numerical growth is women in the prime working years (ages 25 to 54). This group is projected to increase by 10 million, compared with the 7 million increase in prime age men. Prime age women not only would account for the largest labor force increase but would also have the highest rate of growth.<sup>11</sup> Many will be 35 to 54, reflecting the presence of the baby-boom generation.

The change in the number of the older male labor force also represents the interplay of population and participation. The group 55 to 64, whose population is projected to decrease over the 1988-95 period but increase during the 1995-2000 period, has a higher participation rate than men 65 and older. Participation rates of men ages 55 to 64 are projected to drop more slowly than rates for men over age 65. The interplay of these groups combines so that the entire older male labor force is projected to grow over the 1988-2000 period by 1 million.

Women 55 and over will also increase at a rate higher than the overall labor force. These participants are expected to increase by more than a million over the next 12 years. This group has the lowest labor force participation of the six major age-sex groups.<sup>12</sup> Participation is projected to increase faster than the rate for the overall labor force, but most of that growth will be concentrated in the 55 to 64 group. Because most of the women in this age group are over 65, overall participation for the group is not likely to attain high levels.

### Race and Hispanic origin

**Blacks.** There are projected to be 16.5 million blacks in the labor force in 2000, up 3.2 million from 1988. This represents a higher growth rate, 1.9 percent, than is projected for the overall labor force and is the result of faster population growth among blacks. By 2000, blacks are expected to make up 12 percent of the labor force, up 1 percentage point from 1988.

**Asians and others.** The Asian and other work force is projected to be 5.6 million in 2000, an increase of 2 million from 1988. Their growth rate is projected to be 3.6 percent annually,

Table 5. Three projections of the civilian labor force by sex, age, race, and Hispanic origin, 2000

Group	Participation rate (in percent)			Level (in thousands)		
	High	Moderate	Low	High	Moderate	Low
Total .....	70.7	69.0	67.3	146,770	141,134	137,684
16 to 24 years .....	73.1	71.3	69.1	23,581	22,456	21,788
25 to 54 years .....	88.4	87.1	85.8	104,471	101,267	92,465
55 years and over .....	32.8	30.6	28.5	18,718	17,411	15,210
Men: .....	77.8	75.9	74.1	77,323	74,324	72,519
Women: .....	64.3	62.6	61.1	69,447	66,810	65,165
White .....	71.2	69.5	67.8	123,392	118,981	116,041
Black .....	68.3	66.5	65.1	17,074	16,465	16,103
Asian and other <sup>1</sup> .....	68.3	65.5	63.8	6,304	5,688	5,540
Hispanic <sup>2</sup> .....	71.6	69.9	68.2	14,696	14,321	13,971

<sup>1</sup> The "Asian and other" group includes American Indians, Alaskan Natives, Asians, and Pacific Islanders. The historic data are derived by subtracting "Black" from the "Black and other" group; projections are made directly.

<sup>2</sup> Persons of Hispanic origin may be of any race.

higher than either the black or white rate of increase, but below that of Hispanics. Like Hispanics, their growth rate is impacted by immigration as well as higher past fertility. Their share of the labor force would increase by 1 percentage point to 4 percent. The participation rate of Asians and others is projected to remain virtually the same, comparable to the change over the 1976-88 period.

**Hispanics.** There are expected to be 14.3 million Hispanics in the labor force in 2000, up 5.3 million from 1988, according to the BLS projections. This represents a much higher growth rate, 4.0 percent, than projected for the overall labor force. Hispanics may be of any race; their population and labor force numbers are also included in those for whites, blacks, and Asians and others. Hispanic labor force participation is projected to grow 0.3 percent annually, similar to the overall labor force increase of 0.4 percent annually. By 2000, Hispanics are projected to constitute 10 percent of the labor force, up 3 percentage points from 1988. Workers of Hispanic origin are the youngest group in the labor force (as measured by the median age of 35.2) and are projected to remain by far the youngest group.<sup>13</sup>

**Whites.** As in the past, most of the labor force is projected to be white. In the year 2000, there would be 119 million whites (including Hispanics) in the labor force, up 14 percent from 1988. However, their share of the labor force is projected to drop from 86 to 84 percent. (If Hispanics are excluded, more than 95 percent of whom also are counted as white, the shares for whites

would be 79 percent in 1988 and 74 percent in 2000.) White participation is expected to grow at the same rate as the overall labor force, but slower than participation of blacks, Asians and others, and Hispanics, reflecting slower rates of population growth and older age structure.

### Alternative demographic projections

The actual 2000 world of work will certainly be different from that in 1988 in ways that we cannot anticipate. To give an idea of at least some of the uncertainty, two alternative projections of the labor force were prepared. (See table 5.) One assumes slower labor force participation rate changes applied to the middle population series of the Bureau of the Census and the other assumes higher immigration and uses higher participation rate changes.

The assumptions used in the Census Bureau's high immigration series would seem to imply higher labor force participation rates than the middle scenario: Under the high scenario, the labor force increases to 147 million in 2000—6 million greater than the middle scenario. With the higher level of immigration (160 percent greater), the percent change of the labor force is 21 percent from 1988 to 2000. Participation is projected to grow at 0.6 percent annually, a rate one-third higher than in the moderate scenario.<sup>14</sup>

For the higher scenario, it was assumed that immigration of Hispanics would be the same proportion of the civilian noninstitutional population in the previous high immigration projection. However, the Hispanic labor force would grow more rapidly under the high scenario, but the Hispanic labor force would have the same share under both scenarios. Under the low participation scenario, Hispanics would account for 10.4 percent of the labor force and would grow by 3.8 percent yearly to 2000, compared with

the 4.0-percent annual gain shown in the middle scenario.

Under the low alternative, the overall 2000 labor force would be 138 million, an expansion of 13 percent over the 1988 level. This slower growth, 1.0 percent annually, is a consequence of the participation rate growing slowly or dropping more rapidly. In the middle scenario, overall participation is projected to increase 0.4 percent annually. Under the low scenario, it is projected to grow at only 0.2 percent. Also under the low alternative, labor force participation among women is projected to rise more slowly. This is consistent with the view that the rapid increases of the 1970's account for most of the rise in women's labor force participation.

### Entrants

As noted, the labor force is projected to grow by a net of 19 million persons. This increment masks a more dynamic underlying process, the movement of workers into and out of the labor force. BLS projects that 43 million persons will join the labor force between 1988 and 2000. There should be slightly more women than men, reflecting the difference in proportion of women and men in the 16 to 34 age groups. Almost two-thirds of the entrants are expected to be white, non-Hispanics. Hispanic origin entrants are projected to account for 15 percent of entrants, with more Hispanic men than women projected to join the labor force. Blacks would provide 13 percent of the entrants to the labor force, with black women providing slightly more entrants. Seventy percent of those projected to be working in 2000 are now in the labor force.

The picture of workers leaving the labor force is markedly different. By 2000, 23 million persons now in the labor force are projected to leave. Men are projected to leave in greater numbers than women, by more than 3 million. More than 20 million whites are expected to leave the labor force. Whites predominate because they are on average older than the overall labor force and are more likely to have pension benefits. (See table 6.) More than 2 million blacks are expected to leave the labor force, the second largest group. Hispanics are projected to constitute a much smaller proportion of leavers, because, like blacks, they are much younger than whites. On balance, few Asians and others are projected to leave. (See table 7.)

As noted, the labor force is projected to grow by 19 million. The difference between the entrants and leavers, which is also the difference between the 2000 labor force and the 1988 labor force, must be interpreted with caution. Thus,

**Table 6. Median ages of the labor force, by sex, race, and Hispanic origin, selected historical years and projected years, 1994 and 2000**

Group	1962	1970	1976	1980	1988	1994	2000
Total .....	40.5	39.0	35.3	34.3	35.9	37.5	39.3
Men .....	40.5	39.4	36.0	35.1	36.1	37.8	39.6
Women .....	40.4	38.3	34.4	33.9	35.6	37.3	38.9
White .....	40.9	39.3	35.6	34.8	36.1	37.8	39.6
Black .....	38.3	29.3	34.0	33.3	34.3	35.8	37.4
Asian and other <sup>1</sup> .....	—	—	33.6	33.8	36.1	37.3	38.5
Hispanic <sup>2</sup> .....	—	—	32.6	30.7	32.9	33.9	35.2

<sup>1</sup> The "Asian and other" group includes American Indians, Alaskan Natives, Asians, and Pacific Islanders. The historic data are derived by subtracting "Black" from the "Black and other" group; projections are made directly.

<sup>2</sup> Persons of Hispanic origin may be of any race.

white, non-Hispanic men make up one-third of the entrants but almost one-half the leavers. As a consequence, they account for only 12 percent of the net change in the labor force from 1988 to 2000. Reflecting the numbers of youth in the labor force, more entrants are expected in the latter part of the 1988–2000 period. The number of leavers is also likely to be concentrated toward the end of the century.

A definitive estimate of entrants would be a complex undertaking. Rough projections were developed by analyzing the estimated labor force changes between 1988 and 2000 by age, sex, and race and Hispanic origin. For this analysis, Hispanics were separated from the racial group in which they reported in the Current Population Survey.

### Measures of age

The median age of the labor force in the post-World War II era peaked in 1962, at 40.6 years. With the entry of the baby-boom generation into the labor force, the median age dropped, reaching a low in 1980 of 34.3 years. By 1988, the median age had risen to 35.9 years, and is projected to reach 39.3 years in 2000. Even though the age of the population is increasing rapidly, unless older workers remain in the labor force in greater numbers, the 1962 median is not likely to be attained again. Table 6 shows median ages of the labor force by race and Hispanic origin, for selected historical years and for projected years.

A rising median does not necessarily imply that the labor force will be composed of an increasing share of older workers. If we consider a labor force to be "older" if the proportion over age 55 increases, then between 1976 and 1988, the labor force did not become older, because the over age 55 share of the labor force fell 2.5 percentage points. Between 1988 and 2000, the labor force will not become older, as the proportion age 55 and over remains constant. If we consider a labor force to be "younger" if the percent under age 25 increases, then the 1976 labor force was considerably younger than the 1988 labor force, with a proportion almost 6 percentage points lower. The 2000 population will not be younger, as the youth share would drop by 2.6 percentage points. The labor force is becoming more concentrated in the 25- to 54-year group; as these percentages indicate:

	1976	1988	2000
Youth .....	24.3	18.5	15.9
Prime .....	60.8	69.1	71.8
Older .....	14.9	12.4	12.3

*Dependency ratio.* With the members of the

**Table 7. Projected entrants, leavers, and net change, moderate growth scenario, 1988–2000**

[Numbers in thousands]

Group	Entrants		Leavers		Net change	
	Number	Percent	Number	Percent	Number	Percent
Total .....	42,832	100.0	23,371	100.0	19,461	100.0
Men .....	20,735	48.4	13,341	57.1	7,394	38.0
Women .....	22,097	51.6	10,030	42.9	12,067	62.0
White, non-Hispanic .....	28,597	66.8	19,393	83.0	9,204	47.3
Men .....	13,522	31.6	11,257	48.2	2,265	11.6
Women .....	15,075	35.2	8,136	34.8	6,939	35.7
Black .....	5,385	12.6	2,329	10.0	3,056	15.7
Men .....	2,423	5.7	1,121	4.8	1,302	6.7
Women .....	2,962	6.9	1,208	5.2	1,754	9.0
Asian and other .....	2,364	5.5	504	2.2	1,860	9.6
Men .....	1,232	2.9	282	1.2	950	4.9
Women .....	1,132	2.6	222	0.9	910	4.7
Hispanic .....	6,486	15.1	1,145	4.9	5,341	27.4
Men .....	3,558	8.3	681	2.9	2,877	14.8
Women .....	2,928	6.8	464	2.0	2,464	12.7

NOTE: Unlike other tables, the columns in this table are additive. For a discussion of how the number of entrants and leavers were calculated, see the text.

baby-boom generation in their prime working years and with the small number of births projected between 1988 and 2000, more people are expected to be in the labor force than not over the entire period, as indicated by the economic dependency ratio:

	<i>Economic dependency ratio</i>			
	1976	1988	1994	2000
Total .....	121.8	98.9	93.1	87.3
Under age 16 .....	58.7	45.6	44.1	40.6
16 to 64 .....	42.4	31.4	26.7	24.8
65 and over .....	20.7	21.9	22.3	21.9

This ratio is the number of those in the total population (including Armed Forces overseas) who are not in the total labor force per 100 of those in the total labor force. The ratio declined steadily over the 1976–88 period as the baby-boomers entered the labor force, falling below 100 in 1987. The largest component of the dependency ratio is made up of persons under 16. However, this component has been dropping and is expected to continue to do so throughout the entire projection period. With the rising participation of women, the component of the dependency ratio attributed to the 16-to-64 age group has also declined steadily. The dependency ratio for all persons over 65 has been rising over the entire historical period, a trend projected to continue. The slight rise between 1988 and 1994 reflects the aging of the smaller birth cohort of the 1930's. □

## Footnotes

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<sup>1</sup> The Asian and other race group consists of American Indians, Native Alaskans, Asians, and Pacific Islanders.

<sup>2</sup> *Projections of the Population of the United States, 1987 to 2080, Current Population Reports, Series P-25, No. 1018* (Washington, Bureau of the Census, 1989).

<sup>3</sup> For the most recent evaluation of BLS labor force projections, see Howard N Fullerton, Jr., "An evaluation of labor force projections to 1985," *Monthly Labor Review*, November 1988, pp. 7-17.

<sup>4</sup> These projections replace those described by Howard N Fullerton, Jr., in "Labor force projections: 1986 to 2000," *Monthly Labor Review*, September 1987, pp. 19-39; and "The 1995 labor force: BLS' latest projection," *Monthly Labor Review*, November 1985, p. 17-26.

<sup>5</sup> See John F. Long, *The Relative Effects of Fertility, Mortality and Immigration on Projected Population Age Structure* (Washington, U.S. Bureau of the Census, 1989), presented at the 1989 meeting of the Population Association of America.

<sup>6</sup> Gregory Spencer, *Projections of the Hispanic Population, 1983 to 2080, Current Population Reports, Series P-25, No. 995* (Washington, Bureau of the Census, 1986).

<sup>7</sup> The assumed net Hispanic origin immigration includes 212,000 undocumented immigrants yearly, consistent with the initial years, but not with the latter years of the current overall projection. This inconsistency makes analysis of the effects of Hispanic immigration problematic.

<sup>8</sup> For recent studies of the changes in participation by older men, see Robert L. Clark, "The Future of Work and Retirement," *Research on Aging*, June 1988, pp. 169-93; and John R. Moen, "Past and Current Trends in Retirement: American Men from 1960 to 1980," *Economic Review*, Federal Reserve Bank of Atlanta, July-August 1988, pp. 16-27. Recent BLS reports on the status of older workers have included Diane E. Herz and Philip L. Rones, "Institutional barriers to employment of older workers,"

*Monthly Labor Review*, April 1989, pp. 14-21; and Ronald E. Kutscher and Howard N Fullerton, Jr., "The Aging Labor Force," in *The Aging of the American Work Force: Problems, Programs, Policies*, edited by Irving Bluestone, Rhonda Montgomery and John Owen (Detroit, Wayne State University Press, forthcoming.) For recent Department of Labor task force reports, see *Older Worker Task Force: Key Policy Issues for the Future*; and *Labor Market Problems of Older Workers* (Washington, U.S. Department of Labor, Older Worker Task Force, 1989).

<sup>9</sup> The title of Lynn Y. Weiner's book states the case: *From Working Girl to Working Mother: The Female Labor Force in the United States, 1820 to 1980* (Chapel Hill, University of North Carolina Press, 1985); cited in J. Gregory Robinson, *A Cohort Analysis of Trends in the Labor Force Participation of Men and Women in the United States, 1890 to 1985* (Philadelphia, University of Pennsylvania, 1988.)

<sup>10</sup> For further insight into the changing labor force, see Ronald E. Kutscher, "Projections summary and emerging issues," pp. 66-74, this issue.

<sup>11</sup> For a recent BLS study of women and the labor force, see Susan E. Shank, "Women and the labor market: the link grows stronger," *Monthly Labor Review*, March 1988, pp. 3-8.

<sup>12</sup> For a recent BLS review, see Diane E. Herz, "Employment characteristics of older women, 1987," *Monthly Labor Review*, September 1988, pp. 3-12.

<sup>13</sup> See also Peter Cattani, "The growing presence of Hispanics in the U.S. work force," *Monthly Labor Review*, August 1988, pp. 9-14; and Barry R. Chiswick, "Hispanic men: divergent paths in the U.S. labor market," *Monthly Labor Review*, November 1988, pp. 32-34.

<sup>14</sup> For the most recent Department of Labor report on the impact of the immigration on the work force and the economy, see *The Effects of Immigration on the U.S. Economy and Labor Market, Report 1* (Washington, Bureau of International Labor Affairs, Division of Immigration Policy and Research, 1989).



# The aggregate structure of the economy

*Improved foreign trade and productivity, as well as a continuing emphasis on services, mark the outlook for the coming decade as gross national product growth slows because of a decline in population growth*

Norman C. Saunders

In a previous issue of the *Monthly Labor Review*, the Bureau of Labor Statistics published projections of the U.S. economy to the year 2000.<sup>1</sup> In this article, three alternatives which replace the earlier projections are examined: moderate-, low-, and high-growth projections. These alternatives are designed to provide a range of potential output and employment growth patterns during the 1990's, a range encompassing different assumptions about those items which affect future employment growth and which are difficult to project with any certainty.

The moderate-growth projection encompasses an economy which shows a more moderate rate of gross national product (GNP) growth in the coming decade than that for the previous 12 years. This slowing is due primarily to a slowing of labor force growth in an economy that is expected to continue reducing the Federal budget and foreign trade deficits. By way of comparison, the high-growth projection exhibits marked improvements in output growth during the period 1988 to 2000 as compared with the earlier period, due to higher population growth, less slowing in labor force growth, and a much higher rate of growth of labor productivity. Finally, the low-growth economy is characterized by much higher unemployment rates, higher inflation, continually increasing deficits in both Federal and foreign trade, much lower growth in productivity, and deeper swings in the business cycle. Projected rates of growth in real GNP for the period 1988-2000 range from 1.8 per-

cent annually in the low-trend projection to 3.2 percent each year in the high-trend projection.

By 2000, under the assumptions used by the Bureau in developing the projections, GNP ranges from \$4.9 trillion to \$5.8 trillion (in constant 1982 dollars), with disposable personal income between \$3.2 and \$3.8 trillion. Civilian employment is expected to range from 128.3 million persons in the low-trend projection to 141.7 million in the high-trend scenario, with the unemployment rate between 7 percent in the low and 4 percent in the high. Even in the high-growth projection, the average annual increase in employment is only 2.2 million, still lower than the 2.6 million average annual increase during the previous 12 years, from 1976 to 1988. Under the low-trend assumptions, employment is projected to increase by just 1.3 million persons each year. Table 1 shows the levels and growth rates of selected key economic variables for the period 1976-88 and projected to 2000.

## Framework of the projections

Periodically, BLS solicits proposals for a macroeconomic model for use in developing the projections. The current aggregate economic projections were prepared using the Data Resources, Inc., Annual Model of the U.S. Economy, a relatively small-scale model that simulates long-term macroeconomic policy.<sup>2</sup> Just over 200 exogenous variables are provided to the model to generate alternative economic

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outcomes for the U.S. economy. BLS analyses of the properties of medium-term models have shown that a relatively small number of these variables significantly affect the long-term projections of employment and major demand categories of GNP.<sup>3</sup> The assumptions entering into the variables are summarized in table 2 and are discussed below.

The projections are generally prepared with certain variables, such as the level of the unemployment rate, the rate of growth of labor productivity, the inflation rate, and the presence and severity of business cycle fluctuations, much more carefully evaluated than others. These target variables assist BLS in defining the important parameters for which alternatives are developed, but in no way should they be considered fixed. Rather, the preliminary values of these variables provide a test of reasonableness against which the overall projection results may be compared.

First, major target assumptions were made regarding business cycle fluctuations in the 1990's. Critical reviews of past projections have indicated that certain sectors of the economy, notably durable goods consumption and investment in equipment and structures, are overstated when no business cycle is present. Consequently, in order to improve the accuracy of the projections, two recessions have been

hypothesized for the period 1988–2000. It is important that this attribution not be read as a prediction by the BLS of recessions in any specific years. Rather, it is a bow to the seeming inevitability of business cycle fluctuations and the impact they have on the distribution and levels of demand GNP components.

A second major target variable used in evaluating a projection was the general trend expected for the unemployment rate. In a business cycle, the percent of the labor force out of work can be expected to rise dramatically, and it can be expected to fall just as dramatically during recovery periods. Nonetheless, a general trend in the underlying unemployment rate should be apparent in any given set of scenarios. Specifically, in the moderate-growth alternative, the unemployment rate is assumed to tend toward 5.5 percent, the level attained in 1988, a period following a long, sustained economic recovery and well-controlled inflation. The unemployment rate targets in the high- and low-growth scenarios are 4.0 percent and 7.0 percent, respectively.

### Assumptions of moderate growth

Many assumptions must be spelled out in very specific terms in order for the economic model to generate estimates of future growth paths. As noted earlier, many of these assumptions, although important to specific parts of the model and its results, have very little impact on subsequent stages of BLS projections. The following discussion focuses on those assumptions which have the greatest impact on GNP, the demand components of GNP, employment, and productivity.

*Fiscal policy.* Following the Vietnam war, real defense purchases declined steadily, reaching a low point at \$158 billion in 1976. Between 1976 and 1987, there was a resurgence of spending on defense. Real purchases of defense-related goods and services grew at an annual rate of 4.8 percent. A large proportion of this growth was attributable to research and development on the Strategic Defense Initiative program. Increased pressure to trim the budget deficit resulted in a \$2 billion cut in real defense spending in 1988. This move away from an emphasis on defense spending is assumed to continue throughout the coming decade, with real spending on military goods and services dropping at an average annual rate of 1.3 percent per year between 1988 and 2000.

Federal spending on nondefense purchases of goods and services grew at a real rate of only 0.6 percent a year between 1976 and 1988. As a result, such spending declined as a share of

Table 1. **Civilian unemployment rate and growth rates of selected key economic variables, 1976–88 and projected to 2000**

Item	1976	1988	2000		
			Low	Moderate	High
Civilian unemployment rate . . . .	7.7	5.5	7.0	5.5	4.0
Annual growth rate					
Economic variable:	1976–88	1988–2000			
		Low	Moderate	High	
Real GNP . . . .	2.9	1.5	2.3	3.2	
GNP implicit deflator . . .	5.6	6.1	4.7	4.6	
Civilian labor force . . . . .	2.0	1.0	1.2	1.6	
Employment, household basis . . . . .	2.2	.9	1.2	1.5	
Real disposable personal income . . .	2.8	1.3	2.1	2.7	
Real disposable per-capita income . . .	1.8	.5	1.4	1.9	



GNP, from 2.4 percent in 1976 to just 1.7 percent in 1988, a post-World War II historical low. Numerous domestic Federal programs declined during this period. Recently, pressure has been growing for a larger dollar commitment by the Federal Government to many of these programs. Thus, real nondefense spending is expected to strengthen somewhat during the coming decade, growing at 2.0 percent each year between 1988 and 2000. Of course, this is still a slower rate of growth than that expected for overall GNP; thus, the decline in nondefense spending as a share of GNP is not reversed by this assumption, but merely halted at the 1.7-percent level of 1988.

Federal transfer payments to persons are determined in the BLS projections as a function of general economic conditions and a basic background level of transfers, that is to say, the real level of transfer payments that would be expected during periods of sustained high employment. This background level is expected to grow at a real rate of 2.8 percent a year between

1988 and 2000, down slightly from its 3-percent-per-year growth rate during the preceding 12 years.

Real grants-in-aid to State and local governments have been cut relatively sharply during the 1970's and the first half of the 1980's, primarily in the area of Federal revenue-sharing grants, but also in many of the earmarked grant programs. The continued deterioration of our interstate highway system, however, has stimulated some fairly sharp increases in this category of grant spending during just the past few years. From 1988 to 2000, grants-in-aid are expected to grow at a real average annual rate of 0.8 percent, up markedly from the 1.1-percent average annual decline between 1976 and 1988, a reflection primarily of the continuing effort to repair and modernize our highways and bridges.

On the revenue side, most tax rates are specified exogenously as statutory rates or average marginal rates. The relevant effective rates for taxes on corporations and personal income are then derived from the mandated rates, general

Table 2. Major assumptions affecting aggregate economic projections, 1976, 1988, and projected to 2000

Item	1976	1988	2000			Average annual rates of growth			
			Low	Moderate	High	1976-88	1988-2000		
							Low	Moderate	High
Total population .....	218.17	246.05	268.26	268.26	272.33	1.0	0.7	0.7	0.7
Population age 0 to 5 .....	15.62	18.27	16.90	16.90	17.78	1.3	-.6	-.6	-.3
Male population, age 25-54 ..	39.00	51.25	58.90	58.90	59.97	2.3	1.2	1.2	1.2
Population age 16 and over ..	160.32	189.81	210.13	210.13	210.98	1.4	.9	.9	.8
Population age 16-19 .....	17.19	14.89	15.21	15.21	15.13	-1.2	.2	.2	.1
Population age 22 and over ..	134.79	167.49	187.54	187.54	188.28	1.8	.9	.9	.9
Population age 65 and over ..	23.28	30.40	34.88	34.88	34.73	2.2	1.2	1.2	1.1
Trend household formation ....	73.32	91.00	103.95	104.38	105.58	1.8	1.1	1.2	1.2
Defense purchases (1982 dollars) .....	157.5	263.4	220.4	225.3	280.0	4.4	-1.5	-1.3	.5
Nondefense purchases (1982 dollars) .....	66.8	71.6	85.7	90.5	95.8	.6	1.5	2.0	2.5
Grants-in-aid to State and local governments (1982 dollars) ..	98.6	86.4	93.0	94.6	96.3	-1.1	.6	.8	.9
Federal transfers to persons, base level (1982 dollars) ....	238.5	338.8	447.1	463.3	471.6	3.0	2.3	2.6	2.8
Federal corporate profits tax rate .....	48.00	34.00	34.00	34.00	34.00	-2.8	.0	.0	.0
State and local corporate profits tax rate .....	5.65	10.41	12.76	12.77	12.77	5.2	1.7	1.7	1.7
Federal personal taxes, marginal rate .....	27.30	23.31	23.76	23.76	23.76	-1.3	.2	.2	.2
Social insurance tax rate .....	12.78	16.18	17.52	17.52	17.52	2.0	.7	.7	.7
State and local indirect business taxes .....	58.3	129.5	323.7	317.3	290.2	6.9	7.9	7.8	7.0
Interstate highway miles .....	38,182.4	41,979.3	42,479.9	42,479.9	42,479.9	.8	.1	.1	.1
Federal gasoline tax .....	4.00	9.97	9.97	12.00	9.97	7.9	.0	1.6	.0
State and local gasoline tax ...	7.69	14.77	30.15	30.15	30.15	5.6	6.1	6.1	6.1
Required reserve ratio, demand and time deposits .....	1.339	1.125	1.098	1.099	1.100	-1.4	-.2	-.2	-.2
Nonborrowed reserves .....	25.53	61.25	148.73	143.72	135.03	7.6	7.7	7.4	6.8

business conditions, the progressive nature of the tax system, surcharges, tax credits, and tax law changes. It has been assumed that there will be no changes in the tax law that will affect, in any significant manner, the currently mandated tax rates for corporations or persons, or social insurance and indirect business taxes.

*Monetary policy.* In the Data Resources long-term economic model, the monetary sector has been designed to determine the rate of growth of the money supply commensurate with long-term stable growth, as well as interest rates consistent with steady growth and controlled inflation. In short-run models, the monetary authority wields much more power in determining the growth of the economy than is the case in the long-term formulation. There are only two critical monetary assumptions which need to be specified for the moderate-growth projection: the required reserve ratio on demand and time deposits and the nonborrowed reserves of member banks. Both are assumed to be set in a way best described as accommodating, maintaining a roughly constant rate of growth of velocity and stable interest rates.

*Demographic considerations.* The population estimates underlying the aggregate projections are the middle-growth series developed by the Bureau of the Census.<sup>4</sup> The middle-level civilian labor force projections, developed by BLS to be consistent with the Census Bureau population projections, are incorporated into the moderate-growth scenario in place of labor force estimates derived in the long-term model.<sup>5</sup> The only other major demographic assumption is the new-household formation rate, derived from earlier Census Bureau projections and modified by BLS to reflect the later population data.

*Energy.* The demand for energy is determined within the DRI model by general economic activity levels and the price of energy relative to other goods. That supply is adequate to meet demand is assumed. Domestic production of petroleum and natural gas is determined exogenously and specified as that percent of total petroleum and natural gas consumption produced domestically. The balance of the petroleum and natural gas necessary to meet the calculated level of demand is imported. The average import price of crude petroleum is determined within the model. Imported oil is assumed to account for just over 44 percent of domestic consumption by 2000, down considerably from the 63.2 percent import share in 1988, but consistent with projections developed within the Department of Energy.<sup>6</sup>

*General assumptions.* It was assumed in general that there would be no major wars, oil embargoes, major price shocks, or serious natural catastrophes during the projection period.

### Results of moderate-growth projection

As noted previously, GNP, or the sum total of all goods and services produced for final consumption, is projected to increase in real terms at an average annual rate of 2.3 percent between 1988 and 2000, a significant slowdown from the prior 12-year period, during which GNP increased at an average rate of almost 3.0 percent.

The goods and services our economy can produce are a function of the available supplies of the factors of production. At the aggregate level of detail, the two most important factors of production are labor and capital. The labor input to the production process is expected to slow markedly during the coming decade as population growth and, therefore, the labor force slows. Between 1976 and 1988, employment—that is, the number of persons employed—increased at an average annual rate of 2.2 percent, resulting in a gain of more than 26 million employed persons, or 2.2 million per year on average. A slower population growth rate from 1988 to 2000 results in employment growth slipping to 1.2 percent per year during that period, an increase of 18.2 million.

In the moderate-growth projection, labor productivity, as measured by real GNP per employee, is expected to grow at an average annual rate of 1.0 percent between 1988 and 2000, only a slight improvement from the previous 12-year period, when it increased by 0.7 percent each year.

To understand why labor productivity is expected to improve only very little during the coming decade, it is necessary to turn to the other major factor of production, the capital stock. Between 1976 and 1988, the productive capital stock grew by almost 1.5 billion dollars in real terms, an annual rate of growth of 3.3 percent. When the capital stock is adjusted for capacity utilization, the rate of growth was an even more impressive 4.0 percent a year over the past 12 years. In order to maintain this high rate of growth of the capital stock and, as a result, strong growth in labor productivity, a major shift in the distribution of GNP is required, one unprecedented in historical terms. As we shall see in a later section, although investment is expected to account for slightly increasing shares of GNP in the coming decade, the increase will not be enough to stimulate such strong growth in the capital stock. In fact, at a projected annual rate of growth of 2.6 percent, the capital stock is expected to grow more slowly

*Consumer spending is projected to grow at a slower rate in the coming decade than at any time in the postwar era.*

between 1988 and 2000 than during the earlier period. Adjusting for capacity utilization drops this rate even more, to 2.4 percent. Such a rate of growth is still adequate to generate some increases in labor productivity relative to growth in the 1970's and 1980's, but not high enough to warrant a return to the high productivity growth of the 1960's.

Nonetheless, the moderate-growth projection offers the prospect of a basically healthy economy, one in which both the Federal Government and foreign trade deficits are moderated, inflation remains at low to moderate rates, and employment growth stays relatively high.

The following subsections examine in more detail the demand components of GNP and the GNP as income. A summary of demand growth is shown in table 3, and the sources and uses of income are presented in table 4.

*Personal consumption.* As its name implies, this category of gross national product represents the spending by individuals for goods, both durable and nondurable, and services. Consumption is primarily affected by income growth, but it is also determined by demographic factors, such as population growth and changes in the composition of the population by age, and changes in the relative prices of consumer goods and services. Consumer spending is projected to grow at a slower rate in the coming decade than at virtually any time in the post-war era. For the most part, this slowing reflects slower population growth and lower household formation rates, but it also occurs because of generally slower growth in disposable income. The slowdown in income growth takes place because of generally slower economic growth and an increasing tax take, as an ever larger share of income falls into higher tax brackets.

Consumption expenditures, as a proportion of GNP, have increased from the mid-1970's

through the present time, attaining a share that was surpassed only in the few years immediately following World War II, as pent-up wartime demand was finally satisfied. While trade and government budget deficits have made the current high levels of consumption expenditures possible in the short run, many argue that they are not sustainable over the long run. Personal consumption is now near 65 percent of GNP, up from 63.8 percent in 1976. By 2000, consumption is expected to drop back down to 64.3 percent of GNP, a share of the economy's productive capacity more in keeping with long-term relationships.

Demographic factors play a critical role in determining the amount and composition of long-term consumer expenditures. Population growth in general and labor force growth in particular are crucial determinants of potential GNP growth. The expected slowdown in annual population growth, from 1.0 percent over the past 12 years to 0.7 percent over the next 12, reduces the potential growth of both output and consumption: both the number of workers and the number of consumers will be growing more slowly. In addition, the changing age structure of the population has three major implications for consumer spending over the remainder of the century.

First, and most important, the baby-boom generation is moving out of its initial household-forming years and into its peak earning years. This trend will weaken demand for household furnishings, except to the extent that this component of the population can be persuaded to upgrade existing furniture. As baby-boomers' income grows, however, demand for consumer electronics and other, more discretionary items should be boosted. This will partially offset the general decline in demand growth for these goods due to weakening overall income growth.

Table 3. Gross national product by major demand categories, 1976, 1988, and projected to 2000

Category	Billions of 1982 dollars					Percent distribution					Average annual rates of change			
	1976	1988	2000			1976	1988	2000			1976-88	1988-2000		
			Low	Moderate	High			Low	Moderate	High		Low	Moderate	High
Gross national product .....	\$2,826.7	\$3,996.1	\$4,771.9	\$5,222.4	\$5,840.4	100.0	100.0	100.0	100.0	100.0	2.9	1.5	2.3	3.2
Personal consumption .....	1,803.9	2,592.2	3,087.7	3,356.5	3,592.6	63.8	64.9	64.7	64.3	61.5	3.1	1.5	2.2	2.8
Investment .....	431.4	721.8	893.0	956.2	1,207.3	15.3	18.1	18.7	18.3	20.7	4.4	1.8	2.4	4.4
Exports .....	274.5	504.8	776.3	879.9	1,116.1	9.7	12.6	16.3	16.8	19.1	5.2	3.7	4.7	6.8
Imports .....	-285.4	-605.0	-787.5	-829.1	-1,038.5	-10.1	-15.1	-16.5	-15.9	-17.8	6.5	2.2	2.7	4.6
Government .....	580.3	782.3	802.3	858.9	962.8	20.5	19.6	16.8	16.4	16.5	2.5	.2	.8	1.7
Federal .....	224.3	328.7	293.0	315.8	375.8	7.9	8.2	6.1	6.0	6.4	3.2	-1.0	-.3	1.1
State and local ..	356.0	453.6	509.3	543.1	587.0	12.6	11.4	10.7	10.4	10.1	2.0	1.0	1.5	2.2

NOTE: Historical data are from the U.S. Department of Commerce.

Second, the number of children will decline over the next 12 years, resulting in weakened demand for toys and children's apparel.

Last, the elderly population will increase only slightly in the 1990's. In fact, the share of the population over age 65 will remain virtually constant between 1994 and 2000. Furthermore, this age group's share of total income will not rise significantly through the end of the century. This will limit somewhat the growth of demand for medical services. However, the fact that those over age 85 are the fastest growing population group is expected to keep demand growth for medical services strong. As this broad age group moves into the 75-and-over category after the turn of the century, the impact on medical spending for the elderly will be felt even more strongly. The shifting shares of consumption, stated in constant 1982 dollars, among the various categories of spending are shown in table 5.

**Motor vehicles and parts.** The U.S. automotive market has reached a plateau: virtually all of the macroeconomic determinants of car sales—the labor force, the number of households, and the driving-age population—are expected to grow far more slowly in the coming decade than during the past 12 years, resulting in a slower rate of growth in automobile sales. The cost of car ownership is also expected to rise with increasing gas prices throughout the projection period.

Industry trends, as well, support a slow-growth sales outlook. Loan maturities are increasing—from around 4 years in 1984 to almost 5 presently—leaving many buyers with a debt

burden greater than the value of the car for a longer period of time. In such positions of "negative equity," buyers are inclined to wait a bit longer before trading the vehicle for a new one; longer trade-in cycles and a lower scrap-page rate are a direct result. This tendency is reinforced by the manufacturer's policy of offering extended warranties, providing the buyer more comprehensive protection for a longer period of time.

Parts sales are expected to be relatively higher over the coming decade as cars are held longer. Taken together, motor vehicles and parts sales, in real terms, are expected to grow at a very moderate pace of 1.8 percent each year between 1988 and 2000, down from the much higher real sales pace of 4.1 percent annually between 1976 and 1988.

**Other durable goods.** Real spending on furniture, household equipment, and all other durable goods was by far the fastest growing component of consumer spending over the past 12 years, increasing at an average annual rate of 5.2 percent between 1976 and 1988. This situation was due to several factors. First, the baby-boom generation was in its prime household-forming stage. Second, baby-boomers developed a taste for "high-tech" consumer electronics. Finally, rapid advances in technology brought new, sophisticated electronic products into the market at lower prices.

Owing primarily to the expected slowdown in the rate of household formation, spending growth in the category of other durable goods is projected to slow dramatically over the projec-

Table 4. Gross national product as income, 1976, 1988, and projected to 2000

[Billions of current dollars, except where noted]

Category	1976	1988	2000			Percent distribution					Average annual rate of change			
			Low	Moderate	High	1976	1988	2000			1976-88	1988-2000		
								Low	Moderate	High		Low	Moderate	High
Gross national product	\$1,782.8	\$4,864.3	\$10,862.3	\$11,027.0	\$12,245.8	100.0	100.0	100.0	100.0	100.0	8.7	6.9	7.1	8.0
Net national product	1,603.6	4,357.9	9,765.2	9,924.3	11,018.1	89.9	89.6	89.9	90.0	90.0	8.7	7.0	7.1	8.0
National income	1,441.4	3,968.4	9,015.7	9,053.2	9,968.1	80.9	81.6	83.0	82.1	81.4	8.8	7.1	7.1	8.0
Compensation	1,057.9	2,904.7	6,532.1	6,613.9	7,383.8	59.3	59.7	60.1	60.0	60.3	8.8	7.0	7.1	8.1
Proprietors' income	137.7	324.5	641.7	691.8	723.9	7.7	6.7	5.9	6.3	5.9	7.4	5.8	6.5	6.9
Rental income	11.9	19.3	30.6	35.6	34.4	.7	.4	.3	.3	.3	4.1	3.9	5.2	4.9
Corporate profits	145.2	328.4	436.6	619.7	659.3	8.1	6.8	4.0	5.6	5.4	7.0	2.4	5.4	6.0
Net interest	88.8	391.5	968.6	1,178.4	1,242.7	5.0	8.0	8.9	10.7	10.1	13.2	7.8	9.6	10.1
Personal income	1,451.4	4,062.1	9,113.5	9,174.5	10,049.5	81.4	83.5	83.9	83.2	82.1	9.0	7.0	7.0	7.8
Disposable personal income	1,252.6	3,471.8	7,766.5	7,807.1	8,379.3	70.3	71.4	71.5	70.8	68.4	8.9	6.9	7.0	7.6
Billions of 1982 dollars	2,000.8	2,788.3	3,247.4	3,590.1	3,818.6	...	...	...	...	...	2.8	1.3	2.1	2.7
Per capita, current dollars	5,741.4	14,103.0	28,950.4	29,560.1	31,210.3	...	...	...	...	...	7.8	6.2	6.4	6.8
Per capita, 1982 dollars	9,170.8	11,326.0	12,076.2	13,382.5	14,223.1	...	...	...	...	...	1.8	.5	1.4	1.9

tion period, to an average rate of 2.6 percent annually. Nonetheless, the category will remain among the growth leaders of consumption. The demand for consumer electronics will remain strong, while that for most other durables, such as sporting goods, jewelry, books, boats, aircraft, and optical goods, will moderate somewhat over the next 12 years.

**Energy.** Consumer demand for gasoline and motor oil, home heating oil and natural gas, and electricity exhibited the weakest growth of all sectors of consumer demand during the period 1976–88—only 0.8 percent each year in real terms. This was due to several factors, most notably mandated miles-per-gallon targets for new cars, more efficiently designed and insulated homes, and general concern about the growing U.S. energy deficit. Although some of these factors appear to be less influential in the later period of the 1980's, the price of oil is expected to rise at a moderately strong pace during the coming decade, as many of the fears of oil embargoes are being replaced by fears of environmental degradation. Thus, the growth of energy use by consumers is expected to proceed at roughly the same pace during the remaining years of the century—0.7 percent per year.

**Food, clothing, and other nondurables.** In the short run, apparel sales can be quite volatile, depending on the match between consumers' fashion preferences and manufacturers' decisions. Long-term growth, however, is more sensitive to growth in population and income than to fashion trends, and these factors undercut clothing spending growth over the projection period. The only strength in this sector comes from a moderation in price increases, due to the slower descent of the dollar and increased domestic sourcing by the apparel industry.

While never a rapid growth category, food spending is also expected to slow in real terms. Primarily responsible for the slowdown is slower population growth, although slower income growth is expected to limit restaurant receipts growth as well.

Real spending for other nondurable goods, which include items such as drugs, toiletries, tobacco, cleaning supplies, and many other consumer items, is expected to continue to be relatively slow, although growth will probably weaken less here than for many other consumer spending categories. The shrinking number of homemakers will contribute to added spending weakness throughout this category.

**Services.** Growth in spending on housing is expected to moderate by only a very small amount. Spending on housing grew at an aver-

**Table 5. Major components of personal consumption, 1976, 1988, and projected to 2000**

Category	1976	1988	2000		
			Low	Moderate	High
<b>Constant 1982 dollars (thousands)</b>					
Total personal consumption ..	\$1,804.0	\$2,592.2	\$3,024.8	\$3,356.5	\$3,592.6
Motor vehicles .....	109.6	177.7	196.3	220.6	230.6
Other durables .....	215.0	392.4	488.1	532.5	591.9
Fuels .....	185.9	204.3	203.6	222.1	261.0
Other nondurables .....	496.1	616.7	673.4	758.1	789.1
Housing .....	273.3	366.5	447.1	471.6	502.2
Other services .....	524.1	834.6	1,016.3	1,151.6	1,217.8
<b>Percent distribution</b>					
Total personal consumption ..	100.0	100.0	100.0	100.0	100.0
Motor vehicles .....	6.1	6.9	6.5	6.6	6.4
Other durables .....	11.9	15.1	16.1	15.9	16.5
Fuels .....	10.3	7.9	6.7	6.6	7.3
Other nondurables .....	27.5	23.8	22.3	22.6	22.0
Other services .....	29.2	32.2	33.6	34.3	33.9

age annual rate of 2.5 percent between 1976 and 1988 and is projected to drop to a 2.1-percent rate of growth during the remainder of the century.

Other services present a different story, however. Spending on services other than housing accounted for the third-highest growth rate among consumer spending categories during the period 1976–88, a rate of 4.0 percent a year, falling behind only the spending rates for the two consumer durable categories. In the coming decade, slower population and income growth will contribute to a weakness in all of the consumer service categories. Offsetting this, however, is the tendency to a more service-oriented economy.

Higher income families demand increasingly more sophisticated banking and investment services. The significant jump in two-earner families and single heads of household over the last 12 years has resulted in increasing demands for all sorts of personal services—maids and child care, for example. Households have also been spending larger proportions of their income on legal services, while high-technology innovations have led to a greater array of more expensive medical services available to consumers. In short, the tendency to a more service-oriented economy will offset many of the weakening factors mentioned earlier, leading to personal consumption of services accounting for the highest rate of growth of all the consumption categories—2.7 percent each year between 1988 and 2000.

**Business investment.** This category of the GNP represents spending by businesses on equipment

and on buildings such as factories, commercial establishments, and offices. Between 1976 and 1988, fixed business investment modestly increased its share of the GNP from 10.3 to 12.4 percent, reflecting a real rate of growth of 4.4 percent each year. Like GNP as a whole, business investment is expected to grow more slowly during the next 12 years—3.0 percent real growth each year between 1988 and 2000—but it will continue to account for larger portions of the GNP. By 2000, real business fixed investment is expected to account for 13.3 percent of GNP, even while declining sharply during the two recessionary periods hypothesized for the coming decade. The mix of investment types, in constant 1982 dollars, is also projected to change in the decade ahead, as shown in table 6.

Over the past decade, fixed business investment has been increasingly devoted to replacement rather than net addition to the capital stock. This is partly a reflection of the growing importance of computers in business spending. More generally, it also represents a rise in real long-term interest rates and capital cost, which encourages investment in short-term, cost-reducing assets and discourages investment in long-term, capacity-expanding fixed assets. Because real long-term capital costs are expected to decline in the 1990's, investment in somewhat more durable assets may rise, affecting long-term labor productivity.

Spending on producers' durable equipment is expected to grow at a 3.2-percent annual real rate between 1988 and 2000, down markedly from the 5.7 percent average annual rate of growth during the prior 12 years. Despite this slowdown in growth, equipment spending should grow to 10.2 percent of GNP in 2000, up from 9.1 percent in 1988, and up even further from its surprisingly low 6.6 percent share of GNP in 1976. The role of computers in equipment spending growth cannot be overemphasized. Excluding office equipment from the producers' durable equipment figure in table 6 leaves equipment spending relatively flat in terms of its GNP share. The computer component of equipment spending is one of the chief factors responsible for boosting labor productivity.

Spending on nonresidential construction as a whole is expected to grow somewhat more rapidly during the coming decade than it did during the last 12 years, something of a different story from most categories of GNP.

The largest component of investment in structures, as a category of GNP, is investment in buildings other than public utilities and mining and petroleum drilling. The depreciation lifetimes laid down by the Economic Recovery Tax Act of 1981 led to a tax-related investment surge in offices and other commercial buildings during the early 1980's. The Tax Reform Act of 1986 removed many of the tax-shelter incentives, but not the building supply. Vacancy rates have begun to retreat from their peak, but excess capacity is not expected to be drained out of the economy until the early 1990's. Combining the modest recovery this implies after 1993 for commercial buildings with the capacity-straining improvements expected in foreign trade balances leads to this category of nonresidential construction growing at an average annual real rate of 2.3 percent between 1988 and 2000, down moderately from the 3.5-percent rate of growth attained from 1976 to 1988.

The most dramatic changes in business investment, however, have to do with the other two categories of nonresidential construction—public utilities and mining and petroleum drilling. Public utility construction has declined steadily as a share of real GNP since the early 1970's and will likely drop further before stabilizing in the early 1990's. Electric utilities overestimated demand and made excessive additions to their capacity in the 1970's and early 1980's. As a result, their capital spending has declined. However, projected growth in energy consumption is expected to absorb this excess capacity by the early 1990's, resulting in a resurgence of growth thereafter. This modest real growth, projected at an annual average rate of 1.5 per-

Table 6. Categories of investment, 1976, 1988, and projected to 2000

Category	1976	1988	2000		
			Low	Moderate	High
<b>Constant 1982 dollars (thousands)</b>					
All investments	\$453.6	\$721.8	\$910.5	\$956.2	\$1,207.3
Nonresidential	290.6	487.5	666.3	697.1	892.3
Producers' durable equipment	186.2	362.4	519.8	530.1	698.0
Structures	104.4	125.1	146.6	167.0	194.3
Public utilities	29.9	25.3	26.7	30.4	37.7
Mining and petroleum	20.9	18.8	28.7	30.5	41.4
Other	53.7	81.0	91.2	106.1	115.2
Residential	140.8	191.8	227.0	244.9	275.4
Inventory change	22.2	42.5	17.2	14.2	39.6
<b>Percent distribution</b>					
All investments	100.0	100.0	100.0	100.0	100.0
Nonresidential	64.1	67.5	73.2	72.9	73.9
Producers' durable equipment	41.0	50.2	57.1	55.4	57.8
Structures	23.0	17.3	16.1	17.5	16.1
Public utilities	6.6	3.5	2.9	3.2	3.1
Mining and petroleum	4.6	2.6	3.2	3.2	3.4
Other	11.8	11.2	10.0	11.1	9.5
Residential	31.0	26.6	24.9	25.6	22.8
Inventory change	4.9	5.9	1.9	1.5	3.3

cent between 1988 and 2000, will be just adequate to maintain the category of investment in public utilities' share of real GNP at 0.6 percent.

The category of investment in mining and petroleum drilling activity is also currently felt to be near a trough, with some prospect for a turnaround possible as oil prices increase throughout the 1990's. Moderate growth is expected to occur during the decade.

*Residential investment.* From 1976 to 1988, a pent-up demand for housing resulting from the high mortgage rates of the late 1970's and early 1980's, combined with favorable tax incentives for rental property, kept new construction running at a rapid 1.732 million starts per year, on average. The Tax Reform Act of 1986 and the satisfaction of much of the pent-up demand, however, reduced starts in the late 1980's. The general slowdown in population growth and its subsequent effect on household formation rates, together with the two business cycle troughs hypothesized to occur during the 1990's, are expected to further restrict new housing construction, leading to an average of 1.315 million housing starts per year between 1988 and 2000.

Although fewer households will be formed during the 1990's, due primarily to the sharp drop in birth rates in the 1960's, the growth in the population ages 35 to 64 will continue to accelerate, resulting in a continuing shift of buyers into the tradeup market. Thus, new homes will increase in size and are generally expected to increase in quality as well, leading to an increase in the average real value of a housing unit during the coming decade. This will offset, to some extent at least, the demographic-induced slowdowns in housing starts. Real spending on residential investment, which grew at an average annual rate of 2.6 percent between 1976 and 1988, is expected to moderate only slightly, to 2.1 percent, between 1988 and 2000.

*Foreign trade.* The U.S. foreign trade position, along with the Federal deficit, is currently one of the most difficult economic problems facing the economy. Imports of goods and services are determined in the BLS projection model by spending on domestic goods and by relative prices, that is, the prices of imported goods relative to comparable domestic producer prices. Exports are a function of foreign industrial production and relative prices. For both imports and exports, relative prices are adjusted for exchange rate fluctuations. The trade deficit during the 1980's jumped from \$11 billion in 1976 to almost \$140 billion in 1986.

Many factors have been cited as contributing

to the trade deficit: trade barriers abroad, the alleged poor quality of U.S. goods, the emergence of the newly industrializing East Asian nations, and a shortfall in U.S. national saving caused by an increase in Federal Government dissaving (that is, spending in excess of revenues) combined with a reduction in private saving, to name just a few. Not unimportant during the period of the late 1970's was the large increase in the value of the dollar vis-a-vis the currencies of our major trading partners, a development which led to relatively cheaper imports and a consequent rise in the trade deficit. In 1987, the value of the dollar dropped sharply, and it has continued to decline by more moderate amounts since that time. The moderate-growth BLS projection holds that this trend to a lower valued dollar will continue throughout the projection period. The initial effects of the devaluation were a worsening of the trade deficit as imports suddenly became more expensive.<sup>7</sup> Over the long run, however, consumers and businesses are expected to adjust their spending patterns, leading to marked slowdowns in import growth.

As noted previously, consumer spending is expected to moderate in growth and slowly to account for a more normal share of GNP, thus boosting private saving over the coming decade to some extent. More importantly, it has been assumed that considerable fiscal restraint will be exercised in the early to mid-1990's, resulting in a decline in the Federal deficit. Finally, foreign economic activity is expected to proceed at generally higher rates of growth than U.S. industrial production, thus providing a spur to export growth, especially in the area of manufacturing machinery, goods in which the United States excels.

The net effect of the preceding factors is a trade deficit that is projected to come into balance in real terms near the middle of the decade. Nominal trade flows then reach a balance a few years later. Note, however, that, perhaps more than any other component of the GNP, foreign trade is most critically linked to fiscal assumptions. Thus, small changes in the Federal deficit in the future, relative to the projected levels in the BLS analysis, or changes in relative exchange rates, could result in significant differences in the foreign trade figures. Table 7 details the foreign trade growth rates, both actual and projected, for major end-use categories.

Note from the table that it is not a speedup in the growth of exports but rather a sharp dropoff in the rate of growth of imports, especially of durable goods, which accounts for the projected improvement in the U.S. trade balance during the coming decade. This is most apparent in

*Business investment is expected to grow more slowly during the next 12 years, but it will continue to account for larger portions of the GNP.*

automotive imports. As foreign auto producers choose to locate production facilities in this country, their output becomes a domestic product in the eyes of the national income accountants, thus lowering import growth and at the same time increasing our exports—that is, to the extent that these U.S. production facilities are used to satisfy automotive demand in other countries.

**Government.** Since the tax cuts of 1981, the Federal budget deficit has reversed an earlier trend toward lower levels and increased rapidly, peaking at \$205.6 billion in 1986.<sup>8</sup> Thereafter, cutbacks in spending growth and a general increase in tax collections led to a lower, but still high, Federal deficit—just more than \$152 billion in 1988.

The economic growth expected for the coming decade will not be enough, by itself, to eliminate the remaining deficit. For that reason, moderation is seen over the next 12 years in both defense and nondefense spending, in grants to States and localities, and in various transfer programs. Additionally, effective personal tax rates are expected to creep upward as proportionately more income reaches higher tax rates, attaining historically high levels toward the end of the decade.

All of these efforts are projected to lead to a balanced Federal budget relatively late in the century, as table 8 shows.

On the State and local government side, it is expected that the trend toward tax-limiting referendums prevalent during the 1980's will gradually ease as people increase the demand for

services provided at the State or local level. Because grants-in-aid from the Federal Government will continue to account for smaller and smaller shares of State spending needs, the increased program spending will, in large part, be paid for by the States' own resources. Table 9 shows selected State budgetary items as a percent of GNP for 1976 and 1988 and projected to 2000.

**Labor productivity.** In the long run, growth in living standards is determined by the rate of growth of productivity. Between 1988 and 2000, labor productivity<sup>9</sup> growth is expected to average 1.0 percent per year, up from the 0.7-percent average growth during the previous 12-year period, but about in line with growth in labor productivity from 1964 to 1976.

The projected improvement in labor productivity growth results partly from faster growth in capital stock per worker. Labor force growth slows from 2.0 percent annually between 1976 and 1988 to 1.2 percent per year between 1988 and 2000, due to slower growth in both the population and labor force participation rates. By devoting an increasing share of real national output to capital investment, though, the annual growth rate of the effective private nonresidential capital stock increases to 3.5 percent from 3.3 percent, on average. In addition, the composition of the labor force becomes more favorable as the baby-boom generation moves into its prime working years, boosting the average experience and educational level of the work force and, therefore, its productivity.

**Income.** There are no surprising shifts in income distribution in the moderate-growth projection. Personal income accounts for a slightly smaller share of GNP in 2000 than in 1988, as does disposable personal income, reflecting primarily the shift back to a more normal share for income and spending on the personal side than the high levels of the mid-1980's. As effective tax rates continue to increase throughout the projection period, relatively less income remains for consumption.

Real per capita disposable income is expected to reach \$13,383 by 2000, reflecting a slowdown in growth from the 1976–88 period. The personal savings rate is anticipated to range between 5 and 6 percent during the next 12 years, a significant improvement over the low savings rates of the 1982–88 period of time.

In summary, the moderate-growth scenario suggests a growing economy characterized by an improving Federal deficit, a return to somewhat higher productivity growth, and the prospect of an improvement in foreign trade deficits during the coming decade. Although

Table 7. Foreign trade, 1976, 1988, and 2000 (moderate projection), and growth rates, 1976–88 and 1988–2000 (moderate projection)

Category	Year			Growth rate (percent)	
	1976	1988	2000	1976–88	1988–2000
Exports (billions of 1982 dollars)	\$274.5	\$504.8	\$879.9	5.2	4.7
Foods, feeds, and beverages	22.8	33.8	49.9	3.3	3.3
Industrial supplies	47.2	79.9	129.5	4.5	4.1
Capital goods	61.1	146.5	321.6	7.6	6.8
Automotive	24.5	28.6	49.4	1.3	4.7
Consumer goods	22.1	56.0	96.2	8.1	4.6
Services	96.8	160.0	233.3	4.3	3.2
Imports (billions of 1982 dollars)	285.6	595.7	829.0	6.3	2.8
Food, feeds, and beverages	16.6	22.5	23.1	2.6	.2
Industrial supplies	46.7	73.4	102.3	3.8	2.8
Petroleum	90.7	83.8	144.4	–7	4.6
Capital goods	16.2	122.7	151.1	18.4	1.8
Automotive	30.6	65.6	78.2	6.6	1.5
Consumer goods	28.7	93.9	118.5	10.4	2.0
Services	56.1	133.8	211.4	7.5	3.9
Trade balance	–11.0	–90.9	50.8	...	...



**Table 8. Federal budget (expenditure and receipts), as a percent of GNP, 1976, 1988, and 2000 (moderate projection)**

Category	Percent of nominal GNP		
	1976	1988	2000
Expenditures .....	22.1	23.2	20.5
Goods and services .....	7.7	8.0	5.6
Transfer payments .....	9.2	9.1	9.7
Net interest .....	1.5	3.2	.3
Other spending .....	3.7	2.9	4.9
Receipts .....	19.1	20.1	20.6
Personal taxes .....	8.3	8.5	9.6
Corporate taxes .....	3.1	2.3	1.4
Indirect business taxes .....	1.3	1.2	.8
Social insurance .....	6.4	8.1	8.8
Surplus or deficit (-) .....	-3.0	-3.1	.1

growth will be slower than in the past 12 years, it is primarily a reflection of a slower rate of population growth, rather than any inherent weakness in the economy.

### Alternative projection scenarios

The high- and low-growth projection scenarios mentioned earlier set bounds around the moderate-growth projection just described. These alternatives were estimated on the basis of differing sets of assumptions, as outlined in Table 2.

The low-growth projection was designed primarily to get a look at what the decade of the 1990's would be like if many problems that exist today were to persist without much improvement. Critical assumptions in this scenario include supply factors constraining the economy's ability to expand and below-trend growth in the labor force, capital stock, and productivity. Further, inflation steadily regains momentum in the 1990's and remains above trend for almost all of the projection period. Combined with a presupposition of deeper recessions and relatively sluggish recoveries, this leads to a real GNP more than \$450 billion lower in 2000 than in the moderate-growth projection, with employment lower by 5 million.

The high-growth projection, on the other hand, assumes strong growth in labor force participation, higher population levels, a major shift toward the production of investment goods, and a general moderation of inflation. The result is a GNP of \$5.8 trillion in 2000, \$618 billion higher than in the moderate projection. The sustained growth leads to an unemployment rate of 4.0 percent in 2000, implying 5 million

more employed persons that year than in the moderate-growth projection.

The two alternatives to the moderate-growth projection encompass a \$1.1 trillion spread in real GNP, a 9.4 million-person difference in the civilian labor force, and a 13.4 million divergence in the number of employed persons. Major demand category summaries are given in table 3, and income comparisons are presented in table 4.

*Low-growth projection.* In the low-growth projection, the major factors affecting potential GNP growth include the labor force, projected to grow 1.0 percent a year between 1988 and 2000, and attaining a level about 300,000 persons lower in 2000 than in the moderate-growth projection; labor productivity, projected to grow at a rate of 0.8 percent a year over the projection period, as compared with 1-percent growth in the moderate-growth projection; and nonresidential capital stock, with an annual growth of 1.8 percent, well below the expected annual growth of 2.6 percent in the moderate-growth projection. A fourth significant factor lending itself to the sluggish economic performance in the low-trend projection is the inflation rate. Assumed to increase at an average annual rate of 4.7 percent between 1988 and 2000 in the moderate-growth projection, the implicit GNP deflator grows at a much higher rate of 6.2 percent each year in the low-growth scenario, reminiscent of the high inflation-low growth phenomenon of the 1970's.

Over the projection period, real consumer spending grows at an average annual rate of 1.5 percent, as compared with the 2.2-percent growth of consumption in the moderate-growth projection. Higher interest rates and lower in-

**Table 9. State budgets (expenditures and receipts), as a percent of GNP, 1976, 1988, and 2000 (moderate projection)**

Category	Percent of nominal GNP		
	1976	1988	2000
Expenditures .....	14.3	13.3	13.5
Goods and services .....	12.4	12.0	12.3
Other spending .....	1.9	1.3	1.2
Receipts .....	15.2	14.5	15.4
Personal taxes .....	2.9	3.7	4.6
Corporate taxes .....	.5	.6	.5
Indirect business taxes .....	7.2	6.8	7.1
Social insurance .....	1.1	1.1	1.1
Grants-in-aid .....	3.5	2.3	2.1
Surplus .....	.9	1.2	1.9

come growth result in particularly adverse effects on durable goods spending, with autos and housing showing the chief slowdowns. In spite of the sharp reduction in growth, however, consumer spending is expected to maintain the high share of GNP that it had in the 1980's, thus continuing to exacerbate the problem of low consumer savings and its ultimate effect on investment and productivity growth.

The less favorable economic conditions in the low-growth projection severely curtail investment. In this scenario, total investment is expected to grow at a rate of only 1.8 percent per year between 1988 and 2000, less than half the 4.4-percent rate of growth enjoyed by this component of GNP during the prior 12 years, and considerably lower than the 2.4-percent rate of growth projected in the moderate-growth alternative.

All of these factors result in a foreign trade deficit that continues to improve slowly over the decade, but at a much slower rate than in the other alternatives presented, and a stubborn Federal deficit of \$132 billion in 2000, still accounting for just over 1 percent of nominal GNP.

*High-growth projection.* In the high-growth projection, output growth is spurred by higher population and a slightly higher labor force participation rate, resulting in labor force growth of 1.6 percent annually between 1988 and 2000. A lower inflation rate in a dynamic, strengthened economy, stemming from both lower energy price increases and a better ability to respond to growing demand pressures, results in much higher capital accumulation—4.5 percent annual growth over the projection period. Consequently, labor productivity is expected to grow

by 1.4 percent a year, double its growth rate between 1976 and 1988.

Personal consumption spending is projected to grow at a more rapid rate—2.8 percent annually over the projection horizon—in the high-growth projection than in the moderate-growth scenario, but the tendency to high consumption seen in the other alternatives is no longer present in the high-growth alternative. Consumer spending declines to a 61.5-percent share of GNP, the lowest share since the early 1960's, as income growth outpaces the consumer's desire to spend extra income. Overall, consumption is higher in all categories, but the greatest impact of high income growth is felt in durable goods, primarily autos and housing.

Investment growth runs at a high 4.4 percent over the decade of the 1990's, equaling investment growth in the prior period from 1976 to 1988. However, a larger portion of this growth is focused on equipment spending, whereas much of the growth during the former period was centered on office buildings and other structure-type investments with a smaller potential impact on labor productivity. The strong growth, together with its impact on the productive capital stock, is due primarily to the lower inflation, nonexistent Federal deficit, and lower interest rates that prevail in the high-growth projection. These same factors also have a significant impact on exchange rates and the consequent growth in demand for exports. Although domestic demand for imported goods continues at a brisk pace, imports are expected to grow less rapidly than during the period of the 1980's, while exports are projected to increase very rapidly relative to the same period, resulting in a goods and services surplus in real terms of \$78 billion in 2000. □

## Footnotes

<sup>1</sup> September 1987; the series of five related articles was titled "Projections 2000."

<sup>2</sup> See Data Resources, Inc., "The DRI Annual Model of the U.S. Economy," *U.S. Long Term Review*, Winter 1986-87, pp. 30-42.

<sup>3</sup> For a detailed description of the analytical methodology used, see Norman C. Saunders, "Sensitivity of the BLS economic projections to exogenous variables," *Monthly Labor Review*, December 1986, pp. 23-29. The same type of analysis of the DRI long-term model has been carried out, but the results have not yet been published.

<sup>4</sup> *Projections of the Population of the United States, 1987 to 2080, Current Population Reports*, Series P-25, No. 1018 (Bureau of the Census, 1989).

<sup>5</sup> See Howard N. Fullerton, Jr., "New labor force projections, spanning 1988-2000," *Monthly Labor Review*, November 1989, pp. 3-12.

<sup>6</sup> See *Annual Energy Outlook 1987* (U.S. Department of

Energy, 1988). Every year, the Department of Energy publishes a range of alternative energy scenarios. Those consistent with BLS estimates of GNP and inflation were chosen for the DRI model.

<sup>7</sup> For a full discussion of this phenomenon, see J. A. Rosenswig and P. D. Koch, "The U.S. Dollar and the 'Delayed J-Curve,'" *Economic Review*, July-August 1988, pp. 2-15.

<sup>8</sup> All references to Federal budget deficits in this article refer to the National Income and Product Accounts concept of the deficit, formulated on an annual, calendar-year basis.

<sup>9</sup> Labor productivity, in these projections, is represented by real GNP per employee. Based on historical relationships between GNP and the business sector, the Office of Productivity and Technology of the Bureau of Labor Statistics has estimated that the 1.0-percent growth in GNP per employee between 1988 and 2000 adjusts to a 1.3- to 1.4-percent rate of growth in output per hour in the private business sector, the more traditional historical measure of labor productivity.



## Industry output and employment: a slower trend for the nineties

*Of the 18 million new jobs expected by 2000,  
the service-producing sector will dominate,  
with about half added to retail trade,  
health services, and business services*

Valerie A. Personick

**T**he U.S. economy is projected to add another 18 million jobs by the year 2000, an average of 1.5 million per year from 1988. This rate of growth is slower than in the past, when annual job gains averaged 2.3 million over a comparable 12-year period. Slower growth is directly tied to the expectation of less labor force expansion over the next decade.

The 18 million new jobs are expected to be added primarily in the service-producing sector. In contrast, manufacturing employment is projected to shrink slightly, from 19.4 million in 1988 to 19.1 million at the turn of the century. Among the service-sector leaders, retail trade is expected to add 3.8 million jobs; private health services, 3.0 million; and business services, 2.7 million. Government employment, especially in public schools and in State and local safety and general government functions, is also projected to add about 1.6 million new jobs. Despite these gains, the rate of growth for all these divisions from 1988 to 2000 is much slower than that between 1976 and 1988.

Total job growth averaged 2.3 percent a year from 1976 to 1988, but is only expected to average 1.2 percent annually through 2000. Job growth parallels the projected growth in the labor force. Details are in the article by Howard N Fullerton on pp. 3-12, but in broad terms, a slowdown in labor force growth projected for

the nineties is a continuation of a trend that started in the late 1970's, as the baby-boom generation became fully absorbed into the labor force. Coupled with the smaller numbers of new, young workers during the next decade is the expectation of a slowdown in the rate of increase of female labor force participation.

Assumptions about the overall level of economic activity, which are also key factors underlying the industry output and employment projections, are in the article by Norman C. Saunders on pp. 13-24. Economic growth, as measured by real gross national product, is projected to average 2.3 percent a year between 1988 and 2000, and the unemployment rate is projected to be 5.5 percent. Strong gains are especially projected for exports, leading to strength in the manufacturing sector.

Three alternative scenarios were projected for 2000: a base, or moderate case; a low-growth alternative; and a high-growth alternative. The data discussed in this article pertain mainly to the moderate case scenario, with a section at the end describing the low and high projections.

### Employment in major industries

Total employment is projected to rise from 118 million in 1988 to 136 million by the turn of the century. (See table 1.) Most of these jobs, 122

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million, will be wage and salary jobs in the nonfarm sector. Of the rest, 3 million are projected in agriculture (a slight decline from the 1988 level), and almost 10 million represent nonfarm self-employed and unpaid family workers. The number of self-employed is projected to grow at about the same pace as wage and salary employment—both substantially slower than in the previous 12 years. Service-producing industries are projected to rise to 79.0 percent of all nonfarm wage and salary jobs, compared with 75.9 percent in 1988. Goods-producing industries are expected to lose in em-

ployment share, as they have done for decades.

Among the major industry divisions, services will continue to dominate the job growth picture. Employment in the services division is projected to rise from 25.0 million in 1988 to 33.7 million in 2000. This increase accounts for almost one-half of all the new jobs added. The services division encompasses such diverse categories as health, business, personal, and recreational services, among others. Health and business services alone, the two largest, are projected to employ more than 18 million by the year 2000, an increase of almost one-third over

**Table 1. Employment by major industry division, 1976, 1988, and projected to 2000**

[Numbers in thousands]

Industry	1976	1988	2000			Change, 1988-2000			
			Low	Moderate	High	Low	Moderate	High	
Total	89,942	118,104	127,118	136,211	144,146	9,014	18,107	26,042	
Nonfarm wage and salary	79,080	104,960	114,154	122,056	128,998	9,194	17,096	24,038	
Goods-producing	23,358	25,252	23,512	25,680	27,785	-1,740	428	2,533	
Mining	779	721	656	705	827	-65	-16	106	
Construction	3,576	5,125	5,504	5,885	6,318	379	760	1,193	
Manufacturing	19,003	19,406	17,352	19,090	20,640	-2,054	-316	1,234	
Durable	11,080	11,436	10,160	11,220	12,255	-1,276	-216	819	
Nondurable	7,923	7,970	7,192	7,870	8,385	-778	-100	415	
Service-producing	55,722	79,708	90,642	96,376	101,213	10,934	16,668	21,505	
Transportation and utilities	4,583	5,548	5,713	6,096	6,587	165	548	1,039	
Wholesale trade	4,546	6,029	6,463	6,936	7,457	434	907	1,428	
Retail trade	13,208	19,110	21,251	22,875	23,812	2,141	3,765	4,702	
Finance, insurance, and real estate	4,271	6,677	7,306	7,762	8,104	629	1,085	1,427	
Services	14,243	24,971	31,644	33,718	35,258	6,673	8,747	10,287	
Government	14,871	17,373	18,265	18,989	19,995	892	1,616	2,622	
Agriculture	3,371	3,259	2,797	3,125	3,315	-462	-134	56	
Private households	1,398	1,163	1,014	1,103	1,166	-149	-60	3	
Nonfarm self-employed and unpaid family	6,093	8,722	9,153	9,927	10,667	431	1,205	1,945	
	Percent distribution of wage and salary employment					Annual rate of change			
	1976	1988	2000			1976-88	1988-2000		
			Low	Moderate	High		Low	Moderate	High
Total	—	—	—	—	—	2.3	.6	1.2	1.7
Nonfarm wage and salary	100.0	100.0	100.0	100.0	100.0	2.4	.7	1.3	1.7
Goods-producing	29.5	24.1	20.6	21.0	21.5	.7	-.6	.1	.8
Mining	1.0	.7	.6	.6	.6	-.6	-.8	-.2	1.1
Construction	4.5	4.9	4.8	4.8	4.9	3.0	.6	1.2	1.8
Manufacturing	24.0	18.5	15.2	15.6	16.0	.2	-.9	-.1	.5
Durable	14.0	10.9	8.9	9.2	9.5	.3	-1.0	-.2	.6
Nondurable	10.0	7.6	6.3	6.4	6.5	.0	-.9	-.1	.4
Service-producing	70.5	75.9	79.4	79.0	78.5	3.0	1.1	1.6	2.0
Transportation and utilities	5.8	5.3	5.0	5.0	5.1	1.6	.2	.8	1.4
Wholesale trade	5.7	5.7	5.7	5.7	5.8	2.4	.6	1.2	1.8
Retail trade	16.7	18.2	18.6	18.7	18.5	3.1	.9	1.5	1.9
Finance, insurance, and real estate	5.4	6.4	6.4	6.4	6.3	3.8	.8	1.3	1.6
Services	18.0	23.8	27.7	27.6	27.3	4.8	2.0	2.5	2.9
Government	18.8	16.6	16.0	15.6	15.5	1.3	.4	.7	1.2
Agriculture	—	—	—	—	—	-.3	-1.3	-.3	.1
Private households	—	—	—	—	—	-1.5	-1.1	-.4	.0
Nonfarm self-employed and unpaid family	—	—	—	—	—	3.0	.4	1.1	1.7

NOTE: Dash indicates data not available.

their current levels. The rate of growth for services, however, is much slower than it has been in the past. Job growth is projected to average 2.5 percent a year between 1988 and 2000, compared with 4.8 percent a year during the 1976–88 period.

Retail trade will be the second largest of the major divisions by 2000, surpassing manufacturing as a source of employment. Retail jobs are projected to increase by 3.8 million between 1988 and 2000, raising employment in this sector to 22.9 million. Again, the projected rate of 1.5 percent is much lower than the 3.1 percent experienced between 1976 and 1988.

Many jobs in retail trade are part time. Average weekly hours were 30.0 in retail trade in 1988, compared with 40.6 in manufacturing. A problem in finding workers willing to work part time exists in many local labor markets and may persist through part of the next decade, as the size of the youth labor pool shrinks and more and more women seek full-time careers. Consequently, the steady drop in the retail workweek, evident for decades, is projected to taper in the nineties.

The government division is projected to add 1.6 million jobs, virtually all at the State and local level. An increase in school enrollments over the next few years is expected to result in 945,000 new jobs in public education. Federal civilian employment has been virtually flat for the past 20 years at 2.7–3.0 million, and is projected to remain at about that level through the end of the century.

Other service-producing industries are projected to add 2.5 million jobs—1.1 million in finance, insurance, and real estate, 907,000 in wholesale trade, and 548,000 in transportation, communications, and public utilities. Like the other major divisions, the rate of job gain expected during 1988–2000 is only about half the pace of the previous 12 years.

Within the goods-producing sector of the economy, manufacturing jobs are projected to decline slightly, to 19.1 million in 2000. At the trough of the last recession in 1983, manufacturing jobs dropped to 18.4 million, and many feared the sector would never recover. Restructuring, plant closings, and layoffs dominated the news. Trade imbalances in 1984–86 exacerbated these problems and prevented manufacturing from bouncing back as the rest of the economy picked up steam. The value of the dollar began to fall from its unprecedented high, however, and by mid-1987 the trade balance improved. Both production and jobs in manufacturing industries began to expand, even in sectors previously identified as long-term losers. In 1988, manufacturing employment re-

covered to 19.4 million.

Despite this recent healthy growth, the factory job level is still below the 1979 peak of 21 million, and is not projected to climb much higher than current levels. Many of the closed plants were the older, inefficient ones, and while no additional massive closings are anticipated, it is unlikely that tomorrow's factories will employ as many workers as in the 1970's. Production, however, is projected to show very healthy growth during the 1988–2000 period, boosted by an export expansion of 4.7 percent a year. Real output of U.S. manufacturing is projected to grow 2.3 percent a year (2.9 percent for durable goods), in line with the economy as a whole. (See table 2.)

The modest decline projected in factory jobs masks a pronounced shift occurring in the occupational distribution of manufacturing employment to more highly-skilled jobs. While the total employment loss is projected at only 316,000, operator, fabricator, and laborer occupations are projected to lose 714,000 jobs and precision production workers (especially assemblers and inspectors), 137,000. Losses will also be registered for administrative support and service occupations. Partially offsetting these declines are gains in professional occupations (especially engineers), executive and management positions, marketing and sales, and technicians. (For more detail on occupational projections, see the companion article by George Silvestri and John Lukasiewicz on pp. 42–65.)

Among other goods-producing sectors, construction is projected to add 760,000 jobs between 1988 and 2000, to reach the 5.9-million level. Construction activity is expected to expand at a 2.1-percent annual pace, slower than the average rate between 1976 and 1988. Growth rates will vary significantly, however, for the different types of construction. The current slump in industrial building construction is expected to reverse during the nineties as growing manufacturing industries invest in the most up-to-date factory technologies. Present oversupplies of office and commercial space are expected to be absorbed by the early 1990's, and construction of these facilities will then experience an upturn. The slowdown in growth of the general population, as well as in the formation of new households, will limit residential construction, especially for single family homes.

### Medical care

Health care will continue to be one of the most important industry sectors in the economy. Data from the Health Care Financing Administration show that total expenditures for health care

*Total job growth averaged 2.3 percent a year from 1976 to 1988, but is only expected to average 1.2 percent annually through 2000.*

(both public and private) topped 11 percent of current-dollar gross national product in 1987, and may rise to 15 percent by the end of the century.<sup>1</sup> The more narrowly defined BLS projections show that output of private health care services (in constant-dollar terms) rose from 3.3 percent of gross duplicated output in 1977 to 3.7 percent in 1988, and will grow to 4.2 percent by 2000.<sup>2</sup> Under either measure, health care is a significant and growing portion of the U.S. economy.

In job terms, this significance is amplified. Employment in the private health services industries rose from 4.4 million in 1976 (or 1 of every 18 wage and salary jobs) to 7.1 million in 1988 (1 of every 15), and is projected to grow to 10.1 million by 2000 (representing 1 of 12 jobs). The increase in health care jobs between 1988 and 2000 accounts for more than one-sixth of the total payroll job growth projected.

One of the most significant differences between the shares of output developed by the Health Care Financing Administration and those used by BLS in this analysis is that the former are in current dollars while the latter are adjusted for price increases. Medical care prices have consistently risen faster than the average for all goods and services, and this has been a major factor leading to recent cost containment efforts. Over the 1965-80 period, the Consumer Price Index rose 6.6 percent a year for all items, but 8.3 percent for medical services.

Because of burgeoning costs, government and private health insurance programs instituted

a series of measures in the early 1980's to try to hold down outlays. The medicare prospective payment system limiting government reimbursement of hospital procedures, as well as restrictions by private health insurers, forced a slowdown in health care price increases and also led to a major transformation of the health care industry. Procedures formerly conducted on an inpatient-basis in higher cost facilities such as hospitals shifted to lower cost centers such as outpatient facilities and clinics. Hospital utilization dropped sharply, as measured by admissions and inpatient days. The average patient stay declined from 7.1 days in 1982 to 6.4 days by 1987.<sup>3</sup> Releasing patients earlier led to a surge in demand for nursing home and home health care. In addition, diagnostic testing previously done in hospitals became more frequently performed at a lower cost by independent labs which can test large batches of specimens. Consumers have turned to health maintenance organizations (HMO's) in record numbers to hold down their own medical insurance costs. From 1982 to 1988, enrollments in HMO's increased from 10.8 million to 29.3 million.<sup>4</sup>

The output and employment data on the individual health care industries clearly illustrate this dramatic shift. Output (in constant 1982 dollars) rose almost three times faster in outpatient facilities (that is, HMO's and group health associations, diagnostic testing services, home health agencies, visiting nurses associations, and other related medical services) than in hos-

Table 2. Output by major industry division (gross duplicated output), 1976, 1988, and projected to 2000

[Billions of 1982 dollars]

Industry	1976	1988	2000			Percent distribution					Annual rate of change			
			Low	Moderate	High	1976	1988	2000			1976-88	1988-2000		
								Low	Moderate	High		Low	Moderate	High
Total	\$5,319.6	\$7,290.1	\$8,702.1	\$9,531.7	\$10,671.6	100.0	100.0	100.0	100.0	100.0	2.7	1.5	2.3	3.2
Goods-producing	2,468.7	3,168.4	3,705.7	4,099.2	4,702.5	46.4	43.5	42.6	43.0	44.1	2.1	1.3	2.2	3.3
Mining	223.3	220.9	211.6	238.0	273.5	4.2	3.0	2.4	2.5	2.6	-1	-4	.6	1.8
Construction	355.6	482.9	568.5	622.1	692.5	6.7	6.6	6.5	6.5	6.5	2.6	1.4	2.1	3.0
Manufacturing	1,889.8	2,464.6	2,925.6	3,239.1	3,736.5	35.5	33.8	33.6	34.0	35.0	2.2	1.4	2.3	3.5
Durable	945.3	1,286.8	1,617.4	1,803.2	2,152.9	17.8	17.7	18.6	18.9	20.2	2.6	1.9	2.9	4.4
Nondurable	944.5	1,177.8	1,308.2	1,435.9	1,583.6	17.8	16.2	15.0	15.1	14.8	1.9	.9	1.7	2.5
Service-producing	2,676.1	3,932.4	4,781.7	5,197.1	5,711.7	50.3	53.9	54.9	54.5	53.5	3.3	1.6	2.4	3.2
Transportation and utilities	470.1	607.7	738.1	803.7	907.0	8.8	8.3	8.5	8.4	8.5	2.2	1.6	2.4	3.4
Wholesale trade	263.4	415.6	530.4	582.6	671.4	5.0	5.7	6.1	6.1	6.3	3.9	2.1	2.9	4.1
Retail trade	363.4	552.6	646.8	712.9	770.2	6.8	7.6	7.4	7.5	7.2	3.6	1.3	2.1	2.8
Finance, insurance, and real estate	591.0	861.8	1,057.1	1,137.2	1,229.7	11.1	11.8	12.1	11.9	11.5	3.2	1.7	2.3	3.0
Services	609.6	1,035.0	1,320.0	1,440.5	1,571.1	11.5	14.2	15.2	15.1	14.7	4.5	2.0	2.8	3.5
Government	378.6	459.7	489.3	520.2	562.3	7.1	6.3	5.6	5.5	5.3	1.6	.5	1.0	1.7
Agriculture	166.4	180.2	205.5	225.4	246.8	3.1	2.5	2.4	2.4	2.3	.7	1.1	1.9	2.7
Private households	8.4	9.1	9.2	10.0	10.6	.4	.3	.2	.2	.2	.7	.1	.8	1.3

pitals. Following are output and employment indexes of the detailed health care industries:

	Index (1982 = 100)		
	1984	1986	1988
<b>Output:</b>			
Offices of health practitioners .....	107.1	113.9	122.4
Nursing and personal care facilities .....	106.3	120.6	128.1
Hospitals .....	104.1	110.6	121.3
Outpatient and related ...	121.1	149.4	161.6
<b>Employment:</b>			
Offices of health practitioners .....	111.2	122.3	136.3
Nursing and personal care facilities .....	107.6	116.9	123.6
Hospitals .....	99.6	100.8	109.5
Outpatient and related ...	123.6	158.7	181.0

In employment terms, the shift toward outpatient services has been even more pronounced. Jobs in private hospitals rose about 10 percent between 1982 and 1988; in doctors' offices, 36 percent; and in outpatient facilities, 81 percent. Despite the much slower rate of growth, however, hospitals remain the largest employer among the medical services industries, with 3.3 million workers.

The 10-percent increase in hospital employment between 1982 and 1988 all occurred only within the last 2 years. After 7 years of virtually no growth, more than 150,000 jobs were added to private hospitals in 1988 alone. This indicates that the pressures of rising demand for hospital services may eventually have to be accommodated. Demand pressures stem from several factors, some of which are expected to intensify in the future: new medical technologies, a rapidly growing aged population, and treatment of AIDS patients.

New technologies are the most important factor in boosting the demand for health services. Because of advances, patients are likely to undergo more tests and diagnostic procedures, take more drugs, see more specialists, and be subjected to more aggressive treatments than before. Medical intervention will be possible for conditions previously undiagnosed or regarded as untreatable. The use of sophisticated and expensive new equipment, labor-intensive acute care, and multiple doctors' visits and lab tests is bound to accelerate.

Persons over age 75 are significantly higher users of hospital services than those under 75; they are hospitalized more frequently and stay longer. In addition, the rapidly growing population age 85 and older uses twice as many hospital days per capita than do persons ages 65 to

74.<sup>5</sup> One reason for this is the presence of multiple health problems in the very old, which causes much longer hospital stays. The 75-to-84 age group will expand in numbers from 9.5 million in 1988 to 12.0 million in 2000. The number of persons age 85 and older will increase from 3.0 million to more than 4.6 million. Both of these groups are growing much faster than the total population.<sup>6</sup>

The ability or willingness of the economy to pay for the new technologies and for the care of the aged clearly leads to uncertainty about the future level of medical services. In the moderate case scenario, hospital output is projected to grow an average of 3.3 percent per year between 1988 and 2000 and employment, 2.1 percent, the slowest growth of the four private medical services industries. (See table 3.) The fastest growing medical care sector will be outpatient facilities and related health services. The projection for this industry is 4.6 percent annual growth in real output and 4.7 percent in jobs, ranking this industry fifth in output growth and second in employment growth among all the 226 industries used by BLS in projecting output and employment. (See table 4.) Offices of health practitioners are projected to add jobs at a 3.5-percent yearly rate, and nursing homes and personal care facilities at a 3.1-percent pace. These employment growth rates for medical service industries, while higher than for most other industries, are below historical trends because of continued cost-cutting pressures.

In terms of absolute levels, more jobs will be added in the offices of health practitioners than in hospitals, despite the relatively larger size of hospital employment. Together, the four private

**Table 3. Profile of private health industries, 1988-2000**

[Levels in thousands]

Industry	Employment			Annual rate of change	
	1988	2000	Gain, 1988-2000	Employment	Output
Total health services .....	7,144	10,139	2,995	3.0	3.3
Offices of health practitioners .....	1,850	2,810	960	3.5	2.7
Offices of physicians .....	1,146	1,843	697	4.1	—
Offices of dentists .....	486	575	89	1.0	—
Other .....	218	391	173	5.0	—
Nursing and personal care facilities .....	1,319	1,907	588	3.1	3.9
Hospitals .....	3,300	4,245	945	2.1	3.3
Outpatient facilities and other health services .....	675	1,177	502	4.7	4.6
Medical and dental labs .....	149	239	90	4.0	—
Outpatient care facilities .....	266	475	209	4.9	—
Other .....	260	463	203	4.9	—

NOTE: Dash indicates data not available.

health service industries are projected to add 3 million new jobs.

Because of the rapid expansion of health care employment compared to other industrial sectors, 7 of the 10 fastest growing occupations between 1988 and 2000 are health-related. Medical assistants, home health aides, radiologic technologists and technicians, medical records technicians, medical secretaries, physical therapists, and surgical technologists rank among the top 10 fastest growing of 500 or so occupations studied.

### Business services

Business services come close to health care as a source for a large number of new jobs over the next 12 years. Employment in business services is projected to rise from 5.6 million in 1988 to 8.3 million by the end of the century. The 2.7-million increase represents almost 1 of every 6 new wage and salary jobs added between 1988 and 2000.

Business services is broken down into nine industries in the economic growth system. (See table 5.) The largest of these and the one projected to add the most new jobs over the next decade is personnel supply service, which includes the fast-growing temporary help supply industry. Temporary help supply has risen dramatically in the last few years. From 1978, when data were first available, to 1988, employment multiplied almost threefold, rising from 341,000 to 1,016,000. At this 11.5-percent per year rate, the temporary help supply industry has been one of the fastest-growing industries in the whole economy. Employers find temporary help advantageous because of the ease and convenience of meeting peak workloads or covering for absent permanent employees. Also, because temporary help supply agencies typically provide fewer fringe benefits, their rates frequently are competitive with the cost of directly hiring additional employees. Workers are attracted to these agencies because of the training opportunities and the flexible scheduling offered; some, however, may find it the only employment available.

Future gains in temporary help are expected to be slower than the rapid growth in the past few years, as the industry matures and stabilizes. For personnel supply services as a whole, of which four-fifths was temporary help in 1988, the rate of job growth is projected to average 4.1 percent through the nineties. Industry experts expect the skill level of temporary help workers to shift, with a slight increase in the proportion of computer programmers, accountants, engineers, and computer-skilled clerical

workers, and a slight decline in the proportion of laborers and clerical jobs that are not computer-related.

The fastest growing of the business service industries, indeed, the fastest in the whole economy, will be computer services. Employment in this industry sector is projected to grow by 4.9 percent a year, rising to 1.2 million by 2000. Demand for operations research analysts, computer systems analysts, programmers, and related computer specialists will continue to be very high through the turn of the century. Packaged software products as well as customized computer systems will continue to multiply. An ever-expanding number of industries, firms, government agencies, and private individuals are expected to propel the demand for computer and data processing services.

Another large business service industry, although one not growing as rapidly as personnel or computer services, is the research, management, and consulting sector. Employment in this industry is also expected to approach 1.2 million by the year 2000, averaging 3.2 percent yearly growth. Included in this industry are commercial physical and biological research and testing labs, market research, management services and consultants (providing activities such as operations research, human resources planning, financial planning and budgeting, and others), and public relations services. These types of services are being purchased by more and more private firms and by government.

The remainder of the business services industries will have somewhat slower growth than the three just described, although all are well above the growth rate projected for total employment. The sector which includes business services not elsewhere classified is expected to post 3.1 percent annual growth, adding 340,000 jobs. A large variety of activities is included in this sector, such as check validating, interior decorating, paralegal services, salvaging, speakers' and lecture bureaus, telemarketing, and many newly developing business services. Services to buildings, which include primarily janitorial services, is projected to add 243,000 jobs. Detective and protective services employment is expected to expand by 168,000. Most of this growth will be for building guards.

### Education

Almost 1.2 million jobs will be added to education over the next decade. Most of the new jobs will be in the public sector, reflecting rising enrollment projected for elementary and secondary schools.

School enrollment below the college level

*Despite recent healthy growth, the factory job level is still below the 1979 peak of 21 million, and is not projected to climb much higher than current levels.*



mirrors population growth, and, as can be seen in the following tabulation, the elementary school population (ages 5-13) will rise by more than 2 million between 1988 and 2000 (almost all of that in the 10-13 age group), and the secondary school population (ages 14-17), by about 1.3 million.<sup>7</sup>

	Population (millions)				
	Under age 5	Ages 5-9	Ages 10-13	Ages 14-17	Ages 18-24
1975 .....	16.1	17.6	16.3	17.1	27.7
1980 .....	16.5	16.6	14.5	16.1	30.4
1985 .....	18.0	16.8	13.3	14.9	28.7
1988 .....	18.3	18.0	13.4	14.0	26.9
2000 .....	16.9	18.1	15.4	15.3	25.2

Employment in State and local government education was fairly level in the late 1970's and early 1980's as the number of school-age children dipped. By 1983, however, the youngsters born to the large baby-boom cohort started kindergarten and began to put upward pressure on public school facilities. Employment began to edge up, and reached an all-time high of 7.3 million in 1988. As these children advance through intermediate and secondary schools, employment in State and local government education is expected to climb to 8.3 million by the year 2000.

Private school enrollment is not as directly linked to population as is public school enrollment. About three-fifths of the employment in private education is in colleges and universities, and factors other than population are important determinants of enrollment in these institutions. The traditional college-age population (18-24) has been declining since 1981, but enrollment has moved generally in an upward direction nevertheless. Rising enrollment rates for older students, women, foreign students, and part-time students have offset the absolute decline in the 18- to 24-year-old population.

Employment in private colleges and universities has been rising even faster than enrollments, with more than 200,000 jobs added between 1983 and 1988 to reach 964,000. Part of the explanation for this large employment increase has been a rise in the proportion of part-time instructors in institutions of higher education.<sup>8</sup> Employment in all of private education, which includes private elementary and secondary schools, vocational schools, and miscellaneous training programs as well as colleges and universities, is projected to go up another 223,000 by the year 2000.

Not all the increase in public and private education will be for teachers. Increases are also

expected for teacher aides, counselors, technicians, and administrative staff.

Related to the educational sector is the private child-care industry. The rapid growth of this sector in the 1980's has been linked to the rising labor force participation rates of mothers with young children and to the large increase in the absolute number of children under age 5. (See previous text tabulation.) Future growth is projected to be slower due to the expected 1.4 million decline in the under age 5 population over the next 12 years. Also, even though there will be a continued rise in labor force participation

**Table 4. Employment change in selected industries, 1988-2000**

[Levels in thousands]

Industry <sup>1</sup>	1988 level	Annual rate of change, 1988-2000
<b>Fastest growing:</b>		
Computer and data processing services .....	678	4.9
Outpatient facilities and health services, n.e.c. ....	675	4.7
Personnel supply services .....	1,369	4.1
Water and sanitation including combined services ..	152	3.9
Residential care .....	391	3.8
Offices of health practitioners .....	1,850	3.5
Arrangement of passenger transportation .....	175	3.4
Research, management, and consulting services ..	811	3.2
Individual and miscellaneous social services .....	571	3.2
Personal services, n.e.c. ....	294	3.2
Nursing and personal care facilities .....	1,319	3.1
Credit reporting and business services, n.e.c. ....	776	3.1
Miscellaneous publishing .....	79	3.1
Security and commodity brokers and exchanges ..	449	3.0
Advertising .....	237	2.8
Legal services .....	852	2.8
Automotive rentals, without drivers .....	164	2.7
Accounting, auditing, and services, n.e.c. ....	530	2.7
Miscellaneous transportation services .....	141	2.7
Detective and protective services .....	464	2.6
<b>Most rapidly declining:</b>		
Tobacco manufactures .....	56	-2.8
Telephone and telegraph apparatus .....	111	-2.3
Miscellaneous textile goods .....	56	-2.3
Alcoholic beverages .....	72	-2.2
Office and accounting machines .....	56	-2.2
Footwear, except rubber and plastic .....	90	-2.1
Railroad transportation .....	299	-2.1
Tires and inner tubes .....	84	-2.0
Photographic equipment and supplies .....	112	-1.8
Coal mining .....	151	-1.8
Luggage, handbags, and leather products, n.e.c. ....	54	-1.8
Miscellaneous transportation equipment .....	62	-1.7
Engines and turbines .....	94	-1.6
Electronic home entertainment equipment .....	85	-1.6
Sugar and confectionery products .....	98	-1.6
Apparel .....	893	-1.6
Knitting mills .....	211	-1.5
Sawmills and planing mills .....	206	-1.5
Automotive stampings .....	102	-1.5
Metal cans and shipping containers .....	53	-1.5

<sup>1</sup> Ranking is based on industries with employment levels of more than 50,000 in 1988.  
n.e.c. = not elsewhere classified.

rates among young women 16–34, the rise will be much slower than in the past 12 years, except for the 30- to 34-year-olds. A factor supporting employment growth in the child day-care industry is the trend for private companies and government agencies to set up day-care facilities at the workplace. These employer-supported facilities, run under contract with independent day-care providers, should encourage a continued shift from care in the home and day care by relatives to use of child-care centers.

**Retail trade**

Retail trade is projected to add 3.8 million new jobs between 1988 and 2000, second only to services among all the major industry divisions. The number of retail trade jobs is expected to reach almost 23 million by 2000, accounting for almost 1 of every 5 wage and salary jobs in the economy. Further, many self-employed workers are found in the retail trade sector as well, adding 1.9 million to the total in that sector in 2000.

Eating and drinking places make up the largest industry within the retail trade division, and one of the fastest growing. Payroll employment is projected to rise 1.8 percent a year in eating and drinking places to 7.8 million by 2000. This rate of growth, however, is slower than historical increases in such jobs for several reasons. The major reason is the slower growing population, limiting the demand for new restaurants. Another reason is that the market may be reaching saturation, especially the fast-food market. Finally, part of the historical employment growth was related to an increasing proportion of part-time workers, a trend which is to taper.

Evidence already indicates that the shift to part-timers may be slowing, in that average

weekly hours in eating and drinking places are not falling as rapidly in recent years as they have for the past three decades. This trend holds for other retail trade establishments as well. Retail trade accounts for about two-thirds of all the part-time workers in the economy, and part-time workers are predominantly women (two-thirds), and have a higher proportion of young workers ages 16–24 (one-third) than the full-time work force. The source of potential part-time workers has been diminishing as the youth labor force has declined in absolute numbers and fewer women seek part-time jobs. Eating and drinking places and other retail trade industries may have to offer higher compensation or greater benefits to entice full-time jobseekers, at least in the short run. The decline in the youth labor force is expected to reach its trough in 1996, then begin to increase again as the large number of children of baby-boom parents reaches working age.

There has been some attempt by eating and drinking places to fill their part-time job openings with older workers, but the data do not show that this has been successful. Demographic data from the Current Population Survey are not available at the detailed industry level, but data are available for detailed occupations. If we consider employment in food service occupations, more than two-thirds of which is concentrated in eating and drinking places, we can draw some inferences about the age distribution of the industry. Following are employment levels and percentages in food service occupations by age group, 1983–88:

	16–19	20–24	25–34	35–54	55–65	65+
1983:						
Level						
(thousands) ..	1,248	1,107	977	1,080	347	101
Percent of total .....	25.7	22.8	20.1	22.2	7.1	2.1
1988:						
Level						
(thousands) ..	1,293	1,030	1,239	1,175	356	89
Percent of total .....	25.0	19.9	23.9	22.7	6.9	1.7

As the tabulation shows, the age composition of food service workers is shifting slightly away from teenagers and young workers, but not to those over 55. Rather, the 25-34 age group now accounts for an increased proportion. While the number of older workers in the labor force will rise substantially through the nineties (by 2.3 million), these workers are reluctant to accept low-skilled, low-paid jobs that typically provide few fringe benefits.<sup>9</sup>

Projections of employment for other retail trade industries indicate that grocery stores will gain 555,000 new jobs by 2000. Grocery stores

**Table 5. Profile of business services industries, 1988–2000**

[Levels in thousands]

Industry	Employment			Annual rate of change	
	1988	2000	Gain, 1988–2000	Employment	Output
Total business services .....	5,570	8,311	2,741	3.4	3.5
Advertising .....	237	330	93	2.8	4.4
Services to dwellings .....	785	1,028	243	2.3	3.3
Personnel supply .....	1,369	2,218	849	4.1	3.6
Computer .....	678	1,200	522	4.9	4.3
Research, management, consulting ..	811	1,190	379	3.2	3.3
Detective and protective .....	464	632	168	2.6	2.1
Equipment rental .....	262	356	94	2.6	2.1
Photographic .....	188	241	53	2.1	3.5
Credit and all other .....	776	1,116	340	3.1	3.2

are adding more labor-intensive services such as prepared meals in response to consumer demand for convenience. They are also staying open longer in areas where restrictions on hours of operation are being lifted. Department stores are projected to add 305,000 jobs, which represents only a 1.2-percent rate of growth, and miscellaneous shopping goods stores are projected to gain 269,000 jobs.

### Other service-producing industries

As noted earlier, the finance, insurance, and real estate sector is projected to add almost 1.1 million payroll jobs between 1988 and 2000, bringing employment in that sector to 7.8 million by the turn of the century. The fastest growing industry within the financial sector is expected to be security and commodity brokers and exchanges, but the 3.0-percent annual employment growth rate projected is sharply lower than the rate in recent years in this industry, when employment expanded about 10 percent a year.

Employment in the communications industry division is projected to remain almost flat at about 1.3 million through the next decade. Output will show healthy growth, but new technology will result in very little job gains.

Among the transportation sectors, especially strong growth is projected for air transportation and the related industry arrangement of passenger transportation (travel agents). Despite safety concerns and near-capacity airports, demand for air travel is projected to grow rapidly. Job gains are projected to average 2.1 percent a year from 1988 to 2000, and output, 3.8 percent.

Within the services division, mention has already been made of health care, business services, education, and child day care. Other industries in the services division expected to show sizable employment increases include hotels (410,000 more jobs), legal services (329,000), residential care (224,000), engineering and architectural services (222,000), amusements and recreation (202,000), and accounting services (200,000).

### Manufacturing and foreign trade

Led by expectations of high growth in U.S. exports, the manufacturing division is projected to enjoy a 2.3-percent per year expansion in real output, and a modest employment decline of 0.1 percent a year.

These generally optimistic projections come in the wake of the strong recovery in manufacturing in 1987 and 1988. Until then, despite several years of recovery from the deep recessions

of 1980–82, many U.S. manufacturing industries were still languishing. The decline of inflation, but continued high real interest rates, caused investment to shift from real assets such as factories and producers' equipment towards financial assets. It also caused the U.S. dollar to rise to extraordinary levels compared to foreign currencies, closing many overseas markets to U.S. exports but making imports relatively cheap. Particularly hard hit by disinflation and an overvalued dollar were the sectors related to commodities—farming, mining, and manufacturing, especially heavy goods manufacturing.

By mid-1987, a correction in the foreign exchange markets began to have an impact. As the value of the dollar fell and foreign economies experienced fairly strong growth, U.S. manufacturers were able to recover many overseas markets lost during the 1984–86 period. Export growth far surpassed most other final demand categories, and imports slowed their rate of gain as the falling dollar made import prices swing up. Some of the manufacturing sectors which showed the greatest gains in their export markets during this rebound were selected machinery industries, aircraft and missile engines and equipment, pulp and paper mills, meat products, chemicals, and plastics.

After a few months' lag, manufacturing employment also experienced an upturn. Factory jobs rose to 19.4 million in 1988, more than 400,000 above the 1986 level. An analysis by Richard Devens found that manufacturing industries with higher ratios of exports to shipments had more rapid job growth over the first half of 1988 than did industries where exports were less important.<sup>10</sup>

Continued growth in U.S. exports is projected to buoy the manufacturing division through the coming decade. Exports (in constant dollars) are projected to post 4.7 percent yearly growth, compared with 2.3 percent for total GNP and 2.7 percent for imports. The much faster rate of growth for exports than for imports will result in a positive net trade balance over the nineties.

Most of the export growth will be concentrated in capital goods industries, in particular, computers. In fact, mainly because of the value of computer output, durable goods production will enjoy one of the fastest rates of output expansion of all the other major industries, 2.9 percent a year. Excluding the computer industry, however, lowers the rate of growth of real manufacturing output to 1.7 percent.

Valuing the output of the computer industry in constant dollars has been a question economists have been grappling with for some time.<sup>11</sup> Because of the explosive growth in processing ca-

*Service-producing industries are projected to rise to 79.0 percent of all nonfarm wage and salary jobs, compared with 75.9 percent in 1988.*

Table 6. Employment by industry, 1976, 1988, and projected to 2000

Industry	Standard Industrial Classification	Employment (thousands)					Annual rate of change, 1988-2000 <sup>1</sup>	
		1976	1988	2000			Employment	Output
				Low	Moderate	High		
<b>Total</b> .....	—	89,942	118,104	127,118	136,211	144,146	1.2	2.3
<b>Agriculture</b> .....	01,02,07,08,09	3,371	3,259	2,797	3,125	3,315	-.3	1.9
Livestock and livestock products .....	pt. 01, pt. 02	1,105	777	540	606	643	-2.0	.8
Other agricultural products .....	pt. 01, pt. 02	1,749	1,516	1,134	1,290	1,349	-1.3	2.8
Agricultural services, forestry, and fishing .....	07,08,09	517	966	1,123	1,228	1,323	2.0	2.3
Private households .....	88	1,398	1,163	1,014	1,103	1,166	-.4	.8
Nonfarm self-employed and unpaid family .....	—	6,093	8,722	9,153	9,927	10,667	1.1	—
<b>Nonfarm wage and salary<sup>2</sup></b> .....	—	79,080	104,960	114,154	122,056	128,998	1.3	—
<b>Mining</b> .....	10-14	779	721	656	705	827	-.2	.6
Metal mining .....	10	94	51	45	49	64	-.3	.5
Coal mining .....	11,12	225	151	116	122	139	-1.8	1.9
Crude petroleum, natural gas, and gas liquids .....	131,132	161	201	150	169	178	-1.4	-.3
Oil and gas field services .....	138	184	205	235	247	314	1.6	4.3
Nonmetallic minerals, except fuels .....	14	115	113	110	118	132	.4	1.0
<b>Construction</b> .....	15,16,17	3,576	5,125	5,504	5,885	6,318	1.2	2.1
<b>Manufacturing</b> .....	20-39	19,003	19,406	17,352	19,090	20,640	-.1	2.3
<b>Durable manufacturing</b> .....	24,25,32-39	11,080	11,436	10,160	11,220	12,255	-.2	2.9
Lumber and wood products .....	24	679	765	681	740	796	-.3	1.3
Logging camps and logging contractors .....	241	82	90	70	76	84	-1.4	1.5
Sawmills and planing mills .....	242	221	206	157	171	190	-1.5	1.1
Millwork and structural wood members, n.e.c. ....	2431,4,9	118	207	218	235	248	1.1	1.0
Veneer and plywood .....	2435,6	69	62	51	55	60	-.9	1.0
Wood containers and miscellaneous wood products ..	244,9	118	130	113	125	133	-.4	1.8
Mobile homes .....	2451	50	46	47	51	53	.8	1.4
Prefabricated wood buildings .....	2452	21	24	25	27	28	1.0	2.3
Furniture and fixtures .....	25	445	530	555	600	644	1.0	2.2
Household furniture .....	251	306	310	308	336	346	.7	1.7
Partitions and fixtures .....	254	55	79	92	99	112	1.9	1.6
Office and miscellaneous furniture and fixtures .....	252,3,9	84	141	155	166	186	1.4	3.2
Stone, clay, and glass products .....	32	645	600	528	580	607	-.3	1.6
Glass and glass products .....	321,2,3	192	156	123	135	138	-1.2	1.2
Hydraulic cement .....	324	30	20	15	16	18	-1.7	1.9
Concrete, gypsum, and plaster products .....	327	189	215	214	233	244	.7	1.9
Stone, clay, and miscellaneous mineral products .....	325,6,8,9	234	209	176	195	207	-.6	1.5
Primary metal industries .....	33	1,156	772	630	700	774	-.8	.6
Blast furnaces and basic steel products .....	331	549	277	217	241	270	-1.2	.2
Iron and steel foundries .....	332	223	138	112	124	135	-.9	.3
Primary aluminum .....	3334	31	26	18	21	23	-2.0	.5
Primary nonferrous metals, except aluminum .....	3331,2,3,9	36	18	11	13	15	-2.8	1.2
Miscellaneous primary and secondary metals .....	334,9	39	45	39	44	49	-.2	1.3
Copper rolling and drawing .....	3351	32	23	18	21	22	-.9	.7
Aluminum rolling and drawing .....	3353,4,5	67	65	53	59	64	-.8	.9
Nonferrous rolling and drawing, n.e.c. ....	3356	16	15	10	11	12	-2.8	1.5
Nonferrous wire drawing and insulating .....	3357	80	77	63	71	77	-.6	1.5
Aluminum foundries .....	3361	46	54	58	64	71	1.5	.9
Nonferrous foundries, except aluminum .....	3362,9	37	34	30	33	36	-.2	.7
Fabricated metal products .....	34	1,511	1,431	1,230	1,352	1,458	-.5	.9
Metal cans and shipping containers .....	341	78	53	41	44	44	-1.5	.5
Cutlery, hand tools, and hardware .....	342	167	139	111	121	122	-1.1	.4
Plumbing and nonelectric heating equipment .....	343	63	60	53	57	60	-.4	.7
Fabricated structural metal products .....	344	455	429	371	406	437	-.5	.8
Screw machine products, bolts, rivets, etc. ....	345	95	100	90	100	111	.0	1.8
Forgings .....	3462,3	54	38	27	29	33	-2.1	.9
Automotive stampings .....	3465	100	102	78	85	94	-1.5	1.5
Stampings, except automotive .....	3466,9	121	89	84	94	102	.4	2.0
Metal coating, engraving, and allied services .....	347	90	122	118	132	146	.7	1.8
Ordnance, except vehicles and missiles .....	348	58	76	60	65	76	-1.3	-1.3
Miscellaneous fabricated metal products .....	349	230	223	198	219	233	-.1	1.2
Machinery, except electrical .....	35	2,066	2,082	1,855	2,059	2,291	-.1	5.8
Engines and turbines .....	351	121	94	69	77	85	-1.6	1.1
Farm and garden machinery .....	352	162	104	98	107	116	.2	1.4

Table 6. Continued—Employment by industry, 1976, 1988, and projected to 2000

Industry	Standard Industrial Classification	Employment (thousands)					Annual rate of change, 1988-2000 <sup>1</sup>	
		1976	1988	2000			Employment	Output
				Low	Moderate	High		
Construction machinery	3531	148	82	72	79	85	-.3	1.6
Mining and oil field machinery	3532,3	100	58	51	58	74	.0	1.2
Materials handling machinery and equipment	3534,5,6,7	88	87	80	87	94	.0	2.1
Metalworking machinery	354	307	314	271	298	319	-.4	1.4
Special industry machinery	355	183	171	147	162	167	-.4	1.2
General industrial machinery	356	286	249	229	256	269	.2	1.7
Electronic computing equipment	3573	215	418	398	453	556	.7	9.2
Office and accounting machines	3572,4,6,9	72	56	39	43	44	-2.2	2.4
Refrigeration and service industry machinery	358	160	185	173	188	203	.1	1.7
Miscellaneous nonelectrical machinery	359	224	264	226	251	282	-.4	1.5
Electrical and electronic equipment	36	1,775	2,071	1,794	2,014	2,126	-.2	2.8
Electric distributing equipment	361	116	107	91	100	109	-.5	1.4
Electrical industrial apparatus	362	222	184	151	169	183	-.7	2.0
Household appliances	363	170	139	107	117	118	-1.4	2.1
Electric lighting and wiring equipment	364	196	198	168	187	189	-.5	1.2
Electronic home entertainment equipment	365	120	85	61	70	70	-1.6	4.2
Telephone and telegraph apparatus	3661	137	111	77	84	85	-2.3	2.4
Radio and TV communication equipment	3662	308	456	424	463	535	.1	3.4
Electronic tubes	3671,2,3	40	39	28	32	34	-1.6	1.4
Semiconductors and related devices	3674	130	262	244	285	288	.7	4.5
Miscellaneous electronic components	3675,6,7,8,9	196	334	312	359	364	.6	2.4
Storage batteries, engine electrical parts	3691,4	95	98	81	92	94	-.5	1.6
X-ray and other electromedical apparatus	3693	18	32	32	36	38	.9	4.7
Electrical equipment and supplies, n.e.c.	3692,9	27	26	17	19	20	-2.4	2.9
Transportation equipment	37	1,798	2,050	1,823	2,002	2,292	-.2	1.6
Motor vehicles	371	881	856	720	786	883	-.7	1.5
Motor vehicles and car bodies	3711	416	357	289	311	351	-1.1	1.4
Motor vehicle parts and accessories	3714	399	406	339	375	419	-.7	1.8
Truck and bus bodies, trailers, and motor homes	3713,5,6	66	93	93	100	113	.6	1.3
Aircraft	3721	281	367	350	386	458	.4	2.0
Aircraft and missile engines and equipment	3724,8,3764,9	221	385	362	404	474	.4	2.1
Guided missiles and space vehicles	3761	70	155	157	171	201	.8	1.5
Ship and boat building and repairing	373	215	193	158	171	190	-1.0	.4
Railroad equipment	374	50	32	30	33	34	.2	.7
Miscellaneous transportation equipment	375,9	80	62	46	51	52	-1.7	2.5
Instruments and related products	38	576	749	749	822	895	.8	2.9
Engineering and scientific instruments	381	59	95	115	126	146	2.4	3.4
Measuring and controlling devices	382	180	260	245	271	296	.4	1.7
Optical and ophthalmic products	383,5	62	69	66	73	78	.5	5.1
Medical instruments and supplies	384	119	201	234	253	273	1.9	4.2
Photographic equipment and supplies	386	125	112	82	90	91	-1.8	2.0
Watches, clocks, and parts	387	31	12	7	9	11	-2.7	-1.3
Miscellaneous manufacturing	39	429	386	316	350	372	-.8	.6
Jewelry, silverware, and plated ware	391	58	54	47	54	64	-.1	1.0
Toys and sporting goods	394	121	104	84	94	103	-.8	.8
Manufactured products, n.e.c.	393,5,6,9	250	228	185	203	205	-1.0	.2
Nondurable manufacturing	20-23, 26-31	7,923	7,970	7,192	7,870	8,385	-.1	1.7
Food and kindred products	20	1,690	1,636	1,435	1,563	1,595	-.4	1.3
Meat products	201	345	402	377	415	422	.3	.9
Dairy products	202	191	159	142	153	155	-.3	.6
Canned, dried, and frozen foods	203	252	249	228	251	255	.1	2.5
Grain mill products and fats and oils	204,7	179	157	132	143	149	-0.8	1.7
Bakery products	205	237	203	167	176	178	-1.2	.2
Sugar and confectionery products	206	113	98	77	81	85	-1.6	.1
Alcoholic beverages	2082,3,4,5	81	72	50	55	58	-2.2	1.0
Soft drinks and flavorings	2086,7	140	130	105	115	117	-1.0	2.0
Miscellaneous foods and kindred products	209	152	166	158	174	175	.4	1.7
Tobacco manufactures	21	77	56	37	40	42	-2.8	-2.1
Textile mill products	22	919	729	574	627	683	-1.3	1.3
Weaving, finishing, yarn and thread mills	221,2,3,4,6,8	560	402	321	351	385	-1.1	1.1
Knitting mills	225	231	211	161	175	187	-1.5	.5
Floor covering mills	227	58	60	54	59	64	-.2	2.9
Miscellaneous textile goods	229	70	56	38	42	47	-2.3	1.4

Table 6. Continued—Employment by industry, 1976, 1988, and projected to 2000

Industry	Standard Industrial Classification	Employment (thousands)					Annual rate of change, 1988–2000 <sup>1</sup>	
		1976	1988	2000			Employment	Output
				Low	Moderate	High		
Apparel and other textile products	23	1,318	1,093	853	920	976	-1.4	.9
Apparel	231-8	1,146	893	687	739	784	-1.6	.5
Miscellaneous fabricated textile products	239	172	200	166	181	192	-.8	1.9
Paper and allied products	26	676	693	629	690	740	.0	2.4
Pulp, paper, and paperboard mills	261,2,3,6	270	247	205	226	247	-.8	2.9
Converted paper products except containers	264	201	239	232	254	270	.5	2.1
Paperboard containers and boxes	265	205	207	191	210	223	.1	2.0
Printing and publishing	27	1,099	1,562	1,602	1,751	1,848	1.0	2.2
Newspapers	271	384	475	479	527	553	.9	1.1
Periodicals	272	71	130	138	149	156	1.1	1.2
Books	273	96	116	116	126	133	.7	1.4
Miscellaneous publishing	274	41	79	104	113	121	3.1	3.3
Commercial printing and business forms	275,6	392	603	597	652	692	.7	2.9
Greeting card publishing	277	21	24	23	25	26	.5	3.3
Blankbooks and bookbinding	278	56	77	83	90	95	1.3	2.0
Printing trade services	279	38	58	63	68	72	1.4	2.4
Chemicals and allied products	28	1,043	1,065	990	1,084	1,166	.1	1.9
Industrial chemicals	281,6	312	280	243	268	300	-.4	1.6
Plastics materials and synthetics	282	218	178	148	163	181	-.7	2.5
Drugs	283	171	231	244	264	272	1.1	3.0
Soap, cleaners, and toilet goods	284	128	160	155	169	174	.5	1.8
Paints and allied products	285	65	63	56	61	67	-.2	1.0
Agricultural chemicals	287	67	52	45	50	54	-.4	.2
Miscellaneous chemical products	289	82	101	98	108	118	.6	1.3
Petroleum and coal products	29	199	162	127	140	153	-1.2	1.5
Petroleum refining	291	157	122	95	106	115	-1.2	1.4
Miscellaneous petroleum and coal products	295,9	42	40	32	35	38	-1.2	1.9
Rubber and miscellaneous plastics products	30	639	830	852	941	1,027	1.0	3.0
Tires and inner tubes	301	104	84	58	66	70	-2.0	1.0
Rubber products, plastic hose and footwear	302,3,4,6	154	139	113	124	138	-.9	1.6
Miscellaneous plastics products	307	381	607	681	751	819	1.8	3.7
Leather and leather products	31	263	144	93	114	155	-1.9	-.6
Footwear, except rubber and plastic	313,4	174	90	57	70	108	-2.1	-.8
Luggage, handbags, and leather products, n.e.c.	311,5,6,7,9	89	54	37	44	47	-1.8	-.3
Transportation, communications, utilities	40-42,44-49	4,583	5,548	5,713	6,096	6,587	.8	2.4
Transportation	40-42, 44-47	2,680	3,334	3,456	3,705	4,000	.9	2.4
Railroad transportation	40	538	299	214	231	255	-2.1	1.5
Local and interurban passenger transit	41	264	313	310	329	346	.4	1.5
Trucking and warehousing	42	1,149	1,569	1,566	1,682	1,831	.6	2.1
Water transportation	44	195	174	152	161	168	-.6	1.6
Air transportation	45	374	644	772	828	890	2.1	3.8
Pipe lines, except natural gas	46	18	19	17	19	21	.0	1.0
Arrangement of passenger transportation	4722	—	175	244	261	279	3.4	4.9
Miscellaneous transportation services	471,4723,474,8	—	141	181	194	212	2.7	2.7
Communications	48	1,170	1,281	1,260	1,344	1,424	.4	3.3
Communications, except broadcasting	481,2,9	1,010	1,042	1,004	1,070	1,135	.2	3.3
Radio and television broadcasting	483	160	239	256	274	289	1.1	3.4
Public utilities	49	733	933	996	1,048	1,163	1.0	1.7
Electric utilities, including combined services	491,pt.493	438	572	576	597	681	.4	2.0
Gas utilities, including combined services	492,pt.493	213	209	196	211	231	.1	1.0
Water and sanitation, including combined services	494-7, pt. 493	82	152	225	240	252	3.9	3.6
Wholesale trade	50,1	4,546	6,029	6,463	6,936	7,457	1.2	2.9
Motor vehicles and automotive equipment	501	385	431	452	485	522	1.0	—
Machinery, equipment, and supplies	508	1,030	1,516	1,696	1,820	1,957	1.5	—
Groceries and related products	514	602	822	840	902	970	.8	—
Petroleum and petroleum products	517	232	202	187	200	215	-.1	—
Retail trade	52-59	13,208	19,110	21,251	22,875	23,812	1.5	2.1
Building materials and garden supplies	52	546	744	819	885	926	1.5	—

Table 6. Continued—Employment by industry, 1976, 1988, and projected to 2000

Industry	Standard Industrial Classification	Employment (thousands)					Annual rate of change, 1988-2000 <sup>1</sup>	
		1976	1988	2000			Employment	Output
				Low	Moderate	High		
Department stores	531	1,731	2,039	2,169	2,344	2,453	1.2	—
Other general merchandise stores	533,9	424	422	462	499	523	1.4	—
Grocery stores	541	1,780	2,742	3,052	3,297	3,451	1.5	—
New and used car dealers	551,2	815	1,027	1,093	1,181	1,236	1.2	—
Auto and home supply stores	553	228	334	370	400	418	1.5	—
Gasoline service stations	554	626	627	649	701	734	.9	—
Clothing and accessory stores	561,2,5	598	870	873	943	987	.7	—
Furniture and home furnishings stores	571	328	461	509	549	575	1.5	—
Appliance, radio, TV, and music stores	572,3	212	341	406	439	459	2.1	—
Eating and drinking places	58	3,656	6,282	7,294	7,796	8,027	1.8	2.1
Drug stores and proprietary stores	591	475	595	611	660	691	.9	—
Miscellaneous shopping goods stores	594	471	860	1,045	1,129	1,182	2.3	—
Finance, insurance, and real estate	60-67	4,271	6,677	7,306	7,762	8,104	1.3	2.3
Banking	60	1,310	1,738	1,766	1,882	1,990	.7	2.7
Credit agencies and investment offices	61,7	539	1,104	1,333	1,416	1,454	2.1	2.2
Security and commodity brokers and exchanges	62	176	449	601	639	669	3.0	3.2
Insurance carriers	63	1,101	1,442	1,497	1,594	1,654	.8	2.3
Insurance agents, brokers, and service	64	351	640	745	793	823	1.8	2.3
Real estate	65,6	794	1,304	1,364	1,438	1,513	.8	2.2
Services <sup>2</sup>	70-86,89	14,243	24,971	31,644	33,717	35,258	2.5	2.8
Hotels and other lodging places	70	929	1,550	1,845	1,960	2,084	2.0	1.6
Personal services	72	870	1,174	1,333	1,418	1,454	1.6	1.6
Laundry, cleaning, and shoe repair	721,5	367	418	439	469	485	1.0	.4
Personal services, n.e.c.	722,9	137	294	402	428	437	3.2	3.1
Beauty and barber shops	723,4	297	382	409	435	444	1.1	1.1
Funeral service and crematories	726	69	80	82	86	87	.6	.6
Business services	73	2,174	5,570	7,778	8,311	8,987	3.4	3.5
Advertising	731	125	237	308	330	350	2.8	4.4
Services to dwellings and other buildings	734	405	785	966	1,028	1,093	2.3	3.3
Personnel supply services	736	304	1,369	2,079	2,218	2,377	4.1	3.6
Computer and data processing services	737	159	678	1,118	1,200	1,329	4.9	4.3
Research, management, and consulting	7391,2,7	—	811	1,114	1,190	1,323	3.2	3.3
Detective and protective services	7393	—	464	589	632	682	2.6	2.1
Equipment rental and leasing	7394	—	262	333	356	387	2.6	2.1
Photocopying, finishing, commercial art	7332,3,95	—	188	226	241	256	2.1	3.5
Credit reporting and business services, n.e.c.	732,5,7331,9; 7396,9	—	776	1,045	1,116	1,189	3.1	3.2
Auto repair, services, and garages	75	466	837	1,009	1,077	1,134	2.1	1.9
Automotive rentals, without drivers	751	86	164	212	227	245	2.7	1.9
Automobile parking, repair, and services	752,3,4	380	673	797	850	889	2.0	1.9
Miscellaneous repair shops	76	227	347	364	389	416	1.0	1.6
Electrical repair shops	762	63	110	133	142	149	2.1	1.8
Watch, clock, jewelry, and furniture repair	763,4	27	29	27	29	30	-.1	.2
Miscellaneous repair shops and related services	769	137	208	204	218	238	.4	1.7
Motion pictures	78	209	241	248	264	286	.7	1.3
Amusement and recreation services	79	637	918	1,082	1,152	1,180	1.9	3.4
Theatrical producers and entertainers	792	68	129	152	162	168	1.9	3.4
Bowling alleys and billiard establishments	793	100	98	86	91	93	-.6	-1.0
Commercial sports	794	72	88	88	94	96	.5	1.5
Amusement and recreation services, n.e.c.	791,9	397	603	756	805	822	2.4	3.9
Health services	80	4,350	7,144	9,535	10,139	10,355	3.0	3.3
Offices of health practitioners	801,2,3,4	963	1,850	2,641	2,810	2,869	3.5	2.7
Nursing and personal care facilities	805	809	1,319	1,793	1,907	1,946	3.1	3.9
Hospitals, private	806	2,363	3,300	3,994	4,245	4,339	2.1	3.3
Outpatient facilities, health services n.e.c.	807,8,9	215	675	1,107	1,177	1,202	4.7	4.6
Legal services	81	363	852	1,108	1,181	1,242	2.8	2.3
Educational services, private	82	1,013	1,557	1,676	1,780	1,826	1.1	2.0
Social, membership, and miscellaneous services	83,4,6,9	3,005	4,781	5,666	6,046	6,294	2.0	2.5
Individual and miscellaneous social services	832,9	277	571	784	834	850	3.2	2.7
Job training and related services	833	—	243	260	277	289	1.1	2.3

Table 6. Continued—Employment by industry, 1976, 1988, and projected to 2000

Industry	Standard Industrial Classification	Employment (thousands)					Annual rate of change, 1988–2000 <sup>1</sup>	
		1976	1988	2000			Employment	Output <sup>2</sup>
				Low	Moderate	High		
Child day-care services <sup>3</sup>	835	215	406	513	547	558	2.5	4.3
Residential care	836	158	391	577	615	627	3.8	4.3
Museums, noncommercial organizations n.e.c.	84,865,9,892	179	290	349	371	380	2.1	3.4
Business and professional associations	861,2	107	146	159	170	179	1.3	2.9
Labor, civic, and social organizations	863,4	442	517	517	551	563	.5	1.5
Religious organizations <sup>3</sup>	866	878	963	944	1,005	1,024	.4	1.2
Engineering and architectural services	891	387	724	879	946	1,039	2.3	2.3
Accounting, auditing, and services, n.e.c.	893,9	249	530	684	730	784	2.7	2.4
Government	—	14,871	17,373	18,265	18,989	19,995	.7	1.0
Federal Government	—	2,733	2,971	2,992	3,059	3,260	.2	.8
Federal enterprises	—	859	1,044	1,043	1,083	1,182	.3	2.8
U.S. Postal Service	—	671	830	844	878	959	.5	2.9
Federal electric utilities	—	33	35	32	32	38	-.7	2.0
Federal enterprises, n.e.c.	—	155	179	167	173	185	-.3	2.9
Federal general government	—	1,874	1,927	1,950	1,976	2,078	.2	-.1
State and local government	—	12,138	14,402	15,273	15,930	16,735	.8	1.2
State and local enterprises	—	676	890	909	965	1,026	.7	2.2
Local government passenger transit	—	122	205	211	224	237	.7	1.3
State and local electric utilities	—	60	82	87	90	104	.8	.2
State and local enterprises, n.e.c.	—	494	603	611	651	686	.6	2.8
State and local general government	—	11,462	13,512	14,364	14,965	15,708	.9	1.0
State and local government hospitals	—	1,010	1,069	1,104	1,150	1,207	.6	1.5
State and local government education	—	6,270	7,331	7,943	8,276	8,687	1.0	.8
State and local general government, n.e.c.	—	4,182	5,112	5,316	5,539	5,814	.7	1.0

<sup>1</sup> Rates based on moderate case.

<sup>2</sup> Excludes SIC 074,5,8 (agricultural services) and 99 (nonclassifiable establishments), therefore not exactly comparable with data published in *Employment and Earnings*.

<sup>3</sup> Does not meet usual publication criteria of BLS Current Employment Survey.

n.e.c. = Not elsewhere classified.

NOTE: Dash indicates not applicable or data not available.

pability, the price per unit of "computer power" has declined dramatically, thereby raising the value of real output of computer equipment. Using this pricing method, the growth rate of real computer output has averaged more than 25 percent per year for the past three decades. Projecting this output series forward, even with much more moderate assumptions about future technological changes in computers, yields a staggeringly high level of computer output by 2000. This leads to a question about the consistency of this pricing method with the method used in other industries.

Given this unresolved dilemma in valuing computer output, the projection of the precise level of computer equipment output (and exports and imports) possesses a great deal of uncertainty. However, a few general trends can be identified. Computer manufacturing is very likely to be one of the fastest growing industries, with domestic output, exports, and imports all rising sharply. Further, it is expected that computer exports will be larger than imports, maintaining the positive trade balance now enjoyed in that industry through the end of

the century.

Few other major groups within manufacturing are projected to have a positive trade balance—only instruments, food products, tobacco, printing and publishing, and chemicals. For all other major manufacturing groups, the value of imports in 2000 is projected to be higher than exports.

This is not a new phenomenon. Negative trade balances have been predominant for almost all major manufacturing sectors as far back as 1977. This condition clearly worsened in the 1984–86 period, but then eased in 1987 and 1988, and is projected to continue to improve as exchange rates stabilize and strong foreign economic growth spurs exports. However, it should be noted how important the assumption concerning computer exports is to future real manufacturing trade balances.

### Domestic manufacturing

Other factors affecting manufacturing besides the foreign trade situation relate to domestic demand. Investment in producers' durable equip-



ment is projected to enjoy the second fastest rate of growth among all final demand categories, second only to exports. This will further bolster that portion of the manufacturing sector supplying capital goods. On the down side, defense expenditures are projected to actually fall in real terms as the buildup of the 1980's reaches an end. Defense demand for most types of equipment and supplies will be lower in 2000 than at present under the moderate case assumptions. Demand for manufactured goods from the consumer sector is projected to slow, especially for motor vehicles.

Consumer demand for new automobiles is slowing for several reasons. Demographic changes are limiting the market for new cars, specifically, slower population growth in general and an absolute decline in the number of first-time buyers (those ages 16–24). In addition, high relative prices, longer loan maturities, and extended warranties are encouraging consumers to hold onto their cars longer. These factors lead to reduced demand, but will be somewhat offset by the projection of sharply curtailed growth in auto imports. Because it is assumed that more foreign auto companies will open factories in the United States, and that the price of imported cars will rise even faster than domestic prices, imports are expected to decline slightly as a share of the total auto market.

Domestic production of motor vehicles is projected to expand slowly, 1.5 percent a year. Furthermore, continued innovations in factory automation will allow this output to be produced with fewer workers—auto employment is projected to fall from 856,000 in 1988 to 786,000 by 2000.

It has already been noted that the computer industry will enjoy the fastest rate of output growth of all manufacturing industries, indeed of all industries in the economy, even allowing for the difficulties inherent in measuring real computer output. Jobs in computer equipment manufacturing are also projected to expand, from 418,000 in 1988 to 453,000 in 2000. Many more of these jobs will be held by nonproduction workers, especially engineers, technicians, systems analysts, and managers. Industries related to computer manufacturing will also enjoy high production levels, for example, semiconductors and related devices and miscellaneous electronic components.

Other fast-growing manufacturing industries include those relating to health care. Output growth is projected to be very strong for optical and ophthalmic products (in particular, spectrographs and electron microscopes), x-ray and other electromedical apparatus, medical instruments and supplies, and drugs. These rank

among the fastest growing output industries in the whole economy. Employment is not very large in these industries, however, and only about 93,000 jobs are projected to be added.

The defense slowdown will have a significant impact on a selected number of manufacturing industries, but some of them will be able to recoup defense losses from alternative sources. Radio and TV communication equipment depended on defense purchases for more than 40 percent of its output in 1986, but will sell only 22 percent to defense in 2000. An absolute decline in real defense purchases is projected to be more than compensated for by a large rise in private investment purchases of communications equipment, particularly from the air transportation, broadcasting, and communications industries. Similarly, the aircraft industry relied on defense for more than half its market in 1986, but this share will drop to less than one-third by 2000. Exports and private purchases will buoy the production of U.S. aircraft and aircraft engines and equipment through the end of the century.

Ship building also will be affected by reduced defense demand, but boat building for the consumer market should take up some of the slack. Different establishments within the industry will be affected by this switch, but overall output of the ship and boat building industry is projected to remain essentially level through the next decade. Employment is projected to fall, however, from 193,000 to 171,000.

Among the heavy machinery industries, the recovery experienced in 1987 and 1988 is expected to moderate over time. The outlook for most of these sectors is for steady but modest output growth from 1988 to 2000, accompanied by slight declines in employment.

Many of these machinery industries rely on exports for about 10–30 percent of their market, and after losing domestic markets during the 1980–82 recessions, they suffered again during the years of the large trade imbalances. The upturn in exports in 1987 revived these industries, and some of them, such as materials handling equipment, refrigeration and service industry machinery, and miscellaneous machinery, have finally reestablished their 1979 prerecession real production levels. Many more still lag behind their prerecession peaks, however, including engines and turbines, farm and garden equipment, construction, mining, and oilfield machinery, metalworking machinery, special industry and general industrial machinery, and office and accounting machines. Furthermore, employment in virtually every machinery sector is far from the 1979 level despite some new hiring in 1987 and 1988, and it is unlikely to rise

*Health and business services alone are projected to employ more than 18 million by the year 2000, an increase of almost one-third over their current levels.*

any higher. Exports and domestic investment growth will support production in the heavy industrial sectors in the future at about a 1- to 2-percent annual rate, but output gains will be accomplished without additional workers.

The same is true for primary and fabricated metal industries. The foreign trade recovery in 1987 and 1988 boosted even those manufacturing industries previously identified as long-term losers. Imports halted their steady rate of market takeover, and key metals purchasers such as autos, heavy machinery, and construction supplies, had healthy production gains in 1988. Primary metals output was up almost 20 percent in real terms between 1986 and 1988, led by increases in steel, iron and steel foundries, aluminum, copper, and nonferrous wire drawing and insulation. Even employment experienced a turnaround. Steel, for example, added 9,000 jobs in 1988; previously, the steel industry posted nine continuous over-the-year declines.

However, the gains in metals, while large in percentage terms, were made from a very low base. Several years of plant closings and restructuring reduced the size of the primary metals industry in the United States. Domestic production levels in 1988 were still far below the peak years of the late seventies, and it is unlikely the industry will regain its former size. Substitute products and cheaper imports have virtually eliminated some of the demand for domestic metals. Employment in primary metals is projected to fall from 772,000 in 1988 to 700,000 in 2000, and fabricated metals will lose 79,000 jobs, reaching 1,352,000 in 2000. Many of the fabricated metal industries are linked to the slow-growing auto industry or to defense (ordnance).

Within the nondurable goods portion of manufacturing, food production is projected to rise faster than total population because of a significant increase in exports, particularly of grain mill products. Shifts are expected to occur among the various food industries, reflecting changing consumer preferences. Faster than average growth will be posted by canned, dried, and frozen foods, grain mill products, soft drinks and flavorings, and miscellaneous food products. Slower growth is expected for meat, dairy, bakery, and confectionery products and for alcoholic beverages. Most food industries will continue to invest in automated processing equipment, thereby raising productivity levels and reducing employment. The exception is meat products, where productivity improvements resulting from increased assembly line speed have reached a limit. Future gains are restricted by the necessity for many hand operations in red meat processing.

Slow population growth of only 0.7 percent a year will also be a factor limiting the apparel industry over the next decade. Demand is expected to grow faster than population because of rising income levels, but more of that demand will be met by imports. Apparel imports are projected to climb to more than 42 percent of the total market in 2000, compared with about 36 percent in 1987. As a result, domestic apparel output is projected to have only 0.5 percent annual growth, and employment will be cut back from 893,000 in 1988 to 739,000 in 2000, a reduction of 154,000 jobs. Textile industries will suffer from the slow growth of domestic apparel production, but can be expected to find strength in other markets, in particular, exports (affecting fabric mills) and construction (affecting floor covering mills).

Printing and publishing is one of the few manufacturing sectors where employment growth has been accelerating throughout the 1980's. The basis for this growth has been the rapid expansion of printed material (such as catalogs, specialty magazines, business forms, and school textbooks), and the low barriers to entry enticing many new small firms into the field. This has been especially true in commercial printing, where low initial investment costs have spurred the creation of many small companies to meet the growing demand from the trade, financial, business, and professional services sectors. Commercial printing posted 6.9 percent real output growth and 4.1 percent job growth each year over the 1982-88 period. Miscellaneous publishing, although smaller, boasted 9.6 percent output growth and 7.6 percent employment growth.

Future gains are projected to slow in printing and publishing as overall economic growth slows, but 189,000 new jobs are expected to be added, in contrast to actual declines in most other manufacturing sectors.

### **Alternative scenarios**

This article has focused on the results of the moderate growth projection scenario, but two alternatives were also prepared. The alternatives show the effects of changes in some of the key assumptions of the macroeconomic model discussed by Norman C. Saunders on pp. 13-24 in this issue. In the high-growth scenario, output and employment grow more rapidly than in the moderate case because of a larger labor force and a much higher rate of growth of labor productivity. The low growth scenario is characterized by higher unemployment, inflation, increasing Federal and foreign trade deficits, and lower productivity growth. Employment

gains average 1.7 percent a year between 1988 and 2000 in the high alternative, 1.2 percent in the base case, and only 0.6 percent a year in the low alternative. Even the high-growth model does not match the 2.3-percent rate of growth in employment over the previous 12-year period.

Durable goods manufacturing falls proportionately more in the low-growth scenario than any of the other major industry divisions, because the capital goods export boom and strong business equipment purchases that characterize the moderate case do not occur in the low growth scenario. (See table 6, pp. 34–38.) Gov-

ernment employment, in contrast, represents a larger share of total employment in the slow growth scenario, although the absolute level of government jobs is lower than the base case.

In the high scenario, the greater number of jobs (than in the moderate case) is more evenly spread out among the major industry divisions, with the exception of manufacturing, which gets a substantially larger share. More than 26 million jobs are projected to be added overall during the 1988–2000 period in the high alternative, versus 18 million under the conditions of moderate growth. □

## Footnotes

<sup>1</sup> "National health expenditures in 1986," *Health Care Financing Review*, Summer 1987, pp. 1–36.

<sup>2</sup> The Health Care Financing Administration data include not only private health care services (the BLS measure), but also government health care services, drugs and medical sundries, eyeglasses and appliances, program administration and net cost of private insurance, government public health activities, research, and construction of medical facilities. The BLS ratio is smaller for two other reasons. For one, the Health Administration's data are in current dollars, the BLS data, in constant (1982) dollars. Secondly, the Health Administration's ratio is a share of GNP or final value added, while the BLS ratio is based on gross duplicated output, which includes not only final value added but intermediate inputs as well.

It should be noted that measuring real output in medical care, as in many other service industries, is more difficult than measuring the real output of goods because of the lack of comprehensive price deflators. A program to develop service sector price measures is currently underway by BLS.

<sup>3</sup> *Vital and Health Statistics*, series 13 (National Center for Health Statistics, 1988).

<sup>4</sup> Group Health Association of America, Inc., Washington, DC.

<sup>5</sup> *Vital and Health Statistics*, 1988.

<sup>6</sup> "Projections of the population of the United States, 1987 to 2080," *Current Population Reports*, Series P-25, No. 1018 (Bureau of the Census, 1989).

<sup>7</sup> Data for 1975–85 are from *Current Population Reports*, Series P-25, Nos. 917 and 1022 (Bureau of the Census); data for 1988 and 2000 are from "Projections of the population," *Current Population Reports* (Bureau of Census).

<sup>8</sup> *Projections of Education Statistics to 1997-98*, CS 88-607 (National Center for Education Statistics, September, 1988), p. 73.

<sup>9</sup> Diane E. Herz and Philip L. Rones, "Institutional barriers to employment of older workers," *Monthly Labor Review*, April 1989, pp. 14–21.

<sup>10</sup> Richard M. Devens, Jr., "Employment in the first half of 1988," *Monthly Labor Review*, August 1988, pp. 15–19.

<sup>11</sup> See "Improved deflation of purchases of computers," *Survey of Current Business*, March 1986, pp. 7–9.



# Projections of occupational employment, 1988–2000

*The future occupational structure is projected to provide jobs for workers at all educational levels, but persons with the most education and training will enjoy the best job opportunities*

George Silvestri  
and  
John Lukaszewicz

The total number of jobs is projected to increase by 18 million, or 15 percent, from 1988 to 2000, according to the Bureau of Labor Statistics moderate-growth scenario for the U.S. economy. Reflecting the slowing of labor force growth, the pace of increase in employment is expected to be only about half that of the previous 12-year period, 1976–88. Changes in the industrial composition of employment will have a major impact on the occupational structure, as will changes in technology, business practices, and other factors. In general, occupational growth will result in opportunities for workers at all levels of education. However, opportunities in the higher-paying occupations will necessarily be limited to persons with the education and other training such jobs require, effectively foreclosing an attractive and growing segment of the job market to those with low educational attainment or few practical skills.

This article discusses projected changes in the occupational structure of employment over the 1988–2000 period. It includes analyses of the impact of industry employment trends, technological change, and other factors on occupational employment; potential worker displacement stemming from occupations projected to decline; and the implications of the projections for education and training needs and for job opportunities for workers in minority groups. As indicated above, the discussion focuses on the moderate alternative of the three sets of occupa-

tional projections developed by BLS that are tied to the high, moderate, and low economic and industry employment projections alternatives presented elsewhere in this issue of the *Review*. The major differences among the alternatives are discussed at the end of the article.

## Major occupational groups

Each of the three major occupational groups requiring the highest levels of educational attainment—executive, administrative, and managerial occupations; professional specialty occupations; and technicians and related support occupations—is projected to continue to grow more rapidly than the average for total employment over the 1988–2000 period. Employment in executive, administrative, and managerial occupations is expected to increase by 22 percent, which represents an increase of 2.7 million jobs from 1988 to 2000. (See table 1.) Much of the growth of this occupational group is expected to be in retail trade and in the services industry division, especially business services. The numbers of managers and administrators are expected to continue to expand through the year 2000 because of the increasing complexity of corporate activities and because of the startup of many small firms. However, the growth rate for this occupational group is projected to be significantly less than it was from 1976 to 1988 when executive, administrative, and managerial workers grew faster than any other major group, and

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more than twice as fast as total employment.

The number of workers in professional specialty occupations is projected to grow by 3.5 million, an increase of 24 percent. Much of this growth is due to the expected increase in demand for engineers; computer specialists; lawyers; health diagnosing and treating occupations; and teachers, except college and university. The professional specialty occupations group is expected to continue to grow faster than total employment and to increase its share of total employment from 12.4 percent in 1988 to 13.3 percent in 2000.

Employment of the technicians and related support occupations group is projected to grow by 32 percent, more rapidly than any other major occupational group. Over the 1976-88 period, this group also was among the fastest growing major occupational groups. Jobs for health technologists and technicians are expected to account for nearly half of the 1.2 million new technician jobs that will be added from 1988 to 2000. In addition, more than a quarter of a million new jobs are expected for engineering and science technicians and computer programmers.

Marketing and sales occupations, which expanded much more rapidly than total employment from 1976 to 1988, are expected to increase only slightly faster than average through 2000. The employment increase is expected to be about 2.6 million workers. Occupations in

this group are concentrated in industries expected to have average growth—wholesale and retail trade (excluding eating and drinking places).

Employment in administrative support occupations, including clerical, is expected to grow more slowly than average from 1988 to 2000. However, this group is expected to add 2.5 million jobs over the period and to remain the largest major occupational group. The group grew about as fast as total employment in the previous 12-year period, but technological innovations and greater utilization of office automation are expected to slow the future rate of growth. Some occupations in this group, however, such as computer operators, are expected to benefit from continued technological change requiring their skills and, as a result, to grow rapidly. Other occupations in this broad group that involve a great deal of contact with people, and therefore are not affected significantly by automation, also are expected to have average or higher-than-average rates of growth. Among these are hotel desk clerks, interview clerks, and receptionists. Typists and word processors, stenographers, and statistical clerks are among the declining occupations in this group.

Employment in the service occupations group is expected to increase by 23 percent from 1988 to 2000. With an increase of more than 4 million jobs, it will add more jobs than any other major occupational group. Food preparation and serv-

**Table 1. Employment by major occupational group, 1988 and projected to 2000, moderate alternative projection, and percent change 1976-88 and 1988-2000**

[Numbers in thousands]

Occupational title	1988		2000		Percent change	
	Number	Percent	Number	Percent	1976-88	1988-2000
Total, all occupations .....	118,104	100.0	136,211	100.0	29.5	15.3
Executive, administrative, and managerial occupations .....	12,104	10.2	14,762	10.8	66.4	22.0
Professional specialty occupations .....	14,628	12.4	18,137	13.3	44.6	24.0
Technicians and related support occupations .....	3,867	3.3	5,089	3.7	53.9	31.6
Marketing and sales occupations .....	13,316	11.3	15,924	11.7	46.1	19.6
Administrative support occupations, including clerical .....	21,066	17.8	23,553	17.3	27.8	11.8
Service occupations .....	18,479	15.6	22,651	16.6	28.2	22.6
Agricultural, forestry, fishing, and related occupations .....	3,503	3.0	3,334	2.4	-7.7	-4.8
Precision production, craft, and repair occupations .....	14,159	12.0	15,563	11.4	25.3	9.9
Operators, fabricators, and laborers .....	16,983	14.4	17,198	12.6	2.9	1.3

NOTE: The 1988 and 2000 employment data, and the projected change 1988-2000, are derived from data from the industry-occupation matrixes for each year. The data on 1976-88 percent change were derived from the Current Population Survey

data because a comparable industry-occupation matrix for 1976 is not available. The resulting comparison of change between 1976-88 and 1988-2000 consequently is only broadly indicative of trends.

ice, health service, and cleaning and building service occupations are expected to account for nearly three-fourths of the total employment increase in service occupations. Service jobs are expected to increase from 15.6 percent of total employment in 1988 to 16.6 percent in 2000.

The number of agricultural, forestry, fishing, and related workers is projected to decrease by 5 percent between 1988 and 2000. Although continuing a long-term trend, this projected rate of decline is slightly less than the 8-percent drop that occurred between 1976 and 1988.

The number of precision production, craft, and repair jobs is projected to grow more slowly than the average for total employment from 1988 to 2000, just as it did from 1976 to 1988. Nearly all of the 1.4 million total increase in jobs is expected to be in the construction and services industry divisions. In manufacturing, about 100,000 fewer workers in this major group are projected to be employed in 2000 than in 1988.

Employment in the operators, fabricators, and laborers group, which grew by only 3 percent from 1976 to 1988, is projected to grow by about 1 percent through the year 2000. Although a large decline of nearly three-fourths of a million jobs is projected in manufacturing, job gains in services; wholesale and retail trade; construction; and transportation, communications, and public utilities should result in a net gain of 215,000 jobs by 2000. This major group is expected to have the largest change in the share of total employment, declining from 14.4 percent in 1988 to 12.6 percent by 2000.

### Occupational trends by industry

The occupational projections were developed through the use of industry-occupation employment matrixes. The 1988 matrix was used as the base year for the projections.<sup>1</sup> The 1988 occupational structure of each industry was projected to 2000 through an analysis of factors that are expected to change the structure, such as developments in technology, business practices and methods of operation, and product demand. An analysis of the 1988 and 2000 matrixes provides information on the occupational concentration within industries and expected changes in the occupational structure of industries over the period. The levels of employment in selected occupations for wage and salary workers by major industry division in 1988 and projected 2000 are shown in table 2. Also included are estimates of self-employed and unpaid family workers for the economy as a whole. The percent distributions of industry employment and of self-employed and unpaid family workers by occu-

pation are shown in table 3.

Of the 18 million increase in jobs projected between 1988 and 2000, 16.6 million are wage and salary jobs in the services-producing industries. (See table 2.) Only 521,000 more wage and salary jobs are projected in the goods-producing industries. Growth of 1 million self-employed and unpaid family workers is projected for the economy as a whole.

Within the goods-producing industries, the level of employment in mining is expected to remain almost unchanged between 1988 and 2000. The occupational structure of mining is expected to change very little. Administrative support occupations, including clerical, are expected to decrease slightly due to advances in office automation. Precision production, craft, and repair occupations are expected to increase slightly because employment in oil and gas extraction, which has a large proportion of these workers, is projected to grow faster than the rest of the mining industries.

Wage and salary worker employment in agriculture, forestry, and fishing is projected to increase by less than 100,000 through the year 2000. Most of the major occupational groups, except operators, fabricators, and laborers, are expected to experience a slight upturn in the share of employment at the expense of agriculture, forestry, and fishing occupations, which are projected to decline from 77.1 percent of employment in this sector in 1988 to 75.3 percent by 2000. This development is due entirely to a projected decline in the employment of the detailed occupation, farmworkers.

Employment in construction is expected to grow by 760,000 jobs by the year 2000. More than half of the increase is in the construction trades—occupations that are projected to increase slightly their share of construction employment. The only other sizable employment gain in construction is projected for operators, fabricators, and laborers (159,000 jobs), but the expected increase is not large enough to prevent this group of workers from declining as a percent of total employment.

Despite a projected loss of 314,000 jobs in manufacturing by the year 2000, several occupational groups are expected to experience significant gains—executive, administrative, and managerial occupations (164,000 jobs); professional specialty occupations (208,000), with more than half in engineering; and technicians and related support occupations (85,000 jobs). All three groups should increase their shares of total employment in manufacturing through the year 2000. Operators, fabricators, and laborers are expected to decline, both in absolute terms (down 714,000 jobs) and as a proportion of total

*Major occupational groups with lower levels of educational attainment, except sales and service workers, are expected to grow more slowly than average.*

**Table 2. Employment of wage and salary workers in selected occupations by major industry division and of self-employed and unpaid family workers, 1988 and projected to 2000**

[Numbers in thousands]

Occupation	Total, all industries		Self-employed and unpaid family workers		Goods-producing industries		Agriculture, forestry, and fishing		Mining		Construction		Manufacturing	
	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000
Total, all occupations .....	118,104	136,211	10,327	11,314	26,915	27,436	1,664	1,755	721	705	5,125	5,885	19,405	19,090
Executive, administrative, and managerial occupations .....	12,104	14,762	1,576	2,012	2,382	2,639	42	52	86	84	589	673	1,665	1,829
Management support occupations .....	3,428	4,187	266	316	612	674	7	8	28	26	129	144	448	496
Professional speciality occupations ..	14,628	18,137	1,364	1,582	1,365	1,598	61	79	56	57	35	41	1,213	1,421
Engineers .....	1,411	1,762	32	38	766	889	1	2	26	27	23	28	715	833
Computer, mathematical, and operations research analysts .....	503	763	30	52	108	140	0	0	4	4	2	2	102	133
Natural scientists .....	338	403	15	16	106	121	9	11	19	20	0	0	78	89
Lawyers and judicial workers .....	622	810	223	240	4	5	0	0	1	1	0	0	3	3
College and university faculty .....	846	869	0	0	0	0	0	0	0	0	0	0	0	0
Teachers, except college and university .....	4,251	5,026	141	167	2	1	1	0	0	0	0	0	1	1
Health diagnosing occupations .....	801	995	259	271	26	33	26	33	0	0	0	0	0	0
Health assessment and treating occupations .....	2,084	2,876	50	64	3	3	1	1	0	0	0	0	2	2
Technicians and related support occupations .....	3,867	5,089	93	113	687	781	19	24	22	22	27	31	618	704
Health technicians and technologists .....	1,645	2,211	38	47	23	25	7	9	0	0	0	0	15	15
Engineering and science technicians and technologists .....	1,273	1,559	18	21	546	608	8	10	18	18	25	28	495	552
Technicians, except health and engineering and science .....	949	1,319	37	46	118	148	3	4	4	4	2	3	108	137
Marketing and sales occupations .....	13,316	15,924	1,827	2,003	721	873	18	21	10	12	63	73	629	767
Administrative support occupations, including clerical .....	21,066	23,553	434	429	2,914	2,843	79	86	85	75	497	504	2,253	2,178
Computer operators and peripheral equipment operators .....	316	408	4	4	55	61	1	1	2	2	1	2	51	56
Secretaries, stenographers, and typists .....	4,517	4,991	113	119	663	600	25	30	25	22	170	176	443	372
Clerical supervisors and managers .....	1,183	1,319	2	2	128	125	0	0	5	4	7	7	116	114
Service occupations .....	18,479	22,651	1,186	1,431	357	347	22	22	7	6	18	19	310	299
Cleaning and building service occupations, except private household .....	3,312	3,960	183	268	222	217	12	12	3	3	10	10	198	193
Food preparation and service occupations .....	7,503	9,227	113	104	16	17	2	2	0	0	1	1	12	13
Health service occupations .....	1,833	2,450	26	31	1	2	1	2	0	0	0	0	0	0
Personal service occupations .....	2,062	2,625	822	982	2	2	2	2	0	0	0	0	0	0
Private household workers .....	902	860	0	0	0	0	0	0	0	0	0	0	0	0
Protective service occupations .....	2,129	2,610	10	12	71	61	3	3	2	2	6	7	59	50
Agriculture, forestry, fishing, and related occupations .....	3,503	3,334	1,534	1,244	1,393	1,426	1,283	1,322	1	1	6	6	104	97
Precision production, craft, and repair occupations .....	14,159	15,563	1,699	1,854	7,003	7,393	39	44	261	260	2,686	3,173	4,017	3,916
Construction trades .....	3,807	4,423	921	1,047	2,263	2,668	7	8	15	14	2,002	2,395	240	250
Mechanics, installers, and repairers .....	4,839	5,471	427	433	1,186	1,288	18	20	57	58	308	342	802	867
Operators, fabricators, and laborers ..	16,983	17,198	614	645	10,093	9,535	101	104	193	187	1,205	1,364	8,594	7,880
Machine setters, set-up operators, operators, and tenders .....	4,949	4,779	98	106	4,340	4,067	18	17	19	16	20	23	4,282	4,011
Hand workers, including assemblers and fabricators .....	2,528	2,266	85	87	2,165	1,890	4	4	10	10	33	37	2,117	1,839
Transportation and material moving machine and vehicle operators ..	4,612	5,154	332	356	1,238	1,297	35	38	127	127	342	402	734	730
Helpers, laborers, and material movers, hand .....	4,894	4,999	99	96	2,350	2,281	44	45	36	34	809	902	1,461	1,300

**Table 2. Continued—Employment of wage and salary workers in selected occupations by major industry division and of self-employed and unpaid family workers, 1988 and projected to 2000**

[Numbers in thousands]

Occupation	Service-producing industries		Transportation, communications, and utilities		Wholesale trade		Retail trade		Finance, insurance, and real estate		Services		Government	
	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000
Total, all occupations . . . . .	80,862	97,461	5,548	6,096	6,028	6,936	19,110	22,875	6,676	7,762	34,526	44,228	8,974	9,563
Executive, administrative, and managerial occupations . . . . .	8,146	10,111	440	514	698	797	1,595	1,956	1,504	1,850	2,833	3,818	1,076	1,176
Management support occupations . . . . .	2,550	3,197	106	126	168	191	221	259	648	823	755	1,082	652	717
Professional speciality occupations . . . . .	11,899	14,957	246	310	89	123	236	300	189	267	9,713	12,369	1,425	1,587
Engineers . . . . .	613	835	79	102	24	33	3	4	16	21	306	463	185	211
Computer, mathematical, and operations research analysts . . . . .	365	571	21	30	24	36	5	7	92	133	147	279	76	86
Natural scientists . . . . .	217	266	3	4	4	5	0	0	1	1	115	151	94	105
Lawyers and judicial workers . . . . .	395	565	2	3	0	0	0	0	17	23	263	405	113	134
College and university faculty . . . . .	845	869	0	0	0	0	0	0	0	0	845	869	0	0
Teachers, except college and university . . . . .	4,108	4,858	7	8	0	0	0	0	0	0	4,044	4,794	57	56
Health diagnosing occupations . . . . .	516	691	0	0	0	0	4	5	1	1	465	641	46	43
Health assessment and treating occupations . . . . .	2,031	2,809	0	0	1	1	104	126	4	5	1,789	2,534	133	143
Technicians and related support occupations . . . . .	3,087	4,195	238	285	120	166	39	55	126	170	2,133	3,037	431	482
Health technicians and technologists . . . . .	1,585	2,140	33	35	4	5	24	34	7	8	1,395	1,927	121	130
Engineering and science technicians and technologists . . . . .	709	930	77	95	78	108	6	8	6	8	377	522	165	189
Technicians, except health and engineering and science . . . . .	794	1,125	128	155	38	53	9	13	113	154	362	587	144	163
Marketing and sales occupations . . . . .	10,768	13,048	273	370	1,576	1,906	7,206	8,524	736	933	911	1,243	67	73
Administrative support occupations, including clerical . . . . .	17,718	20,280	1,383	1,482	1,674	1,824	1,663	1,854	3,459	3,815	6,936	8,738	2,603	2,568
Computer operators and peripheral equipment operators . . . . .	257	343	19	23	37	45	14	17	59	74	101	156	26	28
Secretaries, stenographers, and typists . . . . .	3,741	4,272	143	151	253	293	147	181	467	491	2,163	2,642	568	514
Clerical supervisors and managers . . . . .	1,052	1,192	94	102	122	133	128	141	283	312	295	380	130	125
Service occupations . . . . .	16,936	20,872	192	239	61	68	6,042	7,505	314	331	8,603	10,788	1,724	1,942
Cleaning and building service occupations, except private household . . . . .	2,907	3,475	29	32	37	41	225	256	199	210	2,287	2,797	132	139
Food preparation and service occupations . . . . .	7,374	9,106	12	12	14	16	5,485	6,846	27	30	1,774	2,140	63	62
Health service occupations . . . . .	1,806	2,417	7	7	0	0	35	41	0	0	1,605	2,196	159	174
Personal service occupations . . . . .	1,238	1,641	98	134	0	0	27	33	1	1	1,028	1,378	84	95
Private household workers . . . . .	902	860	0	0	0	0	0	0	0	0	902	860	0	0
Protective service occupations . . . . .	2,049	2,537	12	11	4	4	55	57	61	58	705	1,016	1,211	1,390
Agriculture, forestry, fishing, and related occupations . . . . .	576	664	5	5	39	46	31	44	91	104	285	331	124	135
Precision production, craft, and repair occupations . . . . .	5,457	6,315	1,111	1,137	619	732	1,149	1,341	229	263	1,410	1,840	939	1,003
Construction trades . . . . .	622	708	74	72	20	25	53	66	29	33	139	180	307	332
Mechanics, installers, and repairers . . . . .	3,226	3,751	745	756	414	490	727	847	178	205	843	1,115	320	338
Operators, fabricators, and laborers . . . . .	6,276	7,018	1,662	1,756	1,152	1,274	1,149	1,296	28	30	1,701	2,065	585	598
Machine setters, set-up operators, operators, and tenders . . . . .	511	606	8	8	54	55	42	46	2	2	378	469	27	25
Hand workers, including assemblers and fabricators . . . . .	278	289	19	19	75	76	34	36	1	1	129	139	19	18
Transportation and material moving machine and vehicle operators . . . . .	3,042	3,501	1,259	1,350	604	715	355	431	8	9	554	711	262	285
Helpers, laborers, and material movers, hand . . . . .	2,445	2,622	376	378	419	428	718	783	16	17	641	746	276	270



manufacturing employment (from 44.3 percent in 1988 to 41.3 percent in 2000), but still should remain the largest major occupational group in this industry. Improved production processes, such as robotics, flexible manufacturing systems, and other technological innovations, are expected to adversely affect nearly all occupations in this major group. The expected loss of 102,000 jobs for precision production, craft, and repair occupations is not large enough to cause the occupational group to lose its share of total employment in manufacturing—about 21 percent in both 1988 and projected 2000.

Within the services-producing industries, the bulk of the 1988–2000 employment increase is expected in the services industry division—9.7 million additional wage and salary jobs out of total growth of 16.6 million.<sup>2</sup> The next largest projected increase is in retail trade (3.8 million jobs), followed by finance, insurance, and real estate (1.1 million); wholesale trade (908,000); government (589,000); and transportation, communications, and public utilities (548,000).

The largest impact of these projected gains by industry over the 1988–2000 period is in the service occupations group—4.2 million additional jobs by 2000. Of this total, not quite half are food preparation and service occupations. Large numbers of additional jobs in services-producing industries also are expected in administrative support occupations, including clerical, and marketing and sales occupations—2.6 million and 2.3 million jobs, respectively. There should be much smaller gains among the lesser skilled broad occupational groups for operators, fabricators, and laborers (742,000 jobs) and for agriculture, forestry, fishing, and related occupations (89,000).

Impressive jobs gains in the services-producing industries are projected for those occupational groups requiring the most education or training. Employment in professional specialty occupations, for example, is expected to grow by 3.1 million workers from 1988 to 2000, the second largest increase after that for service workers. Employment in executive, administrative, and managerial occupations is expected to grow by 2.0 million jobs; technicians and related support occupations by 1.1 million jobs; and precision production, craft, and repair occupations by 859,000 jobs. The projected job gain within the services-producing industries as a percent of the economy-wide job gain for each of these occupational groups is sizable. About 74 percent of the overall wage and salary employment increase in executive, administrative, and managerial occupations is expected in the services-producing industries.

Similarly, about 87 percent of the total wage

and salary job gain for professional specialty occupations; 91 percent of that for technicians and related support occupations; and 61 percent of that for precision production, craft, and repair occupations is projected to be in the services-producing industries.

An analysis of the occupational structure of the major divisions within the services-producing industries reveals that the three broad groups with the highest levels of educational attainment (managers, professionals, and technicians) are projected to increase their relative shares of employment at the expense of groups with lower educational levels. The only exception is wholesale trade for which a slight reduction in the relative share of managers by the year 2000 is projected due to the expectation that retailers will increasingly buy directly from manufacturers, thereby reducing the demand for buyers at the wholesale level. This decline will be offset by slight increases in the shares of technicians and related workers; marketing and sales occupations; and precision production, craft, and repair occupations. The demand for workers in the last group results from an increase in service and repair activities in this industry division.

The share of employment in the service occupations is expected to remain stable over the 1988–2000 period in all industry divisions within the services-producing industries, except in finance, insurance, and real estate, where it is expected to decline. The demand for service workers in these industries is not expected to keep pace with the rising demand for managers, professionals, and technicians, especially in health fields in the service industry division. Also, the relative share for precision production, craft, and repair occupations is projected to remain stable in all industry divisions except retail trade and transportation, communications, and public utilities, where such workers are expected to decline as a proportion of total employment.

Employment of self-employed and unpaid family workers, combined, is projected to increase by nearly 10 percent, from 10.3 million in 1988 to 11.3 million in 2000. All of the growth is expected to occur among self-employed workers, because jobs for unpaid family workers are projected to decline by 134,000. Workers in executive, administrative, and managerial occupations are expected to account for the largest share of the growth of self-employed workers (436,000), followed by workers in service occupations (245,000) and professional specialty occupations (218,000). Consistent with the long-run decline of the farm sector of the economy, employment of self-

*Of the 18 million increase in jobs projected between 1988 and 2000, 16.6 million are wage and salary jobs in the services-producing industries.*

**Table 3. Percent distribution of wage and salary workers in selected occupations by major industry division and of self-employed and unpaid family workers, 1988 and projected to 2000**

Occupation	Total, all industries		Self-employed and unpaid family workers		Goods-producing industries		Agriculture, forestry, and fishing		Mining		Construction		Manufacturing	
	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000
Total, all occupations . . . . .	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
Executive, administrative, and managerial occupations . . . . .	10.2	10.8	15.3	17.8	8.8	9.6	2.5	3.0	11.9	12.0	11.5	11.4	8.6	9.6
Management support occupations . . . . .	2.9	3.1	2.6	2.8	2.3	2.5	.4	.5	3.9	3.7	2.5	2.4	2.3	2.6
Professional speciality occupations . . . . .	12.4	13.3	13.2	14.0	5.1	5.8	3.7	4.5	7.8	8.2	.7	.7	6.3	7.4
Engineers . . . . .	1.2	1.3	.3	.3	2.8	3.2	.1	.1	3.6	3.8	.5	.5	3.7	4.4
Computer, mathematical, and operations research analysts . . . . .	.4	.6	.3	.5	.4	.5	.0	.0	.5	.6	.0	.0	.5	.7
Natural scientists . . . . .	.3	.3	.1	.1	.4	.4	.5	.6	2.7	2.9	.0	.0	.4	.5
Lawyers and judicial workers . . . . .	.5	.6	2.2	2.1	.0	.0	.0	.0	.2	.2	.0	.0	.0	.0
College and university faculty . . . . .	.7	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Teachers, except college and university . . . . .	3.6	3.7	1.4	1.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Health diagnosing occupations . . . . .	.7	.7	2.5	2.4	.1	.1	1.5	1.9	.0	.0	.0	.0	.0	.0
Health assessment and treating occupations . . . . .	1.8	2.1	.5	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Technicians and related support occupations . . . . .	3.3	3.7	.9	1.0	2.6	2.8	1.1	1.4	3.1	3.1	.5	.5	3.2	3.7
Health technicians and technologists . . . . .	1.4	1.6	.4	.4	.1	.1	.4	.5	.0	.0	.0	.0	.1	.1
Engineering and science technicians and technologists . . . . .	1.1	1.1	.2	.2	2.0	2.2	.5	.6	2.5	2.5	.5	.5	2.6	2.9
Technicians, except health and engineering and science . . . . .	.8	1.0	.4	.4	.4	.5	.2	.2	.6	.6	.0	.0	.6	.7
Marketing and sales occupations . . . . .	11.3	11.7	17.7	17.7	2.7	3.2	1.1	1.2	1.4	1.7	1.2	1.2	3.2	4.0
Administrative support occupations, including clerical . . . . .	17.8	17.3	4.2	3.8	10.8	10.4	4.7	4.9	11.8	10.7	9.7	8.6	11.6	11.4
Computer operators and peripheral equipment operators . . . . .	.3	.3	.0	.0	.2	.2	.1	.1	.3	.3	.0	.0	.3	.3
Secretaries, stenographers, and typists . . . . .	3.8	3.7	1.1	1.1	2.5	2.2	1.5	1.7	3.5	3.1	3.3	3.0	2.3	2.0
Clerical supervisors and managers . . . . .	1.0	1.0	.0	.0	.5	.5	.0	.0	.7	.6	.1	.1	.6	.6
Service occupations . . . . .	15.6	16.6	11.5	12.7	1.3	1.3	1.3	1.3	.9	.9	.4	.3	1.6	1.6
Cleaning and building service occupations, except private household . . . . .	2.8	2.9	1.8	2.4	.8	.8	.7	.7	.4	.4	.2	.2	1.0	1.0
Food preparation and service occupations . . . . .	6.4	6.8	1.1	.9	.1	.1	.1	.1	.1	.1	.0	.0	.1	.1
Health service occupations . . . . .	1.6	1.8	.3	.3	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0
Personal service occupations . . . . .	1.7	1.9	8.0	8.7	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0
Private household workers . . . . .	.8	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Protective service occupations . . . . .	1.8	1.9	.1	.1	.3	.2	.2	.2	.3	.2	.1	.1	.3	.3
Agriculture, forestry, fishing, and related occupations . . . . .	3.0	2.4	14.9	11.0	5.2	5.2	77.1	75.3	.1	.1	.1	.1	.5	.5
Precision production, craft, and repair occupations . . . . .	12.0	11.4	16.5	16.4	26.0	26.9	2.4	2.5	36.1	36.9	52.4	53.9	20.7	20.5
Construction trades . . . . .	3.2	3.2	8.9	9.3	8.4	9.7	.4	.4	2.1	2.0	39.1	40.7	1.2	1.3
Mechanics, installers, and repairers . . . . .	4.1	4.0	4.1	3.8	4.4	4.7	1.1	1.1	7.9	8.3	6.0	5.8	4.1	4.5
Operators, fabricators, and laborers . . . . .	14.4	12.6	5.9	5.7	37.5	34.8	6.1	5.9	26.8	26.6	23.5	23.2	44.3	41.3
Machine setters, set-up operators, operators, and tenders . . . . .	4.2	3.5	.9	.9	16.1	14.8	1.1	1.0	2.7	2.3	.4	.4	22.1	21.0
Hand workers, including assemblers and fabricators . . . . .	2.1	1.7	.8	.8	8.0	6.9	.3	.2	1.4	1.4	.7	.6	10.9	9.6
Transportation and material moving machine and vehicle operators . . . . .	3.9	3.8	3.2	3.1	4.6	4.7	2.1	2.2	17.6	18.1	6.7	6.8	3.8	3.8
Helpers, laborers, and material movers, hand . . . . .	4.1	3.7	1.0	.8	8.7	8.3	2.6	2.5	5.0	4.8	15.8	15.3	7.5	6.8

Table 3. Continued—Percent distribution of wage and salary workers in selected occupations by major industry division and of self-employed and unpaid family workers, 1988 and projected to 2000

Occupation	Services-producing industries		Transportation, communications, and utilities		Wholesale trade		Retail trade		Finance, insurance, and real estate		Services		Government	
	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000	1988	2000
Total, all occupations	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
Executive, administrative, and managerial occupations	10.1	10.4	7.9	8.4	11.6	11.5	8.3	8.6	22.5	23.8	8.2	8.6	12.0	12.3
Management support occupations	3.2	3.3	1.9	2.1	2.8	2.8	1.2	1.1	9.7	10.6	2.2	2.4	7.3	7.5
Professional speciality occupations	14.7	15.3	4.4	5.1	1.5	1.8	1.2	1.3	2.8	3.4	28.1	28.0	15.9	16.6
Engineers	.8	.9	1.4	1.7	.4	.5	.0	.0	.2	.3	.9	1.0	2.1	2.2
Computer, mathematical, and operations research analysts	.5	.6	.4	.5	.4	.5	.0	.0	1.4	1.7	.4	.6	.9	.9
Natural scientists	.3	.3	.1	.1	.1	.1	.0	.0	.0	.0	.3	.3	1.1	1.1
Lawyers and judicial workers	.5	.6	.0	.0	.0	.0	.0	.0	.2	.3	.8	.9	1.3	1.4
College and university faculty	1.0	.9	.0	.0	.0	.0	.0	.0	.0	.0	2.4	2.0	.0	.0
Teachers, except college and university	5.1	5.0	.1	.1	.0	.0	.0	.0	.0	.0	11.7	10.8	.6	.6
Health diagnosing occupations	.6	.7	.0	.0	.0	.0	.0	.0	.0	.0	1.3	1.4	.5	.5
Health assessment and treating occupations	2.5	2.9	.0	.0	.0	.0	.5	.6	.1	.1	5.2	5.7	1.5	1.5
Technicians and related support occupations	3.8	4.3	4.3	4.7	2.0	2.4	.2	.2	1.9	2.2	6.2	6.9	4.8	5.0
Health technicians and technologists	2.0	2.2	.6	.6	.1	.1	.1	.1	.1	.1	4.0	4.4	1.4	1.4
Engineering and science technicians and technologists	.9	1.0	1.4	1.6	1.3	1.6	.0	.0	.1	.1	1.1	1.2	1.8	2.0
Technicians, except health and engineering and science	1.0	1.2	2.3	2.5	.6	.8	.0	.1	1.7	2.0	1.0	1.3	1.6	1.7
Marketing and sales occupations	13.3	13.4	4.9	6.1	26.1	27.5	37.7	37.3	11.0	12.0	2.6	2.8	.7	.8
Administrative support occupations, including clerical	21.9	20.8	24.9	24.3	27.8	26.3	8.7	8.1	51.8	49.1	20.1	19.8	29.0	26.9
Computer operators and peripheral equipment operators	.3	.4	.4	.4	.6	.7	.1	.1	.9	.9	.3	.4	.3	.3
Secretaries, stenographers, and typists	4.6	4.4	2.6	2.5	4.2	4.2	.8	.8	7.0	6.3	6.3	6.0	6.3	5.4
Clerical supervisors and managers	1.3	1.2	1.7	1.7	2.0	1.9	.7	.6	4.2	4.0	.9	.9	1.4	1.3
Service occupations	20.9	21.4	3.5	3.9	1.0	1.0	31.6	32.8	4.7	4.3	24.9	24.4	19.2	20.3
Cleaning and building service occupations, except private household	3.6	3.6	.5	.5	.6	.6	1.2	1.1	3.0	2.7	6.6	6.3	1.5	1.5
Food preparation and service occupations	9.1	9.3	.2	.2	.2	.2	28.7	29.9	.4	.4	5.1	4.8	.7	.6
Health service occupations	2.2	2.5	.1	.1	.0	.0	.2	.2	.0	.0	4.7	5.0	1.8	1.8
Personal service occupations	1.5	1.7	1.8	2.2	.0	.0	.1	.1	.0	.0	3.0	3.1	.9	1.0
Private household workers	1.1	.9	.0	.0	.0	.0	.0	.0	.0	.0	2.6	1.9	.0	.0
Protective service occupations	2.5	2.6	.2	.2	.1	.1	.3	.3	.9	.7	2.0	2.3	13.5	14.5
Agriculture, forestry, fishing, and related occupations	.7	.7	.1	.1	.6	.7	.2	.2	1.4	1.3	.8	.7	1.4	1.4
Precision production, craft, and repair occupations	6.7	6.5	20.0	18.6	10.3	10.6	6.0	5.9	3.4	3.4	4.1	4.2	10.5	10.5
Construction trades	.8	.7	1.3	1.2	.3	.4	.3	.3	.4	.4	.4	.4	3.4	3.5
Mechanics, installers, and repairers	4.0	3.8	13.4	12.4	6.9	7.1	3.8	3.7	2.7	2.6	2.4	2.5	3.6	3.5
Operators, fabricators, and laborers	7.8	7.2	29.9	28.8	19.1	18.4	6.0	5.7	.4	.4	4.9	4.7	6.5	6.3
Machine setters, set-up operators, operators, and tenders	.6	.6	.1	.1	.9	.8	.2	.2	.0	.0	1.1	1.1	.3	.3
Hand workers, including assemblers and fabricators	.3	.3	.3	.3	1.2	1.1	.2	.2	.0	.0	.4	.3	.2	.2
Transportation and material moving machine and vehicle operators	3.8	3.6	22.7	22.2	10.0	10.3	1.9	1.9	.1	.1	1.6	1.6	2.9	3.0
Helpers, laborers, and material movers, hand	3.0	2.7	6.8	6.2	6.9	6.2	3.8	3.4	.2	.2	1.9	1.7	3.1	2.8

employed and unpaid family workers in agriculture, forestry, fishing, and related occupations is projected to decline by nearly 290,000 from 1988 to 2000.

### Detailed occupations

The Bureau has developed projections for nearly 500 detailed occupations. The growth rates among these occupations range from an increase of 76 percent to a decline of 44 percent, a much greater range than for the major occupational groups. The following discussion of detailed occupations points out occupations expected to grow rapidly and to add large numbers of jobs over the 1988–2000 period. Current and projected employment data on the detailed occupations that had total employment of 25,000 or more in 1988 are presented in table 4.

*Fastest growing occupations.* Reflecting the very rapid growth of the health services industries, half of the 20 occupations with the fastest projected growth rates are health service occupations. (See table 5.) The health-related occupation projected to grow most rapidly over the 1988–2000 period is medical assistants (70 percent). The next fastest growing occupation, home health aides, will be in great demand to serve the needs of the increasing population who are aged and ill but live at home. Other health occupations with rapid projected growth include: radiologic technicians and technologists, medical record technicians, medical secretaries, physical therapists, surgical technologists, physical and corrective therapy assistants and aides, and occupational therapists.

Rapid growth also is projected for occupations related to the continuing spread of computer technology. The number of data processing equipment repairers should increase rapidly to maintain the growing stock of computer and related equipment. Rapid growth of operations research analysts also is expected. These workers perform data analyses of the operations of manufacturing and other business organizations in order to improve efficiency. Their work often leads to changes in an organization's data processing methods. Computer systems analysts and computer programmers will be needed to improve methods of satisfying the expanding data processing needs of organizations.

Among other occupations with rapid employment growth, paralegals, the occupation with the fastest projected increase, is expected to benefit from the rapid growth of the legal services industry as well as increasing use of paralegals within the industry. Other growth occupations include securities and financial services

sales representatives, travel agents, and social welfare service aides.

*Occupations with the largest job growth.* In addition to rapidly growing occupations, occupations having the largest numerical increases are important in identifying careers that will provide favorable job opportunities. As can be seen in table 6, the rates of growth of some of the occupations expected to have the largest numerical increases are less than for the economy as a whole. Size of employment, however, has a major impact on numerical growth. All of the occupations in table 6 are among the largest in employment size. In addition to numerical growth, employment size also is a major factor in the number of openings that will occur, because of the need to replace workers who leave the labor force or transfer to other occupations.

Some of the occupations with the largest job growth are closely associated with an individual industry group. For the occupations in table 6, the industry groups are retail trade, health services, and educational services. These industries currently have high employment levels and all are projected to continue to grow.

Retail trade has the occupation with the largest expected job growth of all occupations—salespersons, retail, which is found in all retail trade industries. Within retail trade, the rapidly growing eating and drinking places industry has 3 of the top 20 occupations with the largest growth: waiters and waitresses; food counter, fountain, and related workers; and food preparation workers. Another retail trade occupation with a projected large increase is cashiers. Health services has the occupation with the second highest expected increase—registered nurses. Nursing aides and licensed practical nurses are two other occupations among the top 20 growth occupations which are found in health services. Educational services has two occupations in the top 20—secondary school teachers and kindergarten and elementary school teachers.

Other occupations that are expected to have large job gains are not as identifiable with an industry group and exhibit a wide range of skills and earnings levels. Janitors and cleaners, including maids and housekeeping cleaners, lead this group. Following closely behind in terms of employment gains are general managers and top executives, whose numbers are projected to grow because of the increasing complexity of industrial and commercial organizations. General office clerks are projected to increase as a result of recordkeeping needs and other office procedures for which no computer programs can be economically devised.

*Most of the fastest growing occupations are in the health services and computer technology fields.*

Table 4. **Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth**

[Numbers in thousands]

Occupation	Total employment				1988-2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Total, all occupations	118,104	127,118	136,211	144,146	9,015	18,107	26,043	8	15	22
Executive, administrative, and managerial occupations	12,104	13,764	14,762	15,656	1,661	2,658	3,552	14	22	29
Managerial and administrative occupations	8,675	9,841	10,575	11,209	1,165	1,900	2,534	13	22	29
Administrative services managers	217	257	274	291	40	57	73	18	26	34
Communication, transportation, and utilities operations managers	167	182	194	208	15	27	41	9	16	25
Construction managers	187	221	236	253	34	49	66	18	26	35
Education administrators	320	364	382	400	44	62	79	14	19	25
Engineering, mathematical, and natural sciences managers	258	315	341	371	57	83	113	22	32	44
Financial managers	673	750	802	848	77	130	176	12	19	26
Food service and lodging managers	560	670	721	755	109	161	195	20	29	35
General managers and top executives	3,030	3,269	3,509	3,710	239	479	680	8	16	22
Government chief executives and legislators	69	68	71	75	-1	2	6	-1	3	8
Industrial production managers	215	231	254	275	15	39	59	7	18	27
Marketing, advertising, and public relations managers	406	474	511	543	68	105	137	17	26	34
Personnel, training, and labor relations managers	171	194	208	221	23	38	50	14	22	30
Property and real estate managers	225	250	267	282	25	43	58	11	19	26
Purchasing managers	252	268	289	306	15	36	54	6	14	21
Management support occupations	3,428	3,923	4,187	4,447	495	759	1,018	14	22	30
Accountants and auditors	963	1,099	1,174	1,250	136	211	287	14	22	30
Budget analysts	62	68	72	77	6	10	15	10	17	25
Claims examiners, property and casualty insurance	30	35	37	38	5	7	8	16	23	28
Construction and building inspectors	56	61	64	68	5	8	12	9	14	21
Cost estimators	169	180	194	210	12	26	41	7	15	25
Employment interviewers, private or public employment service	81	107	113	121	26	33	40	32	40	50
Inspectors and compliance officers, except construction	130	143	148	156	12	18	26	9	14	20
Loan officers and counselors	172	196	209	217	25	37	46	14	22	27
Management analysts	130	164	176	188	34	46	57	26	35	44
Personnel, training, and labor relations specialists	252	286	305	323	34	53	71	14	21	28
Purchasing agents, except wholesale, retail, and farm products	206	219	236	254	14	30	48	7	15	23
Underwriters	103	126	134	139	22	30	35	22	29	34
Wholesale and retail buyers, except farm products	207	204	220	233	-3	13	26	-2	6	13
Professional specialty occupations	14,628	17,083	18,137	19,072	2,455	3,509	4,444	17	24	30
Engineers	1,411	1,625	1,762	1,933	214	351	522	15	25	37
Aeronautical and astronautical engineers	78	80	88	101	3	10	23	3	13	29
Chemical engineers	49	52	57	62	3	8	13	7	16	27
Civil engineers, including traffic engineers	186	206	219	236	20	32	49	10	17	26
Electrical and electronics engineers	439	565	615	676	126	176	237	29	40	54
Industrial engineers, except safety engineers	132	142	155	171	10	24	40	8	18	30
Mechanical engineers	225	247	269	294	23	44	69	10	20	31
Architects and surveyors	205	227	244	265	22	39	60	11	19	29
Architects, except landscape and marine	86	99	107	117	14	21	31	16	25	36
Surveyors	100	105	112	121	5	12	22	5	12	22
Life scientists	154	179	189	198	25	34	44	16	22	28
Agricultural and food scientists	25	29	30	32	4	5	7	14	21	29
Biological scientists	57	68	72	75	11	15	18	19	26	32
Foresters and conservation scientists	27	28	30	31	1	2	4	4	8	15
Computer, mathematical, and operations research analysts	503	712	763	823	209	259	320	41	52	63
Computer systems analysts	403	575	617	666	173	214	264	43	53	65
Operations research analysts	55	79	85	92	24	30	37	45	55	68
Physical scientists	184	201	215	231	17	31	47	9	17	26
Chemists	80	86	93	100	7	13	20	8	17	25
Geologists, geophysicists, and oceanographers	42	46	49	54	3	7	11	8	16	27
Social scientists	194	225	239	251	31	45	58	16	23	30
Economists	36	43	45	48	7	10	13	19	27	35
Psychologists	104	124	132	139	20	28	34	19	27	33

**Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth**

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Social, recreational, and religious workers .....	931	1,083	1,147	1,185	153	217	254	16	23	27
Clergy .....	185	186	199	204	0	13	19	0	7	10
Directors, religious activities and education .....	56	58	62	63	2	6	7	3	10	12
Human services workers .....	118	161	171	176	43	53	58	37	45	49
Recreational workers .....	186	209	221	229	24	35	43	13	19	23
Social workers .....	385	469	495	512	84	110	127	22	29	33
Lawyers and judicial workers .....	622	757	810	856	135	188	233	22	30	37
Judges, magistrates, and other judicial workers .....	40	45	47	50	5	7	10	13	18	24
Lawyers .....	582	712	763	806	130	181	224	22	31	38
Teachers, librarians, and counselors .....	5,379	5,937	6,228	6,499	558	849	1,121	10	16	21
Teachers, special education .....	275	304	317	332	29	43	57	11	16	21
Teachers, preschool .....	238	290	309	316	53	72	79	22	30	33
Teachers, kindergarten and elementary school .....	1,359	1,499	1,567	1,638	140	208	279	10	15	21
Teachers, secondary school .....	1,164	1,328	1,388	1,451	164	224	287	14	19	25
College and university faculty .....	846	831	869	908	-14	23	63	-2	3	7
Other teachers and instructors .....	490	514	545	571	24	55	81	5	11	17
Adult and vocational education teachers .....	467	493	523	548	27	56	81	6	12	17
Instructors, adult (nonvocational) education .....	227	250	268	282	22	41	54	10	18	24
Teachers and instructors, vocational education and training .....	239	243	255	266	4	16	27	2	7	11
Librarians, archivists, curators, and related workers .....	159	168	176	184	9	17	25	6	11	16
Librarians, professional .....	143	150	157	165	7	14	22	5	10	15
Counselors .....	124	150	157	164	26	33	41	21	27	33
Health diagnosing occupations .....	801	931	995	1,034	130	194	233	16	24	29
Dentists .....	167	175	189	196	8	22	30	5	13	18
Optometrists .....	37	40	43	45	3	6	8	9	16	21
Physicians .....	535	642	684	707	106	149	172	20	28	32
Veterinarians and veterinary inspectors .....	46	53	57	63	8	12	17	17	26	37
Health assessment and treating occupations .....	2,084	2,713	2,876	2,967	629	792	883	30	38	42
Dietitians and nutritionists .....	40	49	51	53	8	11	13	21	28	32
Pharmacists .....	162	192	206	215	30	44	52	18	27	32
Physician assistants .....	48	58	62	63	10	14	15	21	28	31
Registered nurses .....	1,577	2,069	2,190	2,258	491	613	680	31	39	43
Therapists .....	256	346	367	378	90	111	123	35	43	48
Occupational therapists .....	33	46	48	50	13	16	17	41	49	54
Physical therapists .....	68	101	107	110	32	39	42	48	57	62
Recreational therapists .....	26	33	35	36	8	10	11	29	37	41
Respiratory therapists .....	56	75	79	81	19	23	25	34	41	45
Speech-language pathologists and audiologists .....	53	64	68	71	11	15	18	21	28	33
Writers, artists, and entertainers .....	1,387	1,563	1,690	1,793	177	303	406	13	22	29
Artists and commercial artists .....	216	252	274	293	36	58	77	17	27	36
Designers .....	309	364	395	422	55	86	113	18	28	37
Musicians .....	229	233	251	261	4	22	32	2	9	14
Photographers and camera operators .....	105	116	125	132	11	20	27	10	19	26
Photographers .....	94	103	111	117	8	17	23	9	18	24
Producers, directors, actors, and entertainers .....	80	96	104	110	17	24	30	21	30	38
Public relations specialists and publicity writers .....	91	98	105	111	7	14	20	8	15	22
Radio and TV announcers and newscasters .....	57	63	67	71	6	11	14	11	19	25
Reporters and correspondents .....	70	75	82	87	5	12	16	7	16	23
Writers and editors, including technical writers .....	219	253	274	293	34	55	74	16	25	34
Technicians and related support occupations .....	3,867	4,766	5,089	5,384	900	1,222	1,517	23	32	39
Health technicians and technologists .....	1,645	2,085	2,211	2,281	440	566	636	27	34	39
Clinical lab technologists and technicians .....	242	272	288	296	30	46	54	12	19	22
Dental hygienists .....	91	100	107	109	10	16	18	11	18	20
Emergency medical technicians .....	76	82	86	90	5	10	14	7	13	18
Licensed practical nurses .....	626	806	855	881	180	229	255	29	37	41
Medical records technicians .....	47	71	75	77	24	28	30	51	60	64
Opticians, dispensing and measuring .....	49	61	65	67	11	16	18	22	31	36
Radiologic technologists and technicians .....	132	206	218	224	74	87	92	57	66	70
Surgical technologists .....	35	52	55	57	17	20	21	48	56	61

Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Engineering and science technicians and technologists .....	1,273	1,446	1,559	1,690	173	286	417	14	22	33
Engineering technicians .....	722	858	926	1,007	136	204	285	19	28	39
Electrical and electronic engineering technicians and technologists .....	341	434	471	515	93	130	174	27	38	51
Drafters .....	319	331	358	389	12	39	71	4	12	22
Science and mathematics technicians .....	232	257	275	294	25	43	62	11	19	27
Technicians, except health and engineering and science .....	949	1,235	1,319	1,413	287	370	464	30	39	49
Aircraft pilots and flight engineers .....	83	101	108	117	18	26	34	22	31	41
Air traffic controllers .....	27	30	31	33	3	4	6	13	15	22
Broadcast technicians .....	27	18	19	20	-10	-8	-7	-36	-31	-27
Computer programmers .....	519	716	769	831	197	250	312	38	48	60
Legal assistants and technicians, except clerical .....	200	274	290	305	74	90	105	37	45	52
Paralegals .....	83	136	145	153	54	62	70	65	75	84
Title examiners and searchers .....	27	29	31	33	3	5	6	10	17	23
Technical assistants, library .....	54	56	59	62	2	5	7	4	9	14
Marketing and sales occupations .....	13,316	14,758	15,924	16,801	1,442	2,609	3,485	11	20	26
Cashiers .....	2,310	2,429	2,614	2,733	119	304	423	5	13	18
Counter and rental clerks .....	241	288	308	325	46	67	84	19	28	35
Insurance sales workers .....	423	448	481	503	25	58	80	6	14	19
Real estate agents, brokers, and appraisers .....	422	457	493	523	35	72	101	8	17	24
Brokers, real estate .....	70	77	84	89	8	14	19	11	20	27
Real estate appraisers .....	41	46	49	51	5	8	11	13	20	26
Sales agents, real estate .....	311	334	361	383	23	50	72	7	16	23
Salespersons, retail .....	3,834	4,225	4,564	4,785	391	730	951	10	19	25
Securities and financial services sales workers .....	200	289	309	325	89	109	125	45	55	63
Stock clerks, sales floor .....	1,166	1,241	1,340	1,406	75	174	240	6	15	21
Travel agents .....	142	204	219	235	62	77	93	43	54	66
Administrative support occupations, including clerical .....	21,066	22,092	23,553	24,925	1,026	2,487	3,859	5	12	18
Adjusters, investigators, and collectors .....	931	1,040	1,108	1,162	109	177	231	12	19	25
Adjustment clerks .....	231	258	278	295	27	47	63	12	20	27
Bill and account collectors .....	149	182	195	206	33	46	57	22	31	38
Insurance claims and policy processing occupations .....	420	448	476	494	28	56	74	7	13	18
Insurance adjusters, examiners, and investigators .....	145	164	175	181	19	29	36	13	20	25
Insurance claims clerks .....	103	108	115	119	5	11	16	5	11	15
Insurance policy processing clerks .....	171	175	186	193	4	15	22	2	9	13
Welfare eligibility workers and interviewers .....	91	98	102	107	6	11	16	7	12	18
Communications equipment operators .....	346	372	397	421	27	52	75	8	15	22
Telephone operators .....	330	354	378	400	25	49	71	7	15	21
Central office operators .....	43	34	36	39	-9	-6	-4	-20	-15	-10
Directory assistance operators .....	33	25	26	28	-8	-7	-5	-25	-21	-16
Switchboard operators .....	254	296	316	334	41	62	80	16	24	31
Computer operators and peripheral equipment operators .....	316	381	408	436	65	92	120	20	29	38
Computer operators, except peripheral equipment .....	275	331	354	379	56	80	104	20	29	38
Peripheral EDP equipment operators .....	42	50	54	58	9	12	16	21	29	38
Financial records processing occupations .....	2,849	2,674	2,866	3,034	-175	18	185	-6	1	7
Billing, cost, and rate clerks .....	323	311	333	352	-11	11	29	-3	3	9
Billing, posting, and calculating machine operators .....	99	84	89	95	-15	-9	-4	-15	-10	-4
Bookkeeping, accounting, and auditing clerks .....	2,252	2,119	2,272	2,405	-133	20	154	-6	1	7
Payroll and timekeeping clerks .....	176	160	172	183	-15	-4	7	-9	-2	4
Information clerks .....	1,316	1,648	1,757	1,845	333	441	529	25	34	40
Hotel desk clerks .....	113	134	142	151	21	29	38	18	26	34
Interviewing clerks, except personnel and social welfare .....	129	143	152	161	14	23	32	11	18	25
New accounts clerks, banking .....	108	121	129	135	13	21	27	12	19	25
Receptionists and information clerks .....	833	1,092	1,164	1,216	259	331	383	31	40	46
Reservation and transportation ticket agents and travel clerks .....	133	159	170	182	26	37	49	19	28	37

**Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth**

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Mail clerks and messengers .....	259	267	285	302	8	26	42	3	10	16
Mail clerks, except mail machine operators and postal service .....	136	130	137	146	-6	2	10	-5	1	7
Messengers .....	123	138	147	156	14	24	33	12	19	27
Postal clerks and mail carriers .....	665	679	707	772	14	41	107	2	6	16
Postal mail carriers .....	285	298	310	339	13	25	54	5	9	19
Postal service clerks .....	380	381	396	433	1	16	53	0	4	14
Material recording, scheduling, dispatching, and distributing occupations .....	2,278	2,313	2,490	2,665	35	212	387	2	9	17
Dispatchers .....	202	217	231	246	15	29	44	7	14	22
Dispatchers, except police, fire, and ambulance .....	137	149	160	172	12	23	34	9	16	25
Dispatchers, police, fire, and ambulance .....	64	68	71	74	3	6	10	5	10	15
Meter readers, utilities .....	49	42	45	49	-6	-4	0	-13	-9	-1
Order fillers, wholesale and retail sales .....	207	208	224	239	1	17	33	1	8	16
Procurement clerks .....	42	43	47	50	1	4	8	2	10	18
Production, planning, and expediting clerks .....	229	229	250	272	1	21	44	0	9	19
Stock clerks, stockroom, warehouse, or storage yard .....	778	783	841	896	5	63	118	1	8	15
Traffic, shipping, and receiving clerks .....	535	546	591	633	11	55	98	2	10	18
Weighers, measurers, checkers, and samplers, recordkeeping .....	40	41	45	49	1	5	8	3	12	21
Records processing occupations, except financial .....	933	927	990	1,046	-6	56	113	-1	6	12
Brokerage clerks .....	64	62	66	69	-2	2	5	-3	3	8
Correspondence clerks .....	29	35	37	39	6	8	10	20	27	34
File clerks .....	263	272	290	305	9	27	42	3	10	16
Library assistants and bookmobile drivers .....	105	106	111	116	1	6	11	1	6	11
Order clerks, materials, merchandise, and service .....	293	268	289	309	-26	-4	15	-9	-2	5
Personnel clerks, except payroll and timekeeping .....	129	133	141	149	4	12	21	3	9	16
Statement clerks .....	32	31	33	34	-1	1	3	-4	3	8
Secretaries, stenographers, and typists .....	4,517	4,688	4,991	5,272	171	474	755	4	10	17
Secretaries .....	3,373	3,701	3,944	4,165	328	571	792	10	17	23
Legal secretaries .....	263	309	329	347	46	67	84	18	25	32
Medical secretaries .....	207	307	327	334	100	120	127	49	58	61
Secretaries, except legal and medical .....	2,903	3,085	3,288	3,484	181	385	581	6	13	20
Stenographers .....	159	116	122	130	-43	-36	-29	-27	-23	-18
Typists and word processors .....	985	871	924	978	-115	-61	-8	-12	-6	-1
Other clerical and administrative support workers .....	6,656	7,101	7,554	7,971	445	898	1,315	7	13	20
Bank tellers .....	522	513	546	572	-9	24	50	-2	5	10
Clerical supervisors and managers .....	1,183	1,237	1,319	1,394	54	137	211	5	12	18
Court clerks .....	42	49	51	54	7	9	12	16	21	28
Credit authorizers, credit checkers, and loan and credit clerks .....	229	273	291	304	43	61	74	19	27	32
Credit checkers .....	35	41	44	46	6	9	12	18	26	34
Loan and credit clerks .....	151	180	192	199	30	41	49	20	27	32
Customer service representatives, utilities .....	102	113	120	129	11	18	26	11	17	26
Data entry keyers, except composing .....	431	383	410	437	-48	-21	6	-11	-5	2
Duplicating, mail, and other office machine operators .....	164	170	181	193	6	17	29	3	10	18
General office clerks .....	2,519	2,787	2,974	3,144	268	455	625	11	18	25
Proofreaders and copy markers .....	33	29	31	33	-5	-2	-1	-15	-7	-2
Real estate clerks .....	28	28	30	31	0	2	3	1	6	11
Statistical clerks .....	77	71	76	80	-6	-1	3	-8	-2	4
Teacher aides and educational assistants .....	682	789	827	861	107	145	179	16	21	26
Service occupations .....	18,479	21,244	22,651	23,612	2,765	4,172	5,133	15	23	28
Cleaning and building service occupations, except private household .....	3,312	3,722	3,960	4,166	409	648	853	12	20	26
Housekeepers, institutional .....	138	178	189	198	40	51	59	29	37	43
Janitors and cleaners, including maids and housekeeping cleaners .....	2,895	3,240	3,450	3,629	345	556	734	12	19	25
Pest controllers and assistants .....	48	53	56	60	4	8	12	9	16	24



Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Food preparation and service occupations .....	7,503	8,646	9,227	9,543	1,143	1,724	2,040	15	23	27
Chefs, cooks, and other kitchen workers .....	2,755	3,133	3,341	3,458	378	586	702	14	21	25
Cooks, except short order .....	1,099	1,278	1,362	1,412	180	263	313	16	24	29
Bakers, bread and pastry .....	124	155	167	174	31	43	50	25	35	41
Cooks, institution or cafeteria .....	403	443	467	484	40	64	81	10	16	20
Cooks, restaurant .....	572	680	728	754	108	155	181	19	27	32
Cooks, short order and fast food .....	630	672	719	741	43	89	111	7	14	18
Food preparation workers .....	1,027	1,183	1,260	1,305	156	234	278	15	23	27
Food and beverage service occupations .....	4,458	5,174	5,526	5,710	716	1,068	1,252	16	24	28
Bartenders .....	414	473	506	523	59	92	109	14	22	26
Dining room and cafeteria attendants and bar helpers .....	448	542	578	597	94	130	149	21	29	33
Food counter, fountain, and related workers .....	1,626	1,747	1,866	1,927	121	240	301	7	15	19
Hosts and hostesses, restaurant, lounge, or coffee shop .....	183	224	239	247	41	56	64	22	31	35
Waiters and waitresses .....	1,786	2,188	2,337	2,415	402	551	629	22	31	35
Health service occupations .....	1,833	2,307	2,450	2,518	474	617	685	26	34	37
Dental assistants .....	166	185	197	201	20	31	36	12	19	21
Medical assistants .....	149	238	253	259	89	104	110	60	70	74
Nursing aides and psychiatric aides .....	1,298	1,603	1,703	1,752	305	405	454	24	31	35
Nursing aides, orderlies, and attendants .....	1,184	1,469	1,562	1,606	286	378	422	24	32	36
Psychiatric aides .....	114	134	141	146	19	27	31	17	24	28
Pharmacy assistants .....	70	83	89	92	13	19	22	19	27	32
Physical and corrective therapy assistants and aides ..	39	56	60	61	17	21	22	44	52	56
Personal service occupations .....	2,062	2,442	2,625	2,744	381	564	682	18	27	33
Amusement and recreation attendants .....	175	205	217	225	29	42	50	17	24	28
Baggage porters and bellhops .....	32	38	40	43	6	8	11	18	26	34
Barbers .....	76	70	76	79	-6	0	4	-8	0	5
Child care workers .....	670	790	856	901	120	186	231	18	28	34
Cosmetologists and related workers .....	649	678	731	763	29	82	114	4	13	18
Hairdressers, hairstylists, and cosmetologists .....	609	632	683	713	23	74	104	4	12	17
Manicurists .....	26	31	33	34	5	7	8	17	26	31
Flight attendants .....	88	114	123	132	26	34	43	29	39	49
Homemaker-home health aides .....	327	503	535	550	176	207	223	54	63	68
Home health aides .....	236	373	397	409	137	160	173	58	68	73
Social welfare service aides .....	91	130	138	141	39	47	50	43	52	55
Ushers, lobby attendants, and ticket takers .....	44	45	48	51	1	4	6	1	8	14
Private household workers .....	902	790	860	909	-112	-42	7	-12	-5	1
Child care workers, private household .....	375	319	347	367	-56	-28	-8	-15	-8	-2
Cleaners and servants, private household .....	477	427	464	491	-50	-13	14	-11	-3	3
Housekeepers and butlers .....	34	30	33	35	-4	-1	1	-11	-3	3
Protective service occupations .....	2,129	2,475	2,610	2,771	346	481	642	16	23	30
Correction officers and jailers .....	186	251	262	276	65	76	90	35	41	48
Firefighting occupations .....	291	307	321	337	16	29	46	5	10	16
Firefighters .....	233	246	257	270	13	24	37	6	10	16
Firefighting and prevention supervisors .....	47	49	51	54	2	4	7	5	9	15
Police and detectives .....	515	559	583	614	44	68	98	8	13	19
Police and detective supervisors .....	88	93	97	102	5	9	14	6	10	16
Police and detective investigators .....	61	64	66	70	3	5	9	5	9	15
Police patrol officers .....	367	403	421	442	36	54	76	10	15	21
Crossing guards .....	57	58	61	64	1	4	7	2	7	12
Guards .....	795	983	1,050	1,129	189	256	335	24	32	42
Other protective service workers .....	285	316	333	351	31	48	67	11	17	23
Detectives and investigators, except public .....	47	57	61	65	10	14	18	22	31	40
Sheriffs and deputy sheriffs .....	63	60	63	66	-3	0	3	-5	0	5
Agriculture, forestry, fishing, and related occupations ..	3,503	3,079	3,334	3,597	-424	-169	94	-12	-5	3
Animal caretakers, except farm .....	92	99	106	114	8	14	23	8	16	25
Farm occupations .....	984	768	840	922	-216	-144	-62	-22	-15	-6
Farm workers .....	938	717	785	863	-221	-153	-75	-24	-16	-8
Nursery workers .....	46	51	55	60	5	9	13	11	20	29

Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Farm operators and managers . . . . .	1,272	946	1,035	1,109	-326	-237	-163	-26	-19	-13
Farmers . . . . .	1,141	800	875	932	-341	-266	-209	-30	-23	-18
Farm managers . . . . .	131	146	160	177	15	29	46	12	22	35
Fishers, hunters, and trappers . . . . .	54	56	60	64	1	6	10	2	10	17
Fishers, hunters, and trappers . . . . .	47	48	51	55	0	4	7	0	9	16
Forestry and logging occupations . . . . .	146	130	139	151	-16	-6	5	-11	-4	4
Forest and conservation workers . . . . .	40	42	44	47	2	4	7	6	11	17
Timber cutting and logging occupations . . . . .	106	87	95	104	-18	-10	-2	-17	-10	-2
Fallers and buckers . . . . .	36	27	30	32	-9	-6	-4	-24	-17	-10
Logging tractor operators . . . . .	29	25	27	30	-4	-2	1	-13	-6	4
Gardeners and groundskeepers, except farm . . . . .	760	884	943	1,009	123	182	249	16	24	33
Supervisors, farming, forestry, and agricultural related occupations . . . . .	79	77	83	91	-2	4	13	-2	5	16
Precision production, craft, and repair occupations . . . . .	14,159	14,444	15,563	16,683	285	1,404	2,525	2	10	18
Blue-collar worker supervisors . . . . .	1,797	1,788	1,930	2,074	-9	133	277	-1	7	15
Construction trades . . . . .	3,807	4,119	4,423	4,734	312	617	927	8	16	24
Bricklayers and stone masons . . . . .	167	179	193	207	13	26	40	8	16	24
Carpenters . . . . .	1,081	1,166	1,257	1,344	85	175	262	8	16	24
Carpet installers . . . . .	56	63	68	72	7	12	16	12	21	29
Concrete and terrazzo finishers . . . . .	114	125	134	143	10	19	29	9	17	25
Drywall installers and finishers . . . . .	152	166	178	191	13	26	39	9	17	25
Electricians . . . . .	542	595	638	686	53	96	144	10	18	27
Glaziers . . . . .	49	54	58	62	5	9	12	9	18	25
Hard tile setters . . . . .	26	30	32	34	4	6	8	14	22	31
Highway maintenance workers . . . . .	175	182	190	200	7	15	25	4	9	14
Insulation workers . . . . .	64	72	77	83	7	12	18	11	19	28
Painters and paperhangers, construction and maintenance . . . . .	431	465	501	535	34	70	104	8	16	24
Paving, surfacing, and tamping equipment operators . . . . .	70	77	82	87	7	12	17	10	17	24
Pipelayers and pipelaying fitters . . . . .	52	56	59	63	3	7	11	7	13	22
Plasterers . . . . .	26	27	29	31	0	2	4	1	8	16
Plumbers, pipefitters, and steamfitters . . . . .	396	437	469	503	41	73	107	10	18	27
Roofers . . . . .	123	136	147	157	13	24	34	11	19	28
Structural and reinforcing metal workers . . . . .	78	86	92	98	8	14	21	11	18	27
Extractive and related workers, including blasters . . . . .	230	225	239	274	-5	9	44	-2	4	19
Oil and gas extraction occupations . . . . .	82	84	89	110	2	7	28	3	9	35
Roustabouts . . . . .	39	37	39	48	-2	0	9	-5	1	24
Mechanics, installers, and repairers . . . . .	4,839	5,098	5,471	5,836	259	633	997	5	13	21
Communications equipment mechanics, installers, and repairers . . . . .	113	88	94	100	-24	-19	-13	-22	-16	-11
Central office and pbx installers and repairers . . . . .	75	56	59	63	-19	-15	-12	-25	-21	-16
Electrical and electronic equipment mechanics, installers, and repairers . . . . .	533	549	586	631	16	53	98	3	10	18
Data processing equipment repairers . . . . .	71	106	115	125	35	44	54	50	61	76
Electrical powerline installers and repairers . . . . .	104	116	122	134	11	18	29	11	17	28
Electronic home entertainment equipment repairers . . . . .	44	46	49	52	2	6	8	4	13	19
Electronics repairers, commercial and industrial equipment . . . . .	79	87	92	99	8	13	20	10	17	25
Station installers and repairers, telephone . . . . .	58	44	47	49	-14	-12	-9	-25	-20	-15
Telephone and cable TV line installers and repairers . . . . .	127	94	100	106	-33	-27	-21	-26	-21	-16
Machinery and related mechanics, installers, and repairers . . . . .	1,620	1,777	1,910	2,038	157	290	418	10	18	26
Industrial machinery mechanics . . . . .	463	496	538	580	33	75	117	7	16	25
Maintenance repairers, general utility . . . . .	1,080	1,199	1,282	1,359	119	202	279	11	19	26
Millwrights . . . . .	77	83	90	99	6	13	22	8	17	28
Vehicle and mobile equipment mechanics and repairers . . . . .	1,598	1,738	1,868	1,984	140	270	386	9	17	24

**Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth**

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Aircraft mechanics and engine specialists	124	135	144	157	11	20	33	9	16	27
Aircraft mechanics	106	116	124	135	10	18	29	9	17	28
Automotive body and related repairers	214	251	270	284	37	56	70	17	26	33
Automotive mechanics	771	833	898	947	62	126	175	8	16	23
Bus and truck mechanics and diesel engine specialists	269	292	312	335	23	43	66	8	16	24
Farm equipment mechanics	54	51	55	59	-3	1	5	-6	1	9
Mobile heavy equipment mechanics	108	116	124	134	8	16	26	7	14	24
Motorcycle, boat, and small engine mechanics	58	60	65	69	3	8	12	5	13	20
Small engine specialists	43	47	50	53	4	8	11	9	18	25
Other mechanics, installers, and repairers	975	945	1,013	1,083	-30	39	108	-3	4	11
Coin and vending machine servicers and repairers	27	25	27	28	-2	0	1	-7	1	5
Heat, air conditioning, and refrigeration mechanics and installers	225	245	263	281	20	38	55	9	17	25
Home appliance and power tool repairers	76	71	76	81	-6	0	4	-8	0	5
Office machine and cash register servicers	56	53	57	61	-3	1	5	-6	1	9
Precision instrument repairers	46	46	50	55	0	4	8	0	8	18
Tire repairers and changers	88	93	100	105	5	12	17	6	14	20
Production occupations, precision	3,190	2,941	3,208	3,453	-249	18	263	-8	1	8
Assemblers, precision	354	236	263	291	-118	-91	-63	-33	-26	-18
Aircraft assemblers, precision	31	28	31	36	-3	-1	5	-11	-2	16
Electrical and electronic equipment assemblers, precision	161	81	91	99	-80	-71	-62	-50	-44	-39
Electromechanical equipment assemblers, precision	59	47	53	58	-11	-6	0	-19	-10	0
Machine builders and other precision machine assemblers	55	42	47	51	-13	-8	-4	-23	-15	-6
Food workers, precision	332	314	340	353	-18	7	21	-5	2	6
Bakers, manufacturing	41	37	40	40	-4	-1	0	-9	-3	-1
Butchers and meatcutters	258	248	269	281	-9	12	23	-4	4	9
Inspectors, testers, and graders, precision	676	579	634	688	-96	-42	12	-14	-6	2
Metal workers, precision	969	943	1,030	1,119	-25	61	151	-3	6	16
Boilermakers	25	25	27	29	0	2	4	1	9	18
Jewelers and silversmiths	35	38	41	44	2	6	9	6	16	26
Machinists	397	395	433	472	-1	36	75	0	9	19
Sheet metal workers and duct installers	246	238	257	277	-8	11	31	-3	4	13
Tool and die makers	152	145	159	173	-8	7	21	-5	4	14
Printing workers, precision	105	104	114	120	0	9	16	0	9	15
Compositors and typesetters, precision	26	23	25	27	-3	-1	0	-13	-5	1
Lithography and photoengraving workers, precision	44	46	51	54	3	7	10	6	16	23
Textile, apparel, and furnishing workers, precision	293	293	319	341	0	26	48	0	9	16
Custom tailors and sewers	130	135	146	155	4	16	24	3	12	19
Shoe and leather workers and repairers, precision	32	28	32	38	-4	0	7	-12	0	21
Upholsterers	73	74	81	85	2	8	12	2	11	17
Woodworkers, precision	227	230	249	265	3	22	39	1	10	17
Other precision workers	236	241	260	275	5	25	40	2	10	17
Dental lab technicians, precision	51	52	56	57	2	5	7	3	10	14
Optical goods workers, precision	26	30	33	35	5	7	9	18	28	35
Plant and system occupations	296	274	291	313	-22	-5	17	-8	-2	6
Chemical plant and system operators	35	25	28	30	-10	-7	-4	-28	-20	-12
Electric power generating plant operators, distributors, and dispatchers	45	49	51	56	4	6	11	9	14	25
Power generating and reactor plant operators	25	28	29	32	3	4	7	11	17	28
Gas and petroleum plant and system occupations	30	20	22	24	-9	-7	-5	-31	-24	-17
Stationary engineers	36	34	36	38	-3	0	2	-7	-1	5
Water and liquid waste treatment plant and system operators	76	83	87	92	7	11	16	9	14	21
Operators, fabricators, and laborers	16,983	15,888	17,198	18,417	-1,095	215	1,434	-6	1	8
Machine setters, set-up operators, operators, and tenders	4,949	4,373	4,779	5,136	-575	-170	187	-12	-3	4

**Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth**

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Numerical control machine tool operators and tenders, metal and plastic .....	64	63	70	77	-1	6	13	-1	9	21
Combination machine tool setters, set-up operators, operators, and tenders .....	89	88	97	105	-1	8	17	-1	9	19
Machine tool cut and form setters, operators, and tenders, metal and plastic .....	791	678	747	814	-114	-45	23	-14	-6	3
Drilling and boring machine tool setters and set-up operators, metal and plastic .....	56	49	54	59	-7	-2	3	-12	-3	6
Grinding machine setters and set-up operators, metal and plastic .....	72	64	70	77	-8	-1	5	-11	-2	7
Lathe and turning machine tool setters and set-up operators, metal and plastic .....	89	78	86	94	-11	-3	5	-12	-3	6
Machine forming operators and tenders, metal and plastic .....	184	151	166	180	-33	-18	-5	-18	-10	-2
Machine tool cutting operators and tenders, metal and plastic .....	148	121	133	146	-27	-15	-2	-18	-10	-1
Punching machine setters and set-up operators, metal and plastic .....	51	45	50	54	-6	-1	3	-11	-2	6
Metal fabricating machine setters, operators, and related workers .....	149	122	134	145	-27	-15	-4	-18	-10	-3
Metal fabricators, structural metal products .....	40	36	39	42	-4	-1	2	-10	-2	5
Welding machine setters, operators, and tenders .....	99	78	86	93	-21	-14	-6	-21	-14	-6
Metal and plastic processing machine setters, operators, and related workers .....	392	363	401	437	-29	9	45	-7	2	11
Electrolytic plating machine operators and tenders, setters and set-up operators, metal and plastic .....	44	37	41	44	-8	-4	0	-17	-8	0
Metal molding machine operators and tenders, setters and set-up operators .....	35	31	35	38	-4	-1	2	-12	-2	7
Plastic molding machine operators and tenders, setters and set-up operators .....	144	159	176	191	15	32	47	11	22	33
Printing, binding, and related workers .....	422	442	482	512	20	60	89	5	14	21
Bindery machine operators and set-up operators .....	63	65	71	75	2	7	12	3	11	18
Printing press operators .....	239	251	274	291	12	35	52	5	15	22
Offset lithographic press operators .....	91	105	114	121	14	23	30	15	25	33
Printing press machine setters, operators and tenders .....	108	109	119	126	0	10	18	0	9	17
Typesetting and composing machine operators and tenders .....	39	41	45	47	2	6	8	5	14	21
Textile and related setters, operators, and related workers .....	1,161	956	1,036	1,107	-205	-125	-54	-18	-11	-5
Pressing machine operators and tenders, textile, garment, and related materials .....	87	89	95	100	2	8	12	2	9	14
Sewing machine operators, garment .....	620	493	531	565	-127	-89	-56	-21	-14	-9
Sewing machine operators, nongarment .....	143	124	135	144	-19	-8	1	-14	-6	1
Textile bleaching and dyeing machine operators and tenders .....	26	21	23	25	-5	-4	-2	-21	-13	-6
Textile draw-out and winding machine operators and tenders .....	227	180	197	215	-47	-30	-12	-21	-13	-5
Textile machine setters and set-up operators .....	37	31	33	36	-6	-3	0	-17	-9	0
Woodworking machine setters, operators, and other related workers .....	149	148	161	172	-1	12	23	-1	8	15
Head sawyers and sawing machine operators and tenders, setters, and set-up operators .....	80	79	86	92	-1	6	12	-1	7	16
Woodworking machine operators and tenders, setters, and set-up operators .....	69	69	75	80	0	6	11	-1	8	15
Other machine setters, set-up operators, operators, and tenders .....	1,731	1,514	1,652	1,766	-217	-79	35	-13	-5	2
Cement and gluing machine operators and tenders .....	40	32	36	40	-8	-4	0	-20	-11	-1
Chemical equipment controllers, operators, and tenders .....	70	54	59	65	-16	-11	-5	-23	-15	-8

Table 4. Continued—Civilian employment in occupations with 25,000 workers or more, actual 1988 and projected to 2000, under low, medium, and high scenarios for economic growth

[Numbers in thousands]

Occupation	Total employment				1988–2000 employment change					
	1988	2000			Number			Percent		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Crushing and mixing machine operators and tenders .....	136	107	117	126	-29	-19	-10	-21	-14	-7
Cutting and slicing machine setters, operators and tenders .....	91	73	80	86	-18	-11	-5	-20	-12	-5
Electronic semiconductor processors .....	38	29	34	35	-9	-4	-3	-23	-11	-9
Extruding and forming machine setters, operators, and tenders .....	100	96	106	114	-3	6	14	-3	6	14
Furnace, kiln, oven, drier, or kettle operators and tenders .....	62	47	52	56	-15	-11	-6	-24	-17	-10
Laundry and drycleaning machine operators and tenders, except pressing .....	169	195	208	216	25	39	47	15	23	28
Packaging and filling machine operators and tenders .....	286	232	254	266	-54	-33	-21	-19	-11	-7
Painting and coating machine operators .....	159	153	168	181	-6	9	22	-4	5	14
Coating, painting, and spraying machine operators, tenders, setters, and set-up operators .....	113	112	123	133	-1	10	20	-1	9	18
Painters, transportation equipment .....	46	41	45	48	-5	-2	2	-11	-4	4
Paper goods machine setters and set-up operators ..	54	51	56	60	-2	3	6	-4	5	12
Photographic processing machine operators and tenders .....	49	53	57	62	5	9	13	10	18	27
Hand workers, including assemblers and fabricators ...	2,528	2,067	2,266	2,430	-461	-262	-98	-18	-10	-4
Cannery workers .....	71	63	70	71	-8	-1	-1	-11	-2	-1
Cutters and trimmers, hand .....	63	59	65	69	-4	2	6	-6	3	10
Electrical and electronic assemblers .....	237	119	134	144	-118	-103	-93	-50	-44	-39
Grinders and polishers, hand .....	84	67	74	80	-17	-11	-4	-21	-13	-5
Machine assemblers .....	47	37	41	45	-9	-5	-2	-20	-12	-4
Meat, poultry, and fish cutters and trimmers, hand ...	110	117	129	131	7	18	20	6	17	19
Painting, coating, and decorating workers, hand .....	45	40	43	46	-6	-2	1	-12	-4	2
Solderers and brazers .....	29	25	27	29	-4	-2	0	-15	-6	1
Welders and cutters .....	325	285	309	337	-40	-16	12	-12	-5	4
Transportation and material moving machine and vehicle operators .....	4,612	4,803	5,154	5,516	192	542	904	4	12	20
Motor vehicle operators .....	3,300	3,550	3,808	4,064	251	508	764	8	15	23
Bus drivers .....	506	564	593	622	59	88	116	12	17	23
Bus drivers .....	157	166	175	184	9	18	27	6	12	17
Bus drivers, school .....	349	399	418	438	50	70	89	14	20	25
Taxi drivers and chauffeurs .....	109	127	137	145	18	28	37	16	26	34
Truck drivers .....	2,641	2,808	3,024	3,240	167	382	599	6	14	23
Driver-sales workers .....	242	236	255	267	-6	13	25	-2	5	10
Truck drivers, light and heavy .....	2,399	2,572	2,768	2,973	173	369	574	7	15	24
Rail transportation workers .....	106	84	90	99	-22	-16	-7	-21	-15	-7
Railroad brake, signal, and switch operators .....	37	27	29	32	-11	-9	-6	-28	-23	-15
Railroad conductors and yardmasters .....	27	20	21	24	-7	-5	-3	-25	-20	-11
Water transportation and related workers .....	148	140	149	158	-8	1	10	-5	1	7
Material moving equipment operators .....	1,010	972	1,047	1,131	-38	37	121	-4	4	12
Crane and tower operators .....	60	61	66	73	2	7	13	3	11	22
Excavation and loading machine operators .....	76	78	84	90	2	8	15	3	10	19
Grader, dozer, and scraper operators .....	86	90	96	105	3	10	19	4	11	22
Industrial truck and tractor operators .....	421	369	400	429	-52	-21	8	-12	-5	2
Operating engineers .....	158	168	179	191	11	21	34	7	13	22
Helpers, laborers, and material movers, hand .....	4,894	4,644	4,999	5,335	-251	105	441	-5	2	9
Freight, stock, and material movers, hand .....	884	837	905	963	-47	21	79	-5	2	9
Hand packers and packagers .....	635	516	560	596	-119	-75	-39	-19	-12	-6
Helpers, construction trades .....	555	592	633	681	37	78	126	7	14	23
Machine feeders and offbearers .....	249	199	218	232	-50	-31	-17	-20	-13	-7
Parking lot attendants .....	47	50	54	56	3	7	9	7	14	19
Refuse collectors .....	126	120	126	135	-6	0	10	-5	0	8
Service station attendants .....	308	307	331	348	-1	23	40	0	7	13
Vehicle washers and equipment cleaners .....	215	214	230	242	-1	15	27	-1	7	13

### Implications of the projections

The differential growth of occupations has a variety of implications for the job market expected through the 1990's, especially for the characteristics of workers who will have the best opportunities and those who are likely to have the most difficulty in obtaining good jobs. The following sections discuss the likely conse-

quences of declining occupations, the need for education and training, and the implications of the projections for job opportunities for members of minority groups.

*Declining occupations and worker displacement.* The Bureau projects many industries to decline in employment between 1988 and 2000. Workers employed in occupations that are concentrated in these industries are potentially subject to displacement. However, such workers may have more favorable reemployment prospects if employment gains in their occupation in growing industries are greater than losses in declining ones. Workers in occupations that are expected to decline in growing industries as well as in declining ones, generally because of the impact of widespread technological change, also are subject to potential displacement.

The analysis presented here deals only with potential job losses implied by the Bureau's 1988-2000 employment projections. It does not attempt to identify workers who may lose their jobs because of business failure in a growing industry, such as eating and drinking places. Such workers generally have favorable prospects for reemployment in the same occupation and geographic area, although many no doubt suffer periods of unemployment.<sup>3</sup> It should be noted also that not all workers in declining occupations whose jobs are eliminated become displaced. Their employers may place them in similar occupations or provide training for other jobs. Finally, the analysis does not attempt to account for the effects of business cycles on worker displacement.

The data analyzed relate only to wage and salary workers and exclude self-employed and unpaid family workers. The 258 detailed industries in the 1988 and projected 2000 industry-occupation matrixes were divided into two groups—industries that are projected to grow and those that are projected to decline. Within each group, estimates of employment change for individual occupations were developed. The combined total for declining and growing industries reflects 1988-2000 employment change for the economy as a whole.

Table 7 shows the 1988-2000 employment change, by occupation, for all occupations with a projected decline of 10,000 workers or more in declining industries. Data are presented on employment change in all industries, in all industries that are projected to decline, and in all industries projected to show employment growth. The occupations are ranked by the absolute employment decline in the declining industries. The table indicates whether there might be favorable reemployment opportunities

**Table 5. Fastest growing occupations, 1988-2000, moderate alternative projection**

[Numbers in thousands]

Occupation	Employment		Numerical change	Percent change
	1988	2000		
Paralegals .....	83	145	62	75.3
Medical assistants .....	149	253	104	70.0
Home health aides .....	236	397	160	67.9
Radiologic technologists and technicians .....	132	218	87	66.0
Data processing equipment repairers .....	71	115	44	61.2
Medical records technicians .....	47	75	28	59.9
Medical secretaries .....	207	327	120	58.0
Physical therapists .....	68	107	39	57.0
Surgical technologists .....	35	55	20	56.4
Operations research analysts .....	55	85	30	55.4
Securities and financial services sales workers ..	200	309	109	54.8
Travel agents .....	142	219	77	54.1
Computer systems analysts .....	403	617	214	53.3
Physical and corrective therapy assistants .....	39	60	21	52.5
Social welfare service aides .....	91	138	47	51.5
Occupational therapists .....	33	48	16	48.8
Computer programmers .....	519	769	250	48.1
Human services workers .....	118	171	53	44.9
Respiratory therapists .....	56	79	23	41.3
Correction officers and jailers .....	186	262	76	40.8

**Table 6. Occupations with the largest job growth, 1988-2000, moderate alternative projection**

[Numbers in thousands]

Occupation	Employment		Numerical change	Percent change
	1988	2000		
Salespersons, retail .....	3,834	4,564	730	19.0
Registered nurses .....	1,577	2,190	613	38.8
Janitors and cleaners, including maids and housekeeping cleaners .....	2,895	3,450	556	19.2
Waiters and waitresses .....	1,786	2,337	551	30.9
General managers and top executives .....	3,030	3,509	479	15.8
General office clerks .....	2,519	2,974	455	18.1
Secretaries, except legal and medical .....	2,903	3,288	385	13.2
Nursing aides, orderlies, and attendants .....	1,184	1,562	378	31.9
Truck drivers, light and heavy .....	2,399	2,768	369	15.4
Receptionists and information clerks .....	833	1,164	331	39.8
Cashiers .....	2,310	2,614	304	13.2
Guards .....	795	1,050	256	32.2
Computer programmers .....	519	769	250	48.1
Food counter, fountain, and related .....	1,626	1,866	240	14.7
Food preparation workers .....	1,027	1,260	234	22.8
Licensed practical nurses .....	626	855	229	36.6
Teachers, secondary school .....	1,164	1,388	224	19.2
Computer systems analysts .....	403	617	214	53.3
Accountants and auditors .....	963	1,174	211	22.0
Teachers, kindergarten and elementary .....	1,359	1,567	208	15.3

for workers in specific occupations in growing industries if they were to lose their jobs in declining industries. For example, the occupation with the largest change in the declining industries is all other assemblers and fabricators (-113,100 jobs), an occupation heavily concentrated in manufacturing.<sup>4</sup> Numbers of workers in this occupation also are projected to decline in the growing industries (-3,300 jobs). Therefore, reemployment prospects in the same occupation for such workers who lose their jobs are very poor.

The picture is somewhat different for the occupation secretaries, excluding medical and legal, which is projected to lose 44,000 jobs in the declining industries. These workers are not concentrated by industry and employment is projected to increase significantly in the growing industries (428,000 jobs). The net increase in all industries is 384,000 jobs, which translates into relatively favorable reemployment prospects for secretaries if they were to lose their jobs in declining industries. Other occupations with projected large job losses in the declining industries, but which will have even greater job gains in growing industries, include all other helpers, laborers, and material movers, hand; freight, stock, and material movers, hand; blue-collar worker supervisors; bookkeeping, accounting, and auditing clerks; general office clerks; janitors and cleaners; general managers and top executives; sheet metal workers and duct installers; and gardeners and groundskeepers, except farm.

Workers in most of the remaining occupations shown in table 7 face unfavorable reemployment prospects in the same occupation if they lose their jobs, because the occupation is concentrated in industries projected to decline or because the occupation is expected to decline in virtually all industries due to technological change or other factors. For example, jobs for industrial truck and tractor operators are expected to be affected by the continuing spread of automated materials handling equipment in factories and warehouses. Increased use of improved or automated inspecting equipment by workers is expected to reduce the overall demand for inspectors, testers, and graders, precision, by the year 2000. The occupations electrical and electronic assemblers; electrical and electronic equipment assemblers, precision; welders and cutters; and welding machine setters, operators, and tenders are all projected to decline due to the wider adoption of industrial robots and other automated processes. Typists and word processors are expected to decline overall because of the increasing use of word processing equipment. Numbers of hand pack-

ers and packagers are expected to decline as a result of greater use of improved tools and equipment. And opportunities for machine feeders and offbearers are projected to shrink due to greater use of improved machinery and equipment that automatically load and unload products.

Displaced workers who face perhaps the most

**Table 7. Projected employment change by occupation, 1988-2000, ranked by absolute change in declining industries**

[Numbers in thousands]

Occupation	Projected 1988-2000 employment change		
	All industries	All declining industries	All growing industries
Total, all occupations .....	17,120.1	- 1,435.3	18,555.4
All other assemblers and fabricators .....	- 116.4	- 113.1	- 3.3
Farm workers .....	- 98.2	- 108.5	10.2
Sewing machine operators, garment .....	- 90.7	- 96.1	5.4
Inspectors, testers, and graders, precision .....	- 41.7	- 71.6	29.9
Electrical and electronic assemblers .....	- 103.3	- 69.0	- 34.3
All other helpers, laborers, and material movers, hand .....	70.2	- 57.9	128.1
Blue-collar worker supervisors .....	124.1	- 54.6	178.7
Hand packers and packagers .....	- 75.0	- 48.8	- 26.2
Secretaries, except legal and medical .....	383.9	- 44.1	428.0
Electrical and electronic equipment assemblers, precision .....	- 70.2	- 44.1	- 26.1
Freight, stock, and material movers, hand .....	19.7	- 37.6	57.3
All other machine operators, tenders, setters, and set-up operators .....	- 28.5	- 34.1	5.6
Textile draw-out and winding machine operators and tenders .....	- 30.2	- 30.8	.6
Packaging and filling machine operators and tenders .....	- 32.6	- 30.1	- 2.5
Child care workers, private household .....	- 28.1	- 28.1	0
Industrial truck and tractor operators .....	- 21.4	- 27.6	6.3
Machine feeders and offbearers .....	- 31.0	- 26.0	- 5.0
Welders and cutters .....	- 16.1	- 24.8	8.7
Bookkeeping, accounting, and auditing clerks .....	40.3	- 24.4	64.7
Machine forming operators and tenders, metal and plastic .....	- 18.4	- 23.4	5.0
General managers and top executives .....	478.9	- 22.5	501.4
All other hand workers .....	- 18.5	- 19.6	1.1
All other mechanics, installers, and repairers .....	- 25.9	- 17.7	- 8.3
Gardeners and groundskeepers, except farm .....	149.4	- 17.5	166.9
Janitors and cleaners, including maids and housekeeping cleaners .....	471.8	- 16.8	488.6
Crushing and mixing machine operators and tenders .....	- 18.9	- 15.8	- 3.1
Sewing machine operators, nongarment .....	- 8.0	- 15.3	7.2
Machine tool cutting operators and tenders, metal and plastic .....	- 14.9	- 14.1	-.8
Typists and word processors .....	- 66.2	- 13.3	- 52.9
Welding machine setters, operators, and tenders .....	- 13.6	- 13.0	-.6
Cleaners and servants, private household .....	- 12.6	- 12.6	0
All other metal and plastic machine setters, operators, and related workers .....	- 11.5	- 11.9	.3
General office clerks .....	454.3	- 11.1	465.4
All other machine tool cutting and forming, etc. ....	- 4.3	- 10.9	6.5
Chemical equipment controllers, operators, and tenders .....	- 10.8	- 10.2	-.6
Sheet metal workers and duct installers .....	9.7	- 10.1	19.8

unfavorable reemployment prospects in the same occupation are those in occupations that are highly concentrated in a very few declining industries. For example, the apparel industry, which is projected to have a large employment decline (-172,000 jobs), employs more than 80 percent of sewing machine operators, garment, and almost 50 percent of sewing machine operators, nongarment. Total employment for these two occupations is expected to decline by 91,000 and 8,000, respectively. Employment of textile draw-out and winding machine operators and tenders is heavily concentrated in the textile mill products industry, which is projected to lose about 103,000 jobs from 1988 to 2000. Consequently, the number of workers in this

occupation is expected to decline by 30,000. Workers in this occupation are expected to suffer from the displacement effects of increased automation as well.

It should be emphasized that projected employment declines may not lead to displacement of all workers in the occupations discussed here, because some workers may be provided other jobs by their employers. Workers in occupations that are concentrated in declining industries that are themselves concentrated geographically are most likely to face displacement. However, there are relatively few occupations that fall into this category, as only a few of the industries projected to decline are concentrated in a few States.

Table 8. Projected percent change in employment for selected occupations, 1988-2000, and percent distribution of total employment by years of school completed, March 1988

Occupation	Percent change, 1988-2000	Percent of total employment for occupation held by workers with—				Occupation	Percent change, 1988-2000	Percent of total employment for occupation held by workers with—			
		Less than high school	High school	1-3 years of college	4 or more years of college			Less than high school	High school	1-3 years of college	4 or more years of college
Total, all occupations . . . .	15	16	40	21	23	Secretaries, typists and stenographers . . . . .	10	4	54	33	10
Executive, administrative, and managerial occupations . . . .	22	5	27	24	44	Financial recordkeeping . . .	1	5	54	28	13
Professional specialty occupations . . . . .	24	2	9	15	74	Mail clerks and messengers . . . . .	10	10	48	28	14
Engineers . . . . .	25	1	10	14	75	Other clerical occupations . .	13	9	51	28	12
Computer, mathematical, and operations research analysts . . . . .	52	0	12	24	64	Service occupations . . . . .	23	31	45	18	6
Natural scientists . . . . .	19	2	4	6	88	Private household workers . . . . .	-5	50	34	12	4
Health diagnosing occupations . . . . .	24	2	3	2	93	Protective service occupations . . . . .	23	12	43	29	16
Health assessment occupations . . . . .	38	2	8	35	56	Food preparation and service occupations . . . . .	23	37	42	17	4
Teachers, college . . . . .	3	0	4	10	86	Health service occupations .	34	23	51	22	5
Teachers, except college . .	18	1	7	8	84	Cleaning and building service occupations, except private household .	20	41	46	10	3
Lawyers and judges . . . . .	30	1	3	2	95	Personal service occupations . . . . .	27	19	53	22	7
Other professional workers . . . . .	23	3	16	19	62	Precision production, craft, and repair occupations . . . .	10	23	53	18	5
Technicians and related support occupations . . . . .	32	3	29	36	32	Mechanics, installers, and repairers . . . . .	13	21	55	19	4
Health technicians and technologists . . . . .	34	3	35	40	22	Construction trades . . . . .	16	25	53	17	5
Engineering and science technicians and technologists . . . . .	20	4	35	39	22	Other precision production occupations . . . . .	3	23	52	18	8
Technicians, except health, engineering, and science .	39	1	18	27	54	Operatives, fabricators, and laborers . . . . .	1	33	51	12	4
Marketing and sales occupations . . . . .	20	13	39	24	23	Machine operators, assemblers . . . . .	-3	34	52	11	4
Administrative support occupations, including clerical . . . . .	12	7	51	30	12	Transportation and material moving machinery and vehicle operators . . . . .	12	29	53	14	5
Clerical supervisors and managers . . . . .	12	4	45	26	24	Helpers, laborers, and material movers, hand . . . . .	2	37	47	13	3
Computer operators and peripheral equipment operators . . . . .	29	5	46	33	16	Agriculture, forestry, fishing, and related occupations . . . .	-5	36	44	12	7



*Educational requirements.* An analysis of the 1988–2000 occupational employment projections indicates that, in general, employment is projected to increase faster in occupational groups requiring the most education than in those requiring less education. Executive, administrative, and managerial occupations, professional specialty occupations, and technicians and related support occupations have the smallest proportions of workers with less than a high school education and the highest proportions completing at least 4 years of college, and are projected to grow more rapidly than average. (See table 8.) There are some exceptions to this general pattern, however. Service workers, a major group having relatively few workers with a college degree and a high proportion with less than a high school education, is projected to grow faster than average. Also, among the professional specialty occupations, numbers of college and university faculty are projected to grow slowly (3 percent) because college enrollments are not expected to increase between 1988 and 2000. Within the slower-than-average growing major occupational groups shown in table 8, only computer operators and peripheral equipment operators will increase more rapidly than average.

In spite of projected growth rates that are higher for the best educated workers and lower for the least educated workers, the structure of employment at the major occupational group level is not expected to change substantially from 1988 to 2000. (See table 1.) The ranking of occupations by employment size in 2000 should be similar to that in 1988. For example, the administrative support occupations category is expected to continue to have the largest number of workers, followed by service occupations. Professional specialty occupations, however, is expected to move up from the fourth to the third largest group, ahead of operators, fabricators, and laborers. All other major occupational groups should maintain the rank they had in 1988.

The projections show the structure of employment by major occupational group changing only slowly over time. Most of the major groups are projected to change their share of total employment by less than 1 percentage point from 1988 to 2000. The only exception is the major group operators, fabricators, and laborers, which is expected to decline by 1.8 percentage points.

The stability of the overall occupational structure over the 1988–2000 period implies that workers will continue to be required across a broad spectrum of educational requirements. Jobs will be available in 2000 for the less edu-

**Table 9. Median annual earnings by occupation and level of education, 1987**

Occupation	Total, all levels	Less than high school	High school	1–3 years college	4 years college or more
Total, all occupations .....	\$21,543	\$15,249	\$18,902	\$21,975	\$31,029
Executive, administrative, and managerial occupations .....	30,264	22,306	23,286	27,255	37,252
Professional specialty occupations .....	30,116	19,177	23,233	27,458	31,311
Technicians and related support occupations .....	24,489	16,207	21,358	23,830	28,004
Marketing and sales occupations .....	22,220	13,746	17,654	22,546	32,747
Administrative support occupations including clerical .....	17,120	15,535	16,554	17,491	20,823
Service occupations .....	13,443	10,764	13,093	16,937	21,381
Precision production, craft, and repair occupations .....	24,856	20,465	25,140	27,042	30,938
Operators, fabricators, and laborers .....	18,132	15,365	19,303	21,627	22,114
Agriculture, forestry, fishing, and related workers .....	11,781	10,571	12,730	16,331	17,130

**Table 10. Percent distribution of employed persons, by years of school completed, race, and Hispanic origin, March 1988**

Years of school	Total	Whites	Blacks	Hispanics
Total .....	100.0	100.0	100.0	100.0
Less than high school .....	16.4	15.8	22.7	39.0
High school .....	39.7	39.8	42.4	33.5
1–3 years of college .....	20.5	20.5	20.5	15.9
4 years of college or more .....	23.4	23.9	14.3	11.5

cated as well as for those who earn college degrees. Among each of the major occupational groups, however, those workers with 4-year college degrees earn more on average than workers without such degrees. (See table 9.) Furthermore, within each occupational group, workers with more education are expected to earn more than those workers with less education.

Despite this overall pattern, the inference should not be made that good jobs will be available in 2000 only for people with college degrees and only in those fields that are projected to grow faster than average. Many detailed occupations that do not require a 4-year college degree have above-average earnings and are expected to offer favorable employment prospects through 2000 due to projected growth rates that are at least average and to have many job openings as workers who leave the labor force or transfer to other occupations are replaced. Several of these occupations are found in the construction trades, including bricklayers and stonemasons; electricians; plumbers, pipefitters, and steamfitters; and structural and reinforcing metal workers. Other skilled occupations with

favorable employment opportunities are mechanics, installers, and repairers, including data processing equipment repairers; electronic repairers, commercial and industrial equipment; industrial machinery mechanics; heating, air conditioning, and refrigeration mechanics and installers; and mobile heavy equipment mechanics.

Although nearly half of all workers in marketing and sales occupations have some college training, most jobs do not require a 4-year college degree. Among those that are expected to have very favorable employment prospects through 2000, and that currently have above-average earnings, are insurance sales workers; travel agents; and sales agents, real estate. Occupations in other fields that are expected to be equally promising include paralegals; airplane pilots and flight engineers; flight attendants; reservation and transportation ticket agents and travel clerks; lithography and photoengraving workers, precision; and operating engineers.

While favorable employment opportunities in 2000 are expected in a wide variety of occupational fields, some groups of workers will have less of a competitive advantage than others in obtaining the best paying jobs due to a lack of education, training, or necessary job skills. Workers with the highest levels of educational attainment are likely to continue to have a competitive advantage over workers with less education, and they should continue to have more options in the job market. Access to higher paying jobs is likely to be particularly restricted for those with less than a high school education.

*Minority groups.* The educational attainment of blacks and Hispanics is lower than for whites. (See table 10.) It is not surprising, therefore, that blacks and Hispanics generally comprise a disproportionately large share of employment in occupations that require the least amount of education and training. As indicated above, these

Table 11. Percent change in employment for selected occupations 1988–2000, and percent of employment comprised by whites, blacks, and Hispanics, 1988

Occupation	Percent change, 1988–2000	Percent comprised by—			Occupation	Percent change, 1988–2000	Percent comprised by—		
		Whites	Blacks	Hispanics			Whites	Blacks	Hispanics
Total, all occupations . . . . .	15	87	10	7	Secretaries, typists, and stenographers . . . . .	10	89	8	5
Executive, administrative, and managerial occupations . . . . .	22	92	6	4	Financial recordkeeping occupations . . . . .	1	90	6	5
Professional specialty occupations . . . . .	24	89	7	3	Mail clerks and messengers . . . . .	10	74	22	9
Engineers . . . . .	25	90	4	3	Other clerical occupations . . . . .	13	84	13	7
Computer, mathematical, and operations research analysts . . . . .	52	86	7	3	Service occupations . . . . .	23	79	18	10
Natural scientists . . . . .	19	90	3	3	Private household workers . . . . .	-5	76	23	17
Health diagnosing occupations . . . . .	24	88	3	4	Protective service occupations . . . . .	23	81	17	6
Health assessment occupations . . . . .	38	87	8	3	Food service occupations . . . . .	23	83	12	10
Teachers, college . . . . .	3	89	4	4	Health service occupations . . . . .	34	69	28	6
Teachers, except college . . . . .	18	89	9	4	Cleaning service occupations . . . . .	20	74	23	15
Lawyers and judges . . . . .	30	96	2	2	Personal service occupations . . . . .	27	85	12	8
Other professional workers . . . . .	23	90	8	4	Precision production, craft, and repair occupations . . . . .	10	90	8	8
Technicians and related support occupations . . . . .	32	86	9	4	Mechanics, installers, and repairers . . . . .	13	91	7	8
Health technicians and technologists . . . . .	34	81	14	4	Construction trades . . . . .	16	91	7	8
Engineering and scientific technicians . . . . .	22	89	7	5	Other precision production occupations . . . . .	3	88	8	9
All other technicians . . . . .	39	88	7	4	Operatives, fabricators, and laborers . . . . .	1	82	15	11
Marketing and sales occupations . . . . .	20	91	6	5	Machine setters, set-up operators, operators, and tenders . . . . .	-3	83	15	7
Administrative support occupations, including clerical . . . . .	12	86	11	6	Transportation and material moving machine and vehicle operators . . . . .	12	82	16	11
Clerical supervisors and managers . . . . .	12	85	14	6	Helpers, laborers, and material movers, hand . . . . .	2	82	15	13
Computer operators and peripheral equipment operators . . . . .	29	83	14	6	Agriculture, forestry, fishing, and related workers . . . . .	-5	92	7	13

NOTE: Hispanics can be of any race.

**Table 12. Percent distribution of employment by occupation, 1988 and projected 2000 alternatives**

Occupation	1988	2000		
		Low	Moderate	High
Total employment .....	100.0	100.0	100.0	100.0
Executive, administrative, and managerial occupations .....	10.2	10.8	10.8	10.9
Professional specialty occupations .....	12.4	13.4	13.3	13.2
Techicians and related support occupations .....	3.3	3.7	3.7	3.7
Marketing and sales occupations .....	11.3	11.6	11.7	11.6
Administrative support occupations, including clerical .....	17.8	17.4	17.3	17.3
Service occupations .....	15.6	16.7	16.6	16.4
Agriculture, forestry, fishing, and related occupations .....	3.0	2.4	2.4	2.5
Precision production, craft, and repair occupations .....	12.0	11.4	11.4	11.6
Operators, fabricators, and laborers .....	14.4	12.5	12.6	12.8

are generally the occupational groups projected to grow most slowly through 2000 and to have relatively low average earnings. (See table 11.) More than half of all employed blacks and Hispanics in 1988 were found in three major occupational groups—service occupations; administrative support occupations, including clerical; and operators, fabricators, and laborers. All three groups had below-average annual earnings in 1988. Additionally, two of these three major occupational groups—administrative support occupations, including clerical, and operators, fabricators, and laborers—have below-average projected employment growth from 1988 to 2000. Only the service occupations group is projected to grow faster than average through 2000.

In summary, employment opportunities will be found across the entire spectrum of occupations in our economy. However, workers having the most education and training are in a better position to obtain jobs that, on average, are higher paying. Blacks and Hispanics, who traditionally have had lower educational attainment than whites, are likely to continue to be at a disadvantage in the job market unless their educational attainment improves.

### Low and high projections

The distribution of employment by broad occupational group varies little among the projected alternatives for 2000 because of offsetting changes within the broad occupational groups. (See table 12.) Within specific occupations, however, some significant differences exist between the moderate and the low or high alternatives. The differences in occupational em-

ployment from one alternative to another are caused only by differences in projected industry employment levels, because the same set of occupational staffing patterns was used for all alternatives. Total employment in the moderate-trend projections varies by only about 6 percent from the high alternative and about 7 percent from the low alternative. Therefore, the greatest numerical differences for specific occupations exist between the low alternative projected employment and the moderate-trend employment, as shown below:

Occupation	Employment difference
Salespersons, retail .....	339,000
General managers and top executives ..	239,000
Janitors and cleaners .....	210,000
Secretaries, except legal and medical .....	204,000
Truck drivers, light and heavy .....	197,000
General office clerks .....	187,000
Cashiers .....	185,000
Bookkeeping, accounting, and auditing clerks .....	153,000
Waiters and waitresses .....	149,000
Blue-collar worker supervisors .....	142,000

### Uses of occupational projections

The occupational projections presented in this article provide information for analyzing a variety of labor market issues and provide the background for analyses of future employment opportunities described in the BLS *Occupational Outlook Handbook*. Job outlook discussions in the 1990-91 edition of the *Handbook*, scheduled for release in the Spring of 1990, will use the projections presented in each of the articles that make up *Outlook 2000*. □

### Footnotes

<sup>1</sup> The 1988 matrix presents the occupational structure of 258 detailed industries. These data cover wage and salary workers only. The data on the occupational structure of most industries were derived from the Bureau's Occupational Employment Statistics Survey. Data for agriculture; forestry; fishing, hunting, and trapping; and private households were derived from the Current Population Survey (CPS). Estimates of self-employed and unpaid family workers were derived from the CPS.

<sup>2</sup> The services industry division in the industry-occupation matrix includes State and local government hospitals and education. In the article on industry employment by Valerie Personick presented on pages 17-23, workers in State and local government hospitals and education are included in estimates of government employment.

<sup>3</sup> See *Displaced Workers, 1981-85*, Bulletin 2289 (Bureau of Labor Statistics, September 1987).

<sup>4</sup> Because there are so few occupations that are affected significantly by the declining industries, this analysis will incorporate residual occupations not shown in table 4.



# Projections summary and emerging issues

*Productivity growth and  
the educational requirements  
of future jobs are important issues  
for the remainder of the century*

Ronald E. Kutscher

The Bureau of Labor Statistics has developed projections to the year 2000. Three alternative projections—moderate growth, low growth, and high growth—were prepared. This article summarizes these projections for the 1988–2000 period—the latest of the Bureau’s regular projections.

The four articles presented in this issue have provided detailed information on projections of economic growth, the labor force, and industry and occupational employment.

This article focuses on some important issues raised by these projections. Among these issues are the relationship of productivity growth to expected future increases in our standard of living, our global competitiveness, and the extent of educational preparation needed for the types of jobs our economy is increasingly generating, particularly for minorities who represent a growing share of the labor force. The problem of a general education shortfall is also discussed.

## General overview

In the moderate or middle set of projections, the rate of economic growth, as measured by real gross national product (GNP) for the 1988–2000 period, shows an increase of 2.3 percent per year. This represents more than a 30-percent

expansion over the projected period. However, this is a slower rate of GNP growth than the 2.9-percent rate of annual growth recorded for the 1976–88 period.<sup>1</sup> Labor force growth and productivity play important but offsetting roles in the slower projected rate of real GNP growth.

Labor force growth is projected to slow appreciably, particularly when compared with the 2.0-percent annual labor force growth over the 1976–88 period. The 1.2-percent-a-year projected rate of labor force growth over the 1988–2000 period is closer to that experienced by the U.S. economy between 1980 and 1988, when the labor force slowdown began. For productivity, the projected rate of growth for the 1988–2000 period is slightly faster than the average experienced during the 1976–88 period, as shown in the following tabulation. The net effect of the two factors, as shown below for the middle scenario, is a slower projected rate of real GNP growth for the 1988–2000 period.

	1976–88	Projected 1988–2000
Real GNP .....	2.9	2.3
Labor force .....	2.0	1.2
Productivity (GNP per employee) .....	.7	1.0
Real disposable income per capita .....	1.8	1.4

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The categories in the demand structure of GNP reflect a projection over the 1988–2000 period that is a continuation of long-term trends. The two important exceptions are foreign trade and defense expenditures.

Projected changes in the composition of demand GNP shows that foreign trade is projected to change significantly, compared with long-term historical trends. Over the 1976–86 period, imports grew faster than exports. At the same time, exports and imports were increasing faster than overall GNP. However, exports have increased faster than imports since 1986, reversing the trend. The rate of growth projected for exports over the 1988–2000 period is a continuation of this recent trend—primarily because of a slower projected growth for imports.

Another category of demand GNP projected to break with the trend of the 1980's is the share of GNP devoted to defense expenditures. A larger share of GNP was devoted to defense expenditures over the 1979–86 period. That rate of expansion lessened considerably between 1986 and 1988. The projected level of real defense expenditures is for an absolute decline and, thus, for a rather pronounced decline in the share of GNP being devoted to defense expenditures over the 1988–2000 period.

The standard of living frequently is measured by the rate of growth of real per capita disposable personal income. This measure clearly showed a slower growth rate in the 1980's, compared with the 1970's. The 1988–2000 projections show an annual rate of growth of 1.4 percent, which is consistent with that which has prevailed in the 1980's. It should be noted, however, that this is one of the measures that shows considerable variation among the three alternative projections developed for the U.S. economy for the 1988–2000 period. In the alternative with the highest rate of projected GNP growth, per capita disposable personal income is projected to increase 1.9 percent a year, a rate similar to the 1976–88 period. The opposite takes place in the alternative with the slowest projected rate of GNP growth, where this measure is projected to increase only 0.5 percent per year. The spread among the projections reflects a considerably different picture of future changes in the U.S. economy in the three alternatives. The faster growth implies an expansion of 25 percent in the U.S. standard of living as measured by real per capita disposable income for the 1988–2000 period, while the slowest implies only a 6-percent expansion over that same period. The difference is largely because of the projected rate of productivity growth over the 1988–2000 period.

## Labor force

The labor force growth in the 1980's has slowed considerably compared with the growth in the 1970's. This slowdown resulted from the smaller baby-bust generation who entered the labor force following the baby-boom generation who were in the work force in the 1960's and 1970's. The projection for the 1988–2000 period is for 1.2 percent annual growth in the labor force—or 16.0 percent overall growth.<sup>2</sup> This rate contrasts with the 2.0-annual growth over the 1976–88 period, but is only modestly slower than the rate of labor force increase over the 1980–88 period. The two alternative labor force projections show a 1.0-percent annual growth for the 1988–2000 period in the low and a 1.6-annual growth in the high alternative.

Two factors are important in this slower rate of projected labor force growth. First, as already noted, by the late 1970's, the baby-boom generation had entered the work force and, since then, the much smaller baby-bust generation has been entering the labor force. In addition, the high growth rates in labor force participation of women are projected to slow, generally because women's labor force participation rates have already reached very high levels. Despite this slowdown, the changes in the male-female composition of the labor force are projected to continue over the 1988–2000 period because the rate of growth of women in the labor force is projected to continue at nearly double that for men, as shown in the following tabulation. Consequently, women who in 1988 constituted 45 percent of the work force are projected to see their share increase to 47 percent of the labor force by 2000.

*Great concern has been expressed regarding "shortages" of entry-level workers.*

Average annual rate of change

	1976–88	1988–2000
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	1976–88	1988–2000
Total	2.0	1.2
Men	1.3	.9
Women	2.9	1.7
White	1.8	1.1
Black	2.7	1.9
Hispanic	6.4	4.0
Asian and other races	6.1	3.6

In terms of the age distribution of the labor force, some important compositional changes are also expected. Most importantly, the share of the work force that is 16 to 24 years old is projected to be smaller in 2000 than in 1988, declining to 16 percent, compared with 19 percent in 1988. This is because this age group is expected to continue to decline until the mid-

1990's—when it will experience a turnaround. However, the share of workers ages 55 and over is expected to remain a relatively constant share of the labor force over the 1988–2000 period. It follows from these changes that over the 1988–2000 period, increases in the share of the labor force are expected to be in the 25- to 54-year-old age groups, particularly those 54 to 75.

Another change in the composition of the labor force that is projected to continue is the growing share of minorities. Blacks who made up 11 percent of the work force in 1988 are projected to grow to 12 percent in the year 2000. Hispanics, currently 7 percent of the labor force, are projected to increase more rapidly than blacks (4.0 percent versus 1.9 percent annually), reaching 10 percent of the labor force in 2000. Asians and other races, who make up 3 percent of the work force are expected to reach 4 percent in 2000.

### Employment changes

For the total economy, employment changes over the long term mirror closely the aggregate demographic changes. Thus, the rapid labor force growth of the 1970's and the slower rate of increase in the 1980's discussed earlier are also found in the overall rate of employment growth in the U.S. economy. The 1988–2000 employment projections of 1.2 percent annual expansion continue the slowing that was found in the 1980's; the expansion is 15.3 percent for the entire period.<sup>3</sup> In absolute terms, this is a projected increase of 18.1 million jobs—compared to more than 28 million jobs added over the previous 12 years.<sup>4</sup> In the low alternative projection, the 1988–2000 job growth is 9.0 million, while in the high alternative it is 26.0 million.

A predominant story of U.S. employment growth of the last several decades has been the very rapid growth of the service-producing sector and the decline in the share of employment devoted to the goods-producing industry. The 1988–2000 projections continue this long-term employment shift to service-producing industries. Goods-producing industries are projected to grow by 428,000 or less than 2 percent over the 1988–2000 period. Manufacturing is projected to decline by more than 316,000 jobs over the projected period and, as a result, to continue to decline in its share of total employment. (See table 1.) Construction is projected to increase by 760,000 jobs, but even this increase is not large enough to arrest the decline in the share of employment in the overall goods-producing sector.

Most of the U.S. job growth over the 1988–2000 period is expected to be found in the service-producing sector—which is projected to account for 16.7 million of the 18.1 million jobs. Business services and health services are significant, both in terms of the absolute number of jobs expected to be added over the 1988–2000 period, and in their growth rates. These industries have experienced very rapid growth in the past and this growth is expected to continue into the future, although like overall employment growth, the projected rates represent a slowing from the 1976–88 rates of increase. The health service industry's rate of growth slowed in the mid-1980's as employment in private hospitals leveled off. Recently, that industry has accelerated and the growth is projected to continue.

Other important service-producing industries contributing to the projected job growth for the 1988–2000 period are retail trade and education. Retail trade is expected to generate more

**Table 1. Employment, selected years, 1976 and 1988 and projected to 2000**

[In thousands]

Industry	1976	1988	2000 (moderate growth)	Absolute change		Percent change	
				1976–88	1988–2000	1976–88	1988–2000
Total .....	89,942	118,104	136,211	28,156	18,107	31.3	15.3
Agriculture .....	3,371	3,259	3,125	-112	-134	-3.3	-4.1
Nonagricultural wage and salary .....	79,080	104,960	122,056	25,880	17,096	32.7	16.3
Goods-producing .....	23,358	25,252	25,680	1,894	428	8.1	1.7
Manufacturing .....	19,003	19,406	19,090	403	-316	2.1	-1.6
Construction .....	3,576	5,125	5,885	549	760	43.3	14.8
Service-producing .....	55,722	79,708	96,376	23,986	16,668	43.0	20.9
Retail trade .....	13,208	19,110	22,875	5,902	3,765	44.7	19.7
Services .....	14,243	24,971	33,718	10,728	8,747	75.3	35.0
Other <sup>1</sup> .....	7,491	9,885	11,030	2,388	1,145	32.0	11.6

<sup>1</sup> Nonagricultural self-employed, private households, and unpaid family workers.

NOTE: Total employment includes wage and salary workers, the self-employed, and unpaid family workers.

jobs than either health or business services, although its rate of growth is not projected to match that of either of those industries.

### Occupational employment

The Bureau of Labor Statistics projects employment by industry and by occupation.<sup>5</sup> At the aggregate level, of course, the rate of growth is the same. Among the major occupational groups projected to show faster than average rates of growth over the 1988–2000 period are technical and related support occupations; professional specialty occupations; and executive, administrative, and managerial occupations. Each of these groups is projected to increase much faster than the 15.3-percent growth for total employment (1.2-percent annual growth). (See table 2.) In addition to those mostly high skilled occupational groups, two other occupational groups are expected to show faster than average growth—service occupations and marketing and sales occupations. The groups with the slowest rate of projected growth include operators, fabricators, and laborers (about 1 percent growth over the 1988–2000 period), and agriculture, forestry, and fishing occupations (a decline of nearly 5 percent by 2000).

The educational requirements of these groups when analyzed show that managerial, professional, and technical occupations requiring the most education and training have the faster rate of growth, while those with the least educational requirements such as operators, fabricators, and laborers have the slower growth or are projected to decline. However, despite this general rising trend in the educational requirements, many jobs that do not require a bachelors degree or more education have both good growth prospects and above-average earnings. Some of these jobs require a high school educa-

tion, while others require some post-secondary training or education. Jobs are available for those without a high school education, but entry into the better paying jobs is severely limited for such workers.

An analysis of the occupations currently held by minorities and the projected rates of growth of these occupational groups show that blacks and Hispanics are over-represented in occupations with the slowest rates of projected growth, while they are under-represented in occupations projected to have the faster rate of growth.

### Emerging issues

What do the projections hold for the U.S. labor market for the remainder of this century? They could be viewed as portraying a bright future for the U.S. economy. Among the reasons for an optimistic outlook is that the slower growth projected for the labor force, combined with an economy producing a large number of jobs, could make it possible for the unemployment rate to be lowered to levels not reached in the past two decades. If this lower unemployment rate could be coupled with an increasing rate of productivity growth, a number of problems faced by the U.S. economy could ease. For example, faster productivity growth and the resulting GNP growth would likely ease the task of lowering the Federal budget deficit. Also, faster productivity growth would lead to a more rapid rate of growth in real disposable income per capita. If this were accompanied, as it would likely be, by a faster rate of employment growth (such as depicted in the higher GNP growth alternative developed by the Bureau), this could mean more employment opportunities, particularly for minorities, older workers, and the disabled—groups that have not always shared equally in employment growth. In addition, this

*Increases in the share of the labor force are expected to be in the 25- to 54-year-old age groups.*

Table 2. Employment by occupation, 1988 and projected to 2000

Occupation	1988		2000 (moderate growth)	
	Number (thousands)	Percent	Number (thousands)	Percent
Total, all occupations .....	118,104	100.0	136,211	100.0
Executive, administrative, and managerial occupations .....	12,104	10.3	14,762	10.8
Professional specialty occupations .....	14,628	12.3	18,137	13.3
Technicians and related support occupations .....	3,867	3.3	5,089	3.7
Marketing and sales occupations .....	13,316	11.3	15,924	11.7
Administrative support occupations, including clerical .....	21,066	17.8	23,553	17.3
Service occupations .....	18,479	15.6	22,651	16.6
Agricultural forestry, fishing, and related occupations .....	3,503	3.0	3,334	2.4
Precision production, craft, and repair occupations .....	14,159	12.0	15,563	11.4
Operators, fabricators, and laborers .....	16,983	14.4	17,198	12.6

NOTE: Includes total employment of wage and salary workers, self-employed, and unpaid family workers.

employment gain could be an important contributing factor to arresting the widening of the income distribution which has appeared, particularly over the last decade.

But while a bright economic future is possible, there are no guarantees. The U.S. economy is faced with a number of problems. If these problems are not dealt with, a bright future could be jeopardized. These issues include productivity and education.

*Productivity.* The projections for the 1988–2000 period highlight our rate of productivity growth as a continuing concern. Productivity has grown much more slowly in the past 10 to 15 years than in earlier periods.<sup>6</sup> This has had an important effect on the rate of growth of real GNP and on the rate of growth in real per capita disposable personal income. Not only does productivity growth have important implications for our standard of living, it also is an integral factor if America is to remain competitive or, in some cases, if we are to regain our competitiveness. The globalization of many manufacturing and service markets means that we must remain competitive in order to sell our products abroad and also to ensure that American goods have an equal chance in domestic consumption.<sup>7</sup> The prospect for productivity growth is related to several factors: research and development, equipment embodying newer technologies, capacity utilization, and energy prices. Also, an important factor is the education and training of the labor force. A potential education gap highlights the importance of meeting our economy's educational requirements to be assured of future productivity growth. Whether the United States can remain competitive in foreign as well as domestic markets is linked to productivity growth.

Foreign trade has been and is projected to continue to be the fastest growing demand category of GNP. America needs to remain competitive, particularly in high tech goods and services where, in many instances, we still are competitive. In many high tech industries, however, the United States can remain competitive only through the participation of highly skilled and highly educated workers. Consequently, the potential imbalance between the educational preparation of those entering the labor force and industry's requirements raise another important dimension to an increasing concern.

*Educational shortfall.* As mentioned earlier, occupational growth is expected to be most rapid among occupations that require some post-secondary training. The expected supply of individuals with the necessary education and

training causes concern because of a potential gap or shortfall. Some data are available which deepen this concern. For example, in a recent international assessment of mathematics and of science carried out by the Educational Testing Service, the United States ranked in or near the lowest grouping among 13-year-olds tested. The average mathematics proficiency data are highlighted in the following tabulation. (The level represents an indexed scale of proficiency in performing mathematical computations.)

	<i>Level*</i>
Korea . . . . .	567.8
Quebec (French) . . . . .	543.0
British Columbia . . . . .	539.8
Quebec (English) . . . . .	535.8
New Brunswick (English) . . . . .	529.0
Ontario (English) . . . . .	516.1
New Brunswick (French) . . . . .	514.2
Spain . . . . .	511.7
United Kingdom . . . . .	509.9
Ireland . . . . .	504.3
Ontario (French) . . . . .	481.5
United States . . . . .	473.9

\*Data are from a *A World of Differences, An International Assessment of Mathematics and Science* (Washington, Educational Testing Service, January 1989).

The results of the international comparisons of science proficiencies are equally discouraging.<sup>8</sup>

Additionally, an important finding from a recent assessment of literacy of young adults ages 21 to 25,<sup>9</sup> is that many young adults were unable to perform at a level very much above the lowest level of proficiency. All groups performed very well at the lowest level of proficiency; however, the fall off is sharp as the difficulty assessed rises. This decline in proficiency is true of all demographic groups but is particularly so for blacks and Hispanics. Such data heighten concerns about preparation for the more demanding jobs that clearly are continuing to emerge in the economy.<sup>10</sup>

Differences between some job requirements and the educational proficiency of the population as a whole has led some to conclude that we have a shortage or a potential shortage of college-educated workers.<sup>11</sup> This potential shortage should be examined in terms of the labor force who have a college education and those who have other post-secondary training.

The latest analyses of the supply and demand for college-educated workers carried out by BLS show a significant easing of the competition for jobs that has characterized the job market for college graduates since the early 1970's.<sup>12</sup> It should be noted, however, that the narrowing gap between the supply and demand for college graduates does not rule out some problems

*The gap between black and white men's labor force participation rates has not shown any evidence of closing.*



with the mix of college graduates by field of preparation.

In addition to looking at our economy's demand for college graduates, consideration should be given to the question, does the rapid growth of jobs requiring post-secondary training below the bachelors degree level indicate a gap between supply and demand? The BLS projections show that the most rapid rate of growth is among technician jobs. These occupations and skilled craft jobs are normally filled by individuals who have some post-secondary education or training, but generally less than a 4-year college education. In some instances, training is often obtained on the job; others require education and training in a formal institutional setting, either in a private or public institution over a 6-month to 2-year period. In many instances, the institutions for this training or education are in place. The important shortfall that may materialize is the lack of individuals with the education needed to qualify for the necessary post-secondary education or training. This potential shortfall comes about in part because of the continued low high school completion rates. (See table 3.) Because Hispanics are the fastest growing component of the labor force, their low high school completion rate raises considerable concern. Hispanic high school completion rates have not increased much over time nor shown any tendency to narrow the gap with whites or blacks. Further, some individuals who have completed high school may not qualify for post-secondary training, as depicted by the results of the assessments noted earlier. A second cause of the reduction in the number of qualified people available to enter post-secondary training below the bachelors level or on-the-job training programs has resulted from the growth in the proportion of high school graduates who are going on to college—up nearly 10 percentage points over the last decade.

Another frequently discussed topic regarding the American economy is the labor-shortage issue. Great concern has been reported regarding "shortages" of entry-level workers, particularly in geographic areas that currently have low unemployment rates.<sup>13</sup> The difficulty experienced by employers in hiring entry-level workers has resulted primarily from a very sharp drop in the number of workers ages 16 to 24 entering the labor force during the 1980's. This decline is expected to continue until at least the mid-1990's, according to labor force projections. Thus, institutions and firms that recruit primarily from this age group will be competing for declining numbers of young people through the mid-1990's. This is expected to have an effect on colleges and universities, the military, and

on industries that recruit young entry-level workers.

Another dimension of the competition for workers, particularly entry-level workers, is the interface this has with U.S. immigration policy. In the 1970's and 1980's, a significant number of immigrants entered the American economy. Most immigrants who enter the United States legally do not initially enter to fill this country's job-related needs, but enter under other immigration categories, such as family reunification. Once in the United States, however, many of those of working age do seek jobs.<sup>14</sup> At the same time, America was attempting to maintain better control over illegal immigration, and this effort coincided with a period of tightness of the U.S. labor market in a number of geographic areas, increasing the need of many employers for entry-level workers.

*Minorities in the work force.* Earlier, it was pointed out that blacks, Hispanics, and Asians and other races are projected to represent an increasing share of the U.S. labor force over the 1988–2000 period. However, many of the occupations projected to be the most rapidly growing over the period are those that require post-secondary education or training. In many of these occupations, minorities are currently not well represented. At the same time, educational tests show a lack of educational achievement that is particularly pronounced among minorities. Consequently, are the occupations for which minorities are preparing likely to represent good job opportunities? Given the lower

**Table 3. High school completion rates by age, race, and Hispanic origin, 1976–86**

[Percent of age group]

Year	Ages 18 to 19				Ages 20 to 24			
	Total	White	Black	Hispanic origin <sup>1</sup>	Total	White	Black	Hispanic origin <sup>1</sup>
1976 .....	73.1	75.4	58.2	50.9	83.7	85.4	71.9	58.0
1977 .....	72.9	75.7	54.9	50.7	83.7	85.1	73.4	56.6
1978 .....	73.5	76.3	54.9	48.9	83.7	85.2	73.5	58.7
1979 .....	72.8	75.3	56.4	53.7	83.2	84.9	71.8	55.8
1980 .....	73.3	76.1	59.3	46.1	83.8	85.1	74.3	57.1
1981 .....	72.5	74.8	59.6	47.2	83.7	85.0	75.7	59.3
1982 .....	72.0	74.5	58.2	51.7	84.1	85.4	76.2	60.2
1983 .....	72.7	75.6	59.1	50.3	83.3	84.6	75.8	56.6
1984 .....	73.3	75.5	63.0	58.3	84.6	85.7	79.3	60.7
1985 .....	74.6	76.7	62.8	49.8	85.3	86.0	80.8	67.4
1986 .....	74.6	76.6	64.9	54.7	84.8	85.4	81.0	61.6

<sup>1</sup> Hispanics may be of any race.

NOTE: Most of the year-to-year differences in completion rates for Hispanics are not statistically significant because the small size of the Hispanic sample.

SOURCE: U.S. Department of Commerce, Bureau of the Census, "School Enrollment—Social and Economic Characteristics of Students, October (various years)," *Current Population Reports*, Series P-20; and unpublished tabulations.

completion rate from high school for blacks and Hispanics, it is evident that many are not prepared for the advanced education or training necessary in many of the rapidly growing occupations. (See table 3.) Further, blacks and Hispanics are currently over-represented in occupations that are projected to grow slowly or decline and are under-represented in occupations that are projected to have rapid growth.

The low labor force participation for black males is an additional element of a problem to be dealt with in assuring the highest possible involvement of all labor force groups. Labor force participation rates for black men ages 25 to 54 have only recently showed any evidence of leveling off after long-term declines. However, labor force participation rates for black men were still nearly 6 percentage points lower than for white men in 1988. (See table 4). Thus, at a time when white and black women's labor force participation rates have converged, the gap between black and white men's labor force participation rates has not shown any evidence of closing.

The continuing high unemployment rate of blacks and Hispanics illustrates the poor utilization

**Table 4. Labor force participation rates for men ages 25 to 54, 1976-88**

Year	White men	Black men	Hispanic men	Difference, less white rate	
				Black men	Hispanic men
1976 ...	94.9	90.0	92.6	-4.9	-2.3
1977 ...	95.0	90.0	92.6	-4.9	-2.1
1978 ...	95.0	90.1	93.0	-4.9	-2.0
1979 ...	95.1	90.0	93.0	-5.1	-2.0
1980 ...	95.0	90.1	92.7	-5.0	-2.0
1981 ...	95.0	87.7	92.3	-7.3	-2.3
1982 ...	94.9	88.6	92.5	-6.3	-2.6
1983 ...	94.6	87.9	92.5	-6.8	-2.1
1984 ...	94.8	88.2	92.6	-6.6	-2.2
1985 ...	94.8	88.5	92.2	-6.3	-2.6
1986 ...	94.6	89.3	92.7	-5.3	-1.9
1987 ...	94.5	87.0	92.3	-7.6	-2.2
1988 ...	94.5	88.7	92.6	-5.8	-1.9

<sup>1</sup> Hispanics may be of any race.

**Table 5. Civilian unemployment rates, by race and Hispanic origin, 1976-88**

Year	Unemployment rates				Unemployment rate ratios	
	Total	White	Black	Hispanic origin <sup>1</sup>	Black rate/White rate	Hispanic rate/White rate
<b>All workers</b>						
1976 .....	7.7	7.0	14.0	—	2.00	—
1977 .....	7.1	6.2	14.0	—	2.26	—
1978 .....	6.1	5.2	12.8	—	2.46	—
1979 .....	5.8	5.1	12.3	—	2.41	—
1980 .....	7.1	6.3	14.3	10.1	2.27	1.60
1981 .....	7.6	6.7	15.6	10.4	2.33	1.55
1982 .....	9.7	8.6	18.9	13.8	2.20	1.60
1983 .....	9.6	8.4	19.5	13.7	2.32	1.63
1984 .....	7.5	6.5	15.9	10.7	2.45	1.64
1985 .....	7.2	6.2	15.1	10.5	2.44	1.69
1986 .....	7.0	6.0	14.5	10.6	2.41	1.77
1987 .....	6.2	5.3	13.0	8.8	2.45	1.66
1988 .....	5.5	4.7	11.7	8.2	2.49	1.74
<b>Workers, ages 16-24</b>						
1976 .....	14.7	13.1	28.6	—	2.18	—
1977 .....	13.6	11.7	30.0	—	2.56	—
1978 .....	12.3	10.3	27.7	—	2.69	—
1979 .....	11.8	10.1	25.9	—	2.56	—
1980 .....	13.9	12.0	28.6	15.9	2.38	1.33
1981 .....	14.9	12.9	31.2	17.2	2.42	1.33
1982 .....	17.8	15.5	35.9	21.6	2.32	1.39
1983 .....	17.2	14.6	36.7	20.4	2.51	1.40
1984 .....	13.9	11.6	31.1	16.1	2.68	1.39
1985 .....	13.6	11.4	29.6	16.1	2.60	1.41
1986 .....	13.3	11.1	28.9	16.3	2.60	1.47
1987 .....	12.2	10.2	26.1	14.2	2.56	1.39
1988 .....	11.0	9.3	23.8	13.6	2.56	1.46

<sup>1</sup> Hispanics may be of any race.

NOTE: Dash indicates data not available.

tion of these population groups. This is particularly noticeable when the unemployment rate of young blacks and Hispanics are compared to either the unemployment rate for adult blacks or white youths. For black youth, the unemployment rates have been more than 2.5 times that of white youth, and the gap has shown no sign of narrowing even during the rapid job expansion in the 1982-88 period. Clearly, this is a serious problem for the U.S. economy. It must be dealt with if these labor force groups are to benefit fully from opportunities provided by a growing economy. (See table 5.)

Discouraged workers, who would like a job but have given up searching because they think none are available for which they could qualify, illustrate another dimension of groups that are poorly utilized. (Discouraged workers are not counted as unemployed in the official unemployment measures.) Blacks and Hispanics are much more likely to be found among this group of workers who have given up looking for a job. For example, blacks who accounted for about 11 percent of the work force, made up more than 27 percent of the discouraged workers in 1988. This proportionately higher rate is even more pronounced among the young minorities in the labor force. In 1988, blacks ages 16 to 24 made up over 37 percent of young discouraged workers and young Hispanics accounted for almost 16 percent—shares much higher than their shares of the overall labor force. (See table 6.)

*Job growth and decline.* Several issues have emerged from an analysis of the projected growth of employment by industry and by occu-

pation. For example, health services and business services, which are both projected to have significant overall job growth over the 1988–2000 period, required many workers with specialized education or training, highlighting again the need for workers with sufficient educational preparation. Further, health services includes occupations that women have predominantly held. The issue that this projected growth raises is, can this job growth be achieved without a large increase in the number of men in some of these occupations, for example, nursing?

Another large sector to consider in examining employment growth is manufacturing, which is sometimes overlooked because its rate of employment growth has been relatively slow and the projections for 1988–2000 show a decline. However, it is still projected to employ more than 19 million workers in 2000. Further, the lack of expansion in manufacturing during the last decade means that many of its workers will retire and need to be replaced over the 1988–2000 period. Consequently, many job entrants during the 1988–2000 period will find employment in the manufacturing sector.

Despite overall growth, these projections also show both industries and occupations with projected absolute declines in employment. (See the article by George Silvestri and John Lukasiewicz on pp. 42–65.) Individuals in declining industries or occupations who lose their jobs are often unable to find comparable jobs. Further, they often do not have the training and education needed for the jobs that are opening up in their geographic areas. This potential displacement has many contributing factors. Among those are technological change,<sup>15</sup> foreign trade through the substitution of foreign-made products for domestic-made products, lack of competitiveness of U.S. made goods or services, changing consumer tastes, and shifting governmental priorities. The potential for such displacement from a human resource side adds to the need to ensure that workers are trained and educated for the types of jobs that are in demand.

## Footnotes

<sup>1</sup> See the article by Norman C. Saunders in this issue, pp. 13–24, for a detailed discussion of projected GNP, factors which are important to the rate of growth, and the composition of GNP.

<sup>2</sup> See the article by Howard N Fullerton, Jr., in this issue, pp. 3–12, for the full detail of the labor force projections.

<sup>3</sup> For more detail on the industry employment projections, see the article in this issue, pp. 25–41, by Valerie A.

**Table 6. Discouraged workers, by race and Hispanic origin, 1976–88**

[In thousands]

Year	Total	White	Black	Hispanic origin <sup>1</sup>	Percent distribution		
					White	Black	Hispanic origin <sup>1</sup>
All workers							
1976 .....	925	689	244	—	74.5	26.4	—
1977 .....	1,026	723	253	—	70.5	24.7	—
1978 .....	863	597	254	—	69.2	29.4	—
1979 .....	771	551	197	—	71.5	25.6	—
1980 .....	993	673	275	—	67.8	27.7	—
1981 .....	1,103	751	323	—	68.1	29.3	—
1982 .....	1,568	1,042	482	—	66.5	30.7	—
1983 .....	1,641	1,125	470	—	68.6	28.6	—
1984 .....	1,283	823	414	—	64.1	32.3	—
1985 .....	1,204	810	348	—	67.3	28.9	—
1986 .....	1,121	770	297	98	68.7	26.5	8.7
1987 .....	1,026	693	294	106	67.5	28.7	10.3
1988 .....	954	639	261	122	67.0	27.4	12.8
Workers, ages 16–24							
1982 .....	479	294	172	—	61.4	35.9	—
1983 .....	490	305	172	—	62.2	35.1	—
1984 .....	391	220	159	—	56.3	40.7	—
1985 .....	315	193	110	—	61.3	34.9	—
1986 .....	280	166	100	28	59.3	35.7	10.0
1987 .....	264	162	90	42	61.4	34.1	15.9
1988 .....	217	124	82	34	57.1	37.8	15.7

<sup>1</sup> Hispanics may be of any race.

NOTE: Discouraged workers are those who want a job but are not looking for a job because they think they cannot get a job and have given up looking. Dash indicates data not available.

*Interaction of problems.* A very important point concerning the issues discussed is their interconnectiveness. Education and training requirements of future jobs increase the concern that many who will be entering our labor force will not meet job requirements with regard to educational preparation. The slow rate of productivity growth and, in particular, its human resource implications is an additional contributing factor to the Nation's problems. Productivity growth is also linked to the need of our economy to remain competitive, which demands the availability of a highly-skilled and an educated work force. We need to deal with each of these issues, not just separately, but as inter-related problems. □

Personick.

<sup>4</sup> Because the labor force is a count of people at work or looking for work and the total employment measure is primarily a count of jobs from the establishment series, differences exist between the two measures of employment. Over longer periods, the two series have generally shown comparable rates of growth. Recently, particularly in 1988, the establishment employment series has shown more absolute employment growth than the household employment series. In these projections, it was assumed that by 2000 the differ-

## Outlook 2000: Summary and Emerging Issues

ences between the two employment measures will have been reconciled. Consequently, the household employment series shows a faster rate of growth than the establishment-based employment series for the period 1988–2000—reversing the 1976–88 pattern. The following tabulation shows these series for 1976, 1988, and 2000:

	(In millions)			Absolute change	
	1976	1988	2000	1976–88	1988–2000
Civilian labor force	96.2	121.7	141.1	25.5	19.5
Civilian household employment	88.8	115.0	133.3	26.2	18.3
Total employment	89.9	118.1	136.2	28.2	18.1
Civilian unemployment rate	7.7	5.5	5.5	-2.2	0.0
"Adjustment factor"	1.1	3.1	2.9	2.0	-0.2
				Percent change	
				1976–88	1988–2000
Civilian labor force				+26.5	+15.9
Civilian household employment				+29.5	+15.9
Total employment				+31.4	+15.3
Civilian unemployment rate				na	na
"Adjustment factor"				+181.8	-6.5

<sup>5</sup> For a discussion on expected employment changes by occupation, see the article by George Silvestri and John Lukasiewicz in this issue, pp. 42–65.

<sup>6</sup> A considerable body of literature is available describing the productivity slowdown and some of the factors contributing to it. Among those are: Martin Neil Baily, "What Has Happened to Productivity Growth?" *Science*, Oct. 24, 1986, pp. 443–51; Edward F. Denison, *Accounting for Slower Economic Growth: The United States in the 1970s* (Washington, the Brookings Institution, 1979); Edward F. Denison, *Trends in American Economic Growth, 1929–1982* (Washington, The Brookings Institution, 1984); Dale W. Jorgenson, Frank M. Gollop, and Barbara M. Fraumeni, *Productivity and U.S. Economic Growth* (Cambridge, MA, Harvard University Press, 1987); *The Slowdown in Productivity Growth: A Symposium: "Symposium on the Slowdown in Productivity Growth,"* by Stanley Fischer; "Productivity Puzzles and R&D: Another Nonexplanation," by Zvi Griliches; "Productivity and Postwar U.S. Economic Growth," by Dale W. Jorgenson; "The Productivity Slowdown, the Oil Shocks, and the Real Cycle," by Mancur Olson; and "Tax Policy and Economic Growth: Lessons from the 1980's," by Michael J. Boskin, *The Journal of Economic Perspectives*, Fall 1988, pp. 3–97; *Trends in Multifactor Productivity, 1948–81*, Bulletin 2178 (Bureau of Labor Statistics, 1983); *The Impact of Research and Development on Productivity Growth*, Bulletin 2331 (Bureau of Labor Statistics, 1989); Edwin Dean, Kent Kunze, and Larry S. Rosenblum, "Productivity Change and the Measurement of Heterogeneous Labor Inputs," Paper presented at Conference on New Measurement Procedures for U.S. Agricultural Productivity, Mar. 31–Apr. 1, 1988 (Bureau of Labor Statistics, 1989); "Multi-factor Productivity Measures, 1987" (Bureau of Labor Statistics, October 1987), USDL 88–478; John H. Bishop, "Is the Test Score Decline Responsible for the Productivity Growth Decline?" *The American Economic Review*, March 1989, pp. 178–97; and Zvi Griliches, "Productivity, R&D, and Basic Research at the Firm Level in the 1970's," *The American Economic Review*, March 1986, pp. 141–54.

<sup>7</sup> See *International Competition in Services and Paying the Bill, Manufacturing and America's Trade Deficit* (U.S. Congress, Office of Technology Assessment, July 1987 and June 1988).

<sup>8</sup> "An International Assessment of Mathematics and Sci-

ence" (Washington, Educational Testing Service, January 1989). This study had the financial support of the National Science Foundation and the U.S. Department of Education and was carried out in five countries and four Canadian provinces. In each area, a representative sample of 13-year-olds was drawn at random from 100 different schools. Approximately 24,000 students took the 45-minute mathematics assessment along with the 45-minute science assessment.

<sup>9</sup> "Literacy: Profiles of America's Young Adults" (Washington, National Assessment of Educational Progress, Educational Testing Service, September 1986). This assessment is from 3,600 nationally representative 21- to 25-year-olds and included a 60-minute measurement of proficiencies. Percentages of persons and selected tasks at or above successive points on the prose scale follow:

Selected tasks at decreasing levels of difficulty*	Selected points on the prose scale**	Race/ethnicity		
		Total	White	Black Hispanic
Identify appropriate information in lengthy newspaper column	375	8.8	10.8	0.7 3.3
Orally interpret a lengthy feature story in newspaper	325	37.1	42.6	10.5 23.5
Write about a job one would like	200	96.1	98.0	86.2 93.8

\*Number indicating difficulty level designates that point on the scale at which individuals with that level of proficiency have an 80-percent probability of responding correctly.

\*\*Prose is one of three categories tested, the other two are document search and quantitative proficiency. The tests reinforce results from the prose test.

<sup>10</sup> "Workforce Quality" (U.S. Department of Labor, Commission on Workforce Quality, 1989).

<sup>11</sup> "The Bottom Line: Basic Skills in the Workplace" (Washington, U.S. Departments of Labor and Education, 1989).

<sup>12</sup> This analysis is scheduled to be updated in the Summer 1990 issue of the Bureau of Labor Statistics *Occupational Outlook Quarterly*. Also see the Summer 1988 issue of the *Quarterly*.

<sup>13</sup> "Labor Market Shortages" (U.S. Department of Labor, 1989).

<sup>14</sup> For an analysis of the effect of immigration on employment, see "The Effects of Immigration on the U.S. Economy and Labor Market" (U.S. Department of Labor, Bureau of International Labor Affairs, 1989), Report 1.

<sup>15</sup> For further information on technological change and its implication for employment, see the following BLS bulletins: *Technological Change and its Labor Impact in Four Industries*, Bulletin 2316, 1988; *Technology and its Impact on Labor in Four Industries*, Bulletin 2263, 1986; *Technology and Its Impact on Labor in Four Industries*, Bulletin 2242, 1986; *The Impact of Technology on Labor in Four Industries*, Bulletin 2228, 1985; *Technological Change and Its Labor Impact in Four Industries*, Bulletin 2182, 1984; *The Impact of Technology on Labor in Five Industries*, Bulletin 2137, 1982. See also *Technology and Structural Unemployment: Reemploying Displaced Adults* (U.S. Congress, Office of Technology Assessment, February 1986).

## Significant decisions in labor cases



### Employee drug testing

The Supreme Court recently upheld Government mandated and authorized workplace drug testing against challenges that such testing violates the Fourth Amendment's prohibition against unreasonable searches and seizures. In its first two decisions on the propriety of drug testing, the Court held that employees may be tested for drug or alcohol use in situations where the Government's "compelling" interests in such tests outweigh employees' "minimal" privacy interests. Thus, "safety-sensitive" railroad workers may be forced to undergo testing when they are involved in certain accidents or rule violations, as may U.S. Customs Service workers who carry weapons or are involved in interdicting drugs.

In *Skinner v. Railway Labor Executives' Association*,<sup>1</sup> the railway group sought to enjoin Federal Railroad Administration regulations that require blood and urine testing of crew members involved in serious train accidents.<sup>2</sup> The group also challenged regulations that permit, but do not require, urine and breath testing of crew members involved in less serious accidents or rule violations.<sup>3</sup> While conceding that collecting or analyzing a blood, urine, or breath sample is a search to which the Fourth Amendment applies,<sup>4</sup> Justice Anthony Kennedy rejected the railway association's challenges. Writing for a seven-member majority, he stated that such a search is permissible if, depending on "all the circumstances surrounding the search

and seizure and the nature of the search and seizure itself," it is "reasonable."<sup>5</sup>

Under the Fourth Amendment, a search is usually not reasonable unless it is conducted pursuant to a judicial warrant that is based upon probable cause.<sup>6</sup> Justice Kennedy's opinion creates an exception to this rule because "special needs, beyond the normal need for law enforcement, make the warrant and probable cause requirement impracticable."<sup>7</sup> According to Justice Kennedy, a warrant generally is required to ensure that the search is authorized by law and will be narrowly limited. However, because the Federal Railroad Administration's drug-testing regulations carefully circumscribe the circumstances under which testing may be performed and narrowly define their limits, he found that, on balance, a warrant would serve no useful purpose. This is particularly true, he said, because requiring a warrant would impose a significant burden on the employer.

Even more important is the Court's determination that an employer may compel a test even though it lacks probable cause or an individualized suspicion of drug or alcohol use. To reach this conclusion, the Court balanced the intrusion on employees' privacy, which it considered to be minimal, against the Government's interest in testing, which it considered to be compelling.

The Court found blood and breath tests to be minimally intrusive because they are routine in today's world and involve little risk, trauma, or pain. Urine tests were found to be somewhat more intrusive because excretory functions are "traditionally shielded by great privacy."<sup>8</sup> However, this additional intrusiveness is reduced, the

Court said, by procedures requiring samples to be taken in a medical environment by nonemployer personnel who do not watch. Finally, the Court also emphasized railroad workers' reduced expectations of privacy due to employment in a highly regulated industry. The Government, on the other hand, was found to have a compelling interest because of its need to deter drug and alcohol use in an industry where even a "momentary lapse can have disastrous consequences"<sup>9</sup> and because the Government must learn the causes of railroad accidents.<sup>10</sup>

The same day that *Railway Labor Executives' Association* was decided, the Supreme Court upheld parts of a Customs Service drug-testing plan in *National Treasury Employees Union v. Von Raab*.<sup>11</sup> Under the plan, Customs Service employees are subject to urine testing for illegal drugs if they apply for promotions or transfers into other Customs Service jobs requiring them to be directly involved in drug interdiction, to carry firearms, or to handle classified material. Employees who are unable to offer a satisfactory explanation for a positive test result may be dismissed from their jobs.

Justice Kennedy, writing for a 5-4 majority of the Court, closely followed the reasoning in *Railway Labor Executives' Association* that neither a warrant nor individualized suspicion is constitutionally required before drug testing may be performed. Applying the "special needs" balancing test, he held that suspicionless urine testing of employees who are involved in drug interdiction or who carry weapons is reasonable and therefore permissible. He did not rule on the reasonableness of the part of the Customs Service plan that requires testing of employees who

"Significant Decisions in Labor Cases" was prepared this month by Craig Hukill of the Office of the Solicitor, U.S. Department of Labor.

handle "classified material," because he could not determine whether testing is limited only to those who are likely to handle "truly sensitive information."<sup>12</sup> Therefore, this portion of the case was remanded to the lower court.

The Court held that drug interdiction personnel and employees who carry weapons have diminished expectations of privacy because they should reasonably expect their employer to inquire into their fitness for duty. At the same time, it held that the Government's interest is compelling because drug interdiction personnel are the "first line of defense against one of the greatest problems affecting the health and welfare of our population."<sup>13</sup> In addition, it found that those who use drugs endanger their fellow workers and are susceptible to bribery and poor job performance.<sup>14</sup> Like the train operators mentioned in *Railway Labor Executives' Association*, employees who carry weapons perform jobs that become "fraught with . . . risks of injuries to others" if the employees' abilities are impaired, even momentarily, by drugs.<sup>15</sup>

Justice Antonin Scalia, who joined the majority in *Railway Labor Executives' Association*, dissented in *National Treasury Employees Union*. As he explained, the Federal Railroad Administration regulations at issue in *Railway Labor Executives' Association* are supported by ample evidence of substance abuse in the target class of employees.<sup>16</sup> Such evidence, he noted, is completely lacking in *National Treasury Employees Union*, where even the Customs Service admitted that it "is largely drug-free."<sup>17</sup> Similarly, he found speculative the Court's nexus between drug use and any injury to compelling public interests. Thus, he concluded, the "special needs" of the Customs Service for suspicionless testing do not outweigh employees' privacy interests.

While establishing a basic framework for analyzing drug-testing cases under the Fourth Amendment, the preceding two important decisions provide little guidance for deciding whether any particular testing scheme will withstand constitutional scrutiny. Instead, the Court's "special needs" balancing leaves the job of resolving

such issues to the lower courts on a case-by-case basis. Many cases are likely to arise from challenges to Federal agencies' drug-testing plans under Executive Order 12564, which calls for a drug-free Federal workplace. Together with decisions already rendered in cases where employees have challenged agency testing plans, these new cases will generate a substantial body of case law in the near future.<sup>18</sup>

### Civil rights

Litigation of discrimination complaints is frequently complex, lengthy, and expensive. To resolve such suits, parties often enter into court-approved settlements, known as "consent decrees." The finality with which such decrees may be viewed has been called into question by the Supreme Court in *Martin v. Wilks*.<sup>19</sup> Under this decision, actions taken pursuant to consent decrees may now be challenged by persons or groups which were not a party to the original proceeding.

In 1974, seven black plaintiffs filed suit under Title VII of the Civil Rights Act of 1964,<sup>20</sup> alleging that the hiring and promotion practices of the City of Birmingham, AL, and the county personnel board unlawfully discriminated against them on the basis of race. In 1981, after a trial was held, but before the court entered judgment, the parties settled the case by entering into court-approved consent decrees. Among other things, these decrees included goals for hiring and promoting black firefighters.<sup>21</sup> Later, a group of white firefighters filed a second suit under Title VII, alleging that city and county employment actions taken as a result of the decrees amounted to unlawful "reverse discrimination." The defendants sought to have this suit dismissed, arguing that the plaintiffs' knowing failure to intervene in a timely manner in the first proceeding precluded them from attacking the decrees in a second proceeding. The Supreme Court disagreed in *Martin*.

According to Chief Justice William H. Rehnquist, who wrote for the 5-4 majority, "a judgment or decree among parties to a lawsuit resolves issues as among them, but it does not conclude

the rights of strangers to those proceedings."<sup>22</sup> Under the Federal Rules of Civil Procedure, he held, the white firefighters could not be bound by the consent decrees because they had not been joined as parties to the first proceeding.<sup>23</sup> Thus, the Court held that a different outcome can occur in such cases, but only if the Federal Rules of Civil Procedure are changed.

As a result of the Court's decision in *Martin*, the white firefighters are free to challenge the consent decrees in the second proceeding. However, the legal standard governing this or any similar challenge is not settled because the Court did not address the issue. According to the court of appeals, though, challenged consent decrees should be measured by the same standard used to judge the propriety of voluntary affirmative action plans.<sup>24</sup> By that standard, challenged consent decrees would have to meet a two-part test in order to be valid under Title VII.<sup>25</sup> First, they would have to be justified by an underrepresentation of minority workers that reflects a "manifest imbalance" in the relevant job categories. Second, they could not "unnecessarily trammel" the rights of nonminorities or create an absolute bar to their advancement.<sup>26</sup>

The impact of *Martin* could be substantial. Not only will consent decrees be subject to challenge in new legal proceedings, but previously litigated final court orders and judgments may be as well.<sup>27</sup> In addition, conciliated agreements, which do not result from litigation, may be challenged. At a minimum, *Martin* has created considerable uncertainty about the extent to which good-faith actions taken by parties as a result of consent decrees, court orders or judgments, or conciliated agreements may subject such parties to further litigation.

### Union affairs

Section 101(a)(2) of the Labor-Management Reporting and Disclosure Act grants union members the right to express freely their views about union candidates and business.<sup>28</sup> In *Sheet Metal Workers v. Lynn*,<sup>29</sup> the Supreme Court held that this free-speech right protects an elected union business

agent from being removed from his or her position for speaking out against a union proposal to raise dues. This decision resolves an important question left unanswered by the Court's 1982 decision in *Finnegan v. Leu*.<sup>30</sup>

In *Finnegan*, the Court allowed a newly elected union president to replace unelected business agents who had not supported his candidacy with business agents who had. The Court held that the president's actions furthered the Labor-Management Reporting and Disclosure Act's "overriding objective," which was "to ensure that unions would be democratically governed, and responsive to the will of the union membership as expressed in open, periodic elections."<sup>31</sup> Using similar logic, the Court found in *Lynn* that democratic union governance would be equally frustrated if elected business agents—as opposed to business agents who are appointed by elected union officials—could be removed for exercising free-speech rights. In either case, *Lynn* held, the key is whether union members have been denied their choice of representative. If they have, the Labor-Management Reporting and Disclosure Act protects business agents against removal from their positions.<sup>32</sup>

## Footnotes

<sup>1</sup> *Skinner v. Railway Labor Executives' Association*, 109 S. Ct. 1402 (1989).

<sup>2</sup> 49 CFR § 219.201 (1987).

<sup>3</sup> 49 CFR § 219.301 (1987).

<sup>4</sup> The Fourth Amendment applies only to searches by the Government and its agents. In the situation at issue, the searches are performed by a private employer. Nevertheless, the Court found that the Fourth Amendment applies. When the employer performs testing that is mandated by the Government, it is acting as an instrument or agent of the Government. Even when it performs discretionary testing, it is doing so with the Government's encouragement, endorsement, and limited participation. Thus, the Government is sufficiently involved to implicate the Fourth Amendment. It is important to note that the propriety of drug testing plans *not* subject to the Fourth Amendment may be governed by Federal

or State law. For example, § 8(a)(5) of the National Labor Relations Act, 29 U.S.C. § 158(a)(5) (1982), requires a private employer to bargain with its union before it implements a drug-testing plan for current employees, notwithstanding a broad management-rights clause in an existing collective bargaining agreement. See *Johnson-Bateman*, 295 N.L.R.B. No. 26, 1988-89 NLRB Dec. (CCH) § 16,236 (June 15, 1989).

<sup>5</sup> *Skinner v. Railway Labor Executives' Association*, 109 S. Ct. at 1414.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *Id.* at 1418.

<sup>9</sup> *Id.* at 1419.

<sup>10</sup> Justice Stevens, in a concurring opinion, concluded that the Government's interest in determining the causes of accidents is the only basis upon which the challenged regulations may stand. He found unpersuasive the argument that alcohol and drug testing serves as a deterrent. In his view, employees not deterred by the potentially fatal consequences of operating a train under the influence of alcohol or drugs would not likely be deterred by the less onerous prospect of alcohol or drug testing. *Id.* at 1422 (Justice Stevens, concurring).

<sup>11</sup> *National Treasury Employees Union v. Von Raab*, 109 S. Ct. 1384 (1989).

<sup>12</sup> The Court did not define how employees who handle "truly sensitive information" differ from those who handle classified material, other than to indicate that they are less numerous.

<sup>13</sup> *National Treasury Employees Union v. Von Raab*, 109 S. Ct. at 1392.

<sup>14</sup> Justice Kennedy does not require the Customs Service to explain why, in light of such dangers, its plan does not require testing of persons who are not merely applicants, but are already employed in such positions. It could be argued that if the Customs Service's interests are as compelling as the Court found, then employees, as well as applicants, should be tested. See *National Treasury Employees Union v. Von Raab*, 816 F. 2d 170, 184 (5th Cir. 1987) (J. Hill, dissenting).

<sup>15</sup> *National Treasury Employees Union v. Von Raab*, 109 S. Ct. at 1393.

<sup>16</sup> See *Skinner v. Railway Labor Executives' Association*, 109 S. Ct. at 1407 n.1.

<sup>17</sup> *National Treasury Employees Union v. Von Raab*, 109 S. Ct. at 1387.

<sup>18</sup> For example, since March 21, 1989, when the Supreme Court issued its decisions in *Skinner* and the *Treasury Union* case, at least two courts of appeals have ruled on the propriety of agencies' random drug-testing schemes. See *Thomson v. Marsh*, No. 878 F. 2d 1431 (4th Cir. 1989), upholding the Army's plan to test civilian

workers at a chemical weapons plant; and *Harmon v. Thornburgh*, No. 878 F. 2d 484 (D.C. Cir. 1989), prohibiting random testing of attorneys who conduct grand jury proceedings or who are assigned to prosecute criminal cases, but allowing testing of workers with access to top secret documents.

<sup>19</sup> *Martin v. Wilks*, 109 S. Ct. 2180 (1989).

<sup>20</sup> Current version at 42 U.S.C. § 2000e (1982).

<sup>21</sup> *United States v. Jefferson County*, 28 Fair Empl. Prac. Cas. (BNA) 1834 (N.D. Ala. 1981).

<sup>22</sup> *Martin*, 109 S. Ct. at 2184.

<sup>23</sup> The court indicated that under the Federal Rules of Civil Procedure, the white firefighters might have been joined as parties either through the "permissive" joinder provisions of Rule 24 or the "mandatory" joinder provisions of Rule 19.

<sup>24</sup> See *In re Birmingham Reverse Discrim. Empl. Lit.*, 833 F. 2d 1492, 1500 (11th Cir. 1987).

<sup>25</sup> Consent decrees involving public employers may also be challenged under the Fourteenth Amendment, which, generally speaking, does not apply to private employers. If the validity of such decrees is to be measured against the standard used to judge the validity of affirmative action plans under the Fourteenth Amendment, public employers will be forced to show that their decrees are the result of identifiable discrimination and are narrowly tailored to remedy it. See *City of Richmond v. J.A. Croson Co.*, 109 S. Ct. 706 (1989).

<sup>26</sup> In the first reported case decided post-*Martin*, a Federal district court applied this two-part test and upheld the challenged consent decree. See *Henry v. City of Gadsden*, 715 F. Supp. 1065 (N.D. Ala. 1989). In the summary of its ruling, the court expressed an apparent lack of enthusiasm for such collateral attacks: "Since the challenged consent decree passes the two-prong test . . . with flying colors, the attack fails—and it fails miserably." *Id.* at 293.

<sup>27</sup> See *Martin*, 109 S. Ct. at 2200 n. 30 (Justice Stevens, dissenting).

<sup>28</sup> 29 U.S.C. § 411(a)(2) (1982).

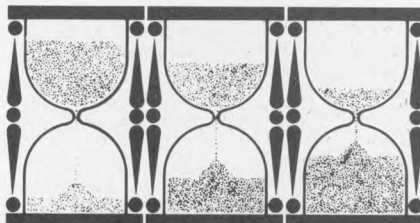
<sup>29</sup> *Sheet Metal Workers v. Lynn*, 109 S. Ct. 639 (1989).

<sup>30</sup> *Finnegan v. Leu*, 456 U.S. 431 (1982).

<sup>31</sup> *Id.* at 441.

<sup>32</sup> The court also held that it makes no difference that the elected business agent was removed, not by an elected official, but rather by a trustee who had been appointed by the International's general president to direct the affairs of the financially troubled local. The Court reasoned that the trustee was not empowered to order a dues increase without the approval of the local's members and so could not control debate on the issue by removing the business agent.

# Major agreements expiring next month



This list of selected collective bargaining agreements expiring in December is based on information collected by the Bureau's Office of Compensation and Working Conditions. The list includes agreements covering 1,000 workers or more. Private industry is arranged in order of Standard Industrial Classification. Labor organizations listed are affiliated with the AFL-CIO, except where noted as independent (Ind.).

## Private industry

### Construction

Construction Association of Western Pennsylvania; Carpenters, Laborers, Operating Engineers, and Teamsters unions, 190,000 workers

### Food products

Campbell Soup Co., Paris, TX; Food and Commercial Workers, 1,300 workers

### Apparel and other textile products

Plastic Soft Materials Manufacturers Association, New York, NY; Ladies' Garment Workers, 2,500 workers

### Primary metals

Inco Alloys International, Huntington, WV; United Steelworkers, 1,000 workers

Manufacturers Industrial Relations Association, Interstate; Molders and Allied Workers, 2,000 workers

### Electrical and electronic equipment

AVX Corp., AVX Ceramics Division, Myrtle Beach, SC; Electrical Workers (IBEW), 1,200 workers

Zenith Radio Corp., Rauland Division, Melrose Park, IL; Electrical Workers (IBEW), 1,600 workers

### Transportation equipment

Dana Corp., Interstate; Automobile Workers, 2,500 workers

## Transportation

Flying Tiger Line, Interstate; Machinists, 1,250 workers

Great Lakes Association of Stevedores, Interstate; International Longshoremen's Association, 2,000 workers

## Public utilities

Atlantic City Electric Co., Atlantic City, NJ; Electrical Workers (IBEW), 1,000 workers

## Retail trade

Bob's Big Boy Restaurants, Southern California; Bob's Employees Association (Ind.), 5,500 workers

Kroger Food Stores, Dayton, OH; Food and Commercial Workers, 2,500 workers

## Real estate

Realty Advisory Board on Labor Relations (commercial and apartment buildings), New York, NY; Service employees, 50,000 workers

Beverly Enterprises, Interstate; various unions, 1,000 workers

## Public activities

### General administration

State supervisors, Alaska; Alaska Public Employees Association (Ind.), 1,000 workers

General employees, Chataqua County, NY; State, County and Municipal Employees, 1,000 workers

General employees, Dutchess County, NY; State, County and Municipal Employees, 1,200 workers

Clerical employees, Fresno County, CA; Service Employees, 1,200 workers

General employees, Hempstead, NY; State, County and Municipal Employees, 3,000 workers

Clerical and manual employees, Middlesex County, NJ; State, County and Municipal Employees, 1,200 workers

General employees, Nassau County, NY; State, County and Municipal employees, 12,500 workers

General employees, Oneida County, NY; State, County and Municipal Employees, 1,300 workers

Office and technical employees, San Joaquin County, CA; San Joaquin County Employees Association (Ind.), 1,100 workers

General employees, Trenton, NJ; State, County and Municipal Employees, 1,100 workers

General employees, Westchester County, NY; Westchester County Employees Association (Ind.), 6,200 workers

## Education

Teachers, Boulder, CO; National Education Association (Ind.), 1,250 workers

Teachers, Cherry Creek, CO; National Education Association (Ind.), 1,600 workers

Teachers, Colorado Springs, CO; National Education Association (Ind.), 1,650 workers

Teachers, Gary, IN; American Federation of Teachers, 1,300 workers

Community college faculty, San Diego, CA; American Federation of Teachers, 2,300 workers

Teachers, Worcester, MA; National Education Association (Ind.), 1,500 workers

## Protective services

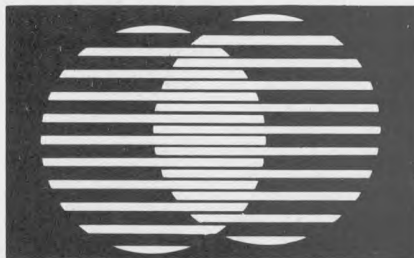
Police, Cincinnati, OH; Fraternal Order of Police (Ind.), 1,050 workers

Fire Fighters, Pittsburgh, PA; International Association of Fire Fighters, 1,100 workers

Police, Pittsburgh, PA; Fraternal Order of Police (Ind.), 1,150 workers



# Developments in industrial relations



## Regional telephone accords

Following their settlement with American Telephone & Telegraph Co. (AT&T), the Communications Workers and the International Brotherhood of Electrical Workers opened bargaining with the seven regional companies which, with AT&T, made up the Bell System prior to the court-ordered breakup in 1984. Communications Workers President Morton Bahr had indicated that the unions hoped to use the AT&T settlement (see *Monthly Labor Review*, August 1989, pp. 49–50) as a basis for settling with the regional companies. One area of particular interest to unions was family care benefits—such as employee time off for the birth or adoption of a child or to care for disabled or elderly family members—which was a feature of the AT&T settlement. This issue was resolved, as the regional companies agreed to provisions essentially the same as those for AT&T. A major goal of the regional companies was to slow the rise in their costs for health insurance by shifting some of the burden to employees. The new 3-year contracts do not call for employees to begin paying part of premium costs, which the companies had sought, but some contracts do include cost control measures, such as increased deductibles, coinsurance obligations, and shifts to preferred provider organizations offering comprehensive medical care according to a set fee schedule.

Wage increases—which varied among the companies, as they did in

the 1986 round of settlements—were generally viewed as moderate by industry observers.

The settlements did not come without difficulty, as four of the companies experienced work stoppages that involved a peak total of 200,000 workers. By early September, the disputes were resolved and the employees were back at work, except at NYNEX Corp. This stoppage began August 6 and involved 60,000 employees of the subsidiary New York Telephone Co. and the New England Telephone and Telegraph Co. It was still in progress when this report went to press.

The companies that settled peacefully with the Communications Workers were Bell South Corp., for 63,000 employees in nine States; US West, for 41,000 workers in 14 States; and Southwestern Bell, for 45,000 workers in five States. The first of the peaceful settlements was between Ameritech's Illinois Bell Telephone Co. unit and the Brotherhood of Electrical Workers. The July tentative settlement was ratified, but some of the 12,900 workers refused to cross the picket lines of 3,000 employees represented by the Communications Workers who struck Illinois Bell at the same time that employees represented by the Communications Workers struck the five other Ameritech subsidiaries: Indiana Bell Telephone Co., Michigan Bell Telephone Co., Ohio Bell Telephone Co., Wisconsin Bell, and Ameritech Services, a supply and distribution unit.

**Bell South.** The August agreement for Bell South provides for:

- An immediate 4-percent general wage increase, followed by 1-percent increases in August of 1990 and 1991.
- Additional wage increases to

some employees resulting from job reclassifications.

- Possible cost-of-living adjustments in August of 1990 and 1991, under the existing formula of 0.8 percent for each 1.0-percent of any rise in the BLS Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) between 3 percent and 8 percent during the preceding 12 months.

- Revision of the Team Incentive Award plan to provide for “standard” payments to employees in March of 1990, 1991, and 1992 equal to 2 percent (was 1.5 percent) of each employee's pay during the preceding year. The actual lump-sum payments range from nothing to 225 percent of the standard amount, depending on the success in meeting customer service and company revenue and net income objectives.

- A new Employment Security Partnership to provide training and retraining for employees, funded by Bell South at a rate of about \$130 a year for each employee.

- A \$15 increase in the \$150 annual deductible for health benefits and a \$50 decrease in the \$450 family maximum.

- A 6-percent increase in pension rates, effective in January 1990.

**Southwestern Bell.** At Southwestern Bell Corp., the August accord provides for:

- An August 1989 monetary gain equal to 5.25 percent of each employee's yearly wage, in the form of a \$1,000 lump-sum payment and the balance as a wage increase. This will be followed by wage increases in August of 1990 and 1991 of 2.25 percent for employees at top pay steps and proportionately smaller amounts for

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

those in lower steps.

- Possible cost-of-living adjustments in August of 1990 and 1991 based only on that part of any rise in the BLS CPI-W between 2 percent and 6 percent during the 12 months ending in May. The adjustment rate is 55 cents plus 0.65 percent of the worker's pay rate in the prior year for each percent increase in the CPI-W. Any resulting amounts will be "annualized", with the first \$400 paid in a lump-sum and the balance as a wage increase. Under the previous formula, only the 2- to 4-percent portion of a rise in the CPI-W was compensable and the entire amount was paid in a lump sum.

- Continuation of company-paid health insurance, which was revised to provide some improvements in benefits, and increases in employee deductible and coinsurance obligations.

- Increases in pension rates in each contract year—3 percent for employees retiring before age 55, 4 percent for those retiring between ages 55 and 59, and 5 percent for those retiring at age 60 or later.

*US West.* Terms of the August settlement at US West include:

- An August 1989 monetary gain equal to 5 percent of each employee's yearly wage, in the form of a \$600 lump-sum payment and the balance as a wage increase, with employees at the top of pay steps receiving the largest increase and those in lower steps receiving proportionately less. In August of 1990 and 1991, there will be respective increases of 2.5 and 2.25 percent in top rates, with proportionately smaller increases in lower pay steps.

- Revisions in the team award plan. Under the new approach, employees will receive payments after the close of 1990 and 1991 equal to 3 percent of their base annual wage if "targeted" profit and customer service goals—weighted equally—are met during the year. The payments can range to a higher maximum limit or down to nothing, depending on actual profit and service performance.

- Reductions in the number of pay steps for some jobs and in geographic wage zones, resulting in additional pay increases for some employees.

- An immediate 10-percent increase in pension rates, followed by a 3-percent increase in January 1991.

- Continuation of company-paid health insurance, which was revised to include financial inducements for employees to switch to a preferred provider organization.

*Pacific Telesis.* The Pacific Telesis agreement with the Communications Workers applied to 42,000 employees of its Pacific Bell Telephone Co. in California and 750 employees of its Nevada Bell Telephone Co. The Brotherhood of Electrical Workers negotiated similar terms for 2,500 employees in the two States. Terms for workers represented by the Communications Workers include:

- Average wage increases of 3.1 percent effective immediately, 3.7 percent in August 1990, and 2.6 percent in August 1991.

- Increased lump-sum incentive payments.

This accord was rejected by members of the Communications Workers, leading to changes in the lump-sum payments and health insurance, and a revote that was to be completed by December 1.

*Ameritech.* At Ameritech, the only peaceful settlement was between its Illinois Bell subsidiary and the Brotherhood of Electrical Workers. Major terms of the later settlement between Illinois Bell and the Communications Workers were similar to those negotiated by the Brotherhood of Electrical Workers, and include:

- A monetary allocation equal to 5 percent of base annual pay, with \$1,000 of the amount paid in a lump sum and the balance paid as a wage increase. A ratification payment equal to 2.5 percent of base annual pay also was paid immediately. In July of 1990 and 1991, the employees will receive 2-percent wage increases plus possible cost-of-living adjustments up to 0.75 percent—equal to three-fourths of that portion of any rise in the BLS CPI-W between 4.5 percent and 5.5 percent.

- Revision of the Success Sharing Formula to provide for lump-sum payouts of up to 1.2 percent of base annual

pay in 1991 and up to 2.4 percent in 1992 (formerly 1.1 percent) if the profit and customer service goal is met. Larger or smaller payouts are possible.

- Effective January 1990, a maximum 10-percent (of base annual pay) employee investment in the Savings and Security Plan (formerly 6 percent), with the company matching 60 percent (formerly 50 percent) of the amount.

- A 13-percent increase in pension rates, with employees now having the option of taking their benefit in a lump sum.

- A new company-financed Gateway to Learning program to help employees set career goals and achieve them. Participating employees will receive up to \$2,200 a year in counseling, testing, and tuition aid.

The Communications Workers work stoppage at the five other Ameritech operating companies—also including 3,000 employees the union represents at Illinois Bell—began August 12. All of the employees stayed out until the last of the settlements, with Michigan Bell on August 30. This company-by-company bargaining approach contrasted with that at the other regional companies where all major wage and benefit provisions were negotiated at one bargaining table, leaving only local issues for later resolution. Ameritech contended that its approach was necessary because of the need to deal with varying financial and operating conditions among its subsidiaries.

The Ohio Bell contract provides for:

- A signing bonus equal to 2 percent of the employee's base annual pay and an immediate 2-percent wage increase, followed by wage increases totaling 3 percent in 1990 and 3.5 percent in 1991.

- Improvements in vision and dental care benefits.

- A 13-percent increase in pension rates.

- A company contribution to the savings plan equal to 60 percent (formerly 50 percent) of each employee's investment.

At Indiana Bell, the Communications Workers agreed to:

- A 2.5-percent (of annual pay) lump-sum and a 2.5-percent wage

increase, both payable immediately, followed by a 2.25-percent wage increase in August of 1990 and a 2.5-percent increase in August of 1991.

- Termination of the cost-of-living adjustment clause. To possibly compensate for this, the provision for annual Success Sharing payments was revised to provide that a portion—0.5 percent of base annual pay—be applied as a wage increase if the standard or target is exceeded by 160 percent or more.

- A 13-percent increase in pension rates, with employees given the option of lump-sum payments in lieu of monthly benefit payments.

- A company contribution to the Savings and Security plan equal to 60 percent (formerly 50 percent) of each employee's investment. The investment was raised to 10 percent of earnings, from 8 percent.

The Wisconsin Bell contract provides for:

- A signing bonus equal to 2.5 percent of each employee's annual wage and an immediate wage increase ranging from 2.5 percent of maximum pay progression rates to no increase in starting rates. In the second and third years, wage increases will range from 2.5 percent at the top of progressions to 1 percent at the beginning. If financial and service performance goals are met, employees will receive additional 0.5-percent wage increases by March 15, 1990, 1991, and 1992.

- Possible employee performance bonuses equal to a week's pay in March of 1990, 1991, and 1992. These lump sums also are contingent on meeting financial and service performance goals.

- Improved job security, including a new Building Employment Skills for Tomorrow program to provide employee counseling and training for new jobs.

- A 13-percent increase in pension

rates and a new option to take the benefit in a single lump sum.

- Formation of a joint health care cost containment committee, improvements in a number of health benefits, and a requirement that employees pay the full cost of coverage for certain dependents enrolled after September 1, 1989.

- A company contribution to the savings and security plan equal to 60 percent (formerly 50 percent) of each employee's investment, which was raised to 10 percent (formerly 6 percent) of earnings.

At Michigan Bell, the Communications Workers agreed to:

- Wage increases of 2 percent effective immediately, 2.5 percent in September 1990 and 3 percent in September 1991, and a lump-sum immediate payment equal to 3 percent of base annual pay.

- A revision of a Team Performance Award plan guaranteeing that payments to workers after each plan year will at least equal 1 percent of their annual wage, even if goals are not met. Another change provides for wage increases after each plan year ranging from 0.1 percent if achievement is 130–134 percent of the goal to 0.5 percent if achievement is 150–200 percent of the goal.

- Combination of the health plans for management and nonmanagement employees, with no changes in deductibles and coinsurance payments. There also were improvements in benefits.

- A 13-percent increase in pension rates, a new employee option to take their benefit in a lump sum if it amounts to more than \$3,500, and upgrading of some pension "bands", resulting in larger entitlements.

- A company contribution of its stock to the savings and security plan equal to 60 percent (formerly 50 percent) of each employee's investment.

- New flexibilities in scheduling excused work days, vacations, educational leaves, and workweeks.

*Bell Atlantic.* At Bell Atlantic, where a work stoppage began August 13, the Communications Workers settled on "regionwide" issues on August 17, but there was no back-to-work movement because the individual subsidiary companies still had not settled on local issues. The last of the tentative local accords was reached in late August when the union settled with Bell of Pennsylvania and Diamond State Telephone Co. of Delaware. This triggered a return to work in Bell Atlantic's six-State and Washington, DC, region, except in New Jersey, where 5,400 employees remained out until September 5, when the Brotherhood of Electrical Workers settled on all issues for the 9,000 workers it represents in New Jersey. The union also settled with Bell of Pennsylvania for the 2,000 workers it represents in that State.

The regionwide terms for workers represented by the Communications Workers include:

- A 3-percent wage increase effective immediately and 2.25-percent increases in the second and third years.

- Possible profit-sharing payouts in each of the 3 years.

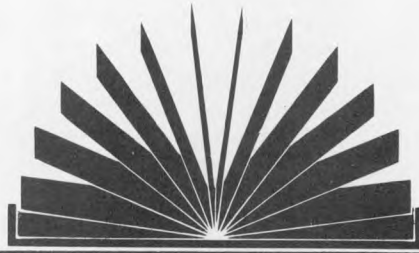
- Conversion of health care coverage to a preferred provider organization approach.

- A 13-percent increase in pension rates for future retirees and a 6-percent increase for current retirees.

- An employer match equal to two-thirds (formerly one-half) of each employee's investment in the savings plan.

The Brotherhood of Electrical Workers accords with Bell of New Jersey and Bell of Pennsylvania provide for essentially the same terms as the Communications Workers settlements. □

## Book reviews



### A prescription for solving the crisis in the work force

Horst Brand

On Labor Day 1989, the Secretary of Labor's Commission on Workforce Quality and Labor Market Efficiency issued its report titled, *Investing in People: Strategy to Address America's Workforce Crisis*.<sup>1</sup> The Commission, which consisted of leading representatives of industry, labor, universities, and research institutes, had been established in July 1988 by former Secretary of Labor Ann McLaughlin.

The report deals with the intensifying needs of the workplace for basic knowledge and skills, and to an extent contrasts these needs with the inability of much of the work force to meet them.<sup>2</sup> It attributes this inability to the inadequacies of high school education, and, as is implied by the numerous remedies it recommends, to the insufficient involvement of business and industry in the educational effort. It discusses the obstacles to training in specialized (or job-related) skills, and the possibly even larger impediments to the retraining of workers whose skills and experience no longer fill workplace needs. Here, too, it urges a much more active role for business than business has hitherto been willing to assume.

It also addresses questions of what it terms labor market efficiency, although here the report is less comprehensive than in its discussion of schooling and training. It argues for

greater supportiveness of the work environment in mitigating conflicts between family needs and the requirements of the workplace for stable attendance, punctuality, and attention to the tasks at hand. It suggests a mix of public and private policies—a mix that applies to most of its recommendations—that would necessarily extend the conventional horizons of business operations to matters of social policy. It also advocates greater scheduling flexibility, a matter more readily resolved within the authority confines of business.

In its proposals for matching jobs and jobseekers, the Commission advocates a more active role for the U.S. Employment Service; changes in the experience rating system of unemployment insurance; and programs that facilitate nationwide job search and worker relocation. It also calls for encouraging worker participation at the workplace and innovative compensation plans, although this call takes the form of recommendations for government research and the exploration of "best practice" plans. In the final part of its report, the Commission offers a human resource research agenda for the Departments of Labor and Education, and urges adequate funding to carry it out. In what follows, some of the themes and policy recommendations of the Commission are detailed.

The Commission's work draws upon a large volume of monographs (49 altogether), reflecting the current state of knowledge pertaining to its concerns.<sup>2</sup> In addition, Commission members listened to the testimony of 116 expert witnesses at its public hearings, and gathered additional statements from another 105 persons. The Commission also interviewed an array of represen-

tatives of labor, business, education, employment and training centers, and other organizations, eliciting their insights and ideas.

The forces that make for the urgency of the Commission's report have been analyzed in detail in *Workforce 2000*.<sup>3</sup> The authors base their analysis on the economic trends they foresee or project over the coming decade, as well as upon the evolving demographics of the labor force. Essentially, they argue that, inasmuch as the dependence of the American economy upon the world economy at large will grow, and as the continued growth of the former hinges upon its interlinkages with the latter, the United States must attain and maintain competitiveness in the widening range of export industries which its leadership position demands.<sup>4</sup> They offer two definitions of competitiveness. One is that the United States can lower the costs of its goods and services so as to make them price-competitive on international markets, and thus pay for imports. This would entail lower wages and salaries, hence lower living standards. The other is to achieve international price competitiveness by raising productivity. This would permit wages and salaries and hence standards of living, to rise. "Competitiveness is really another way of looking at national productivity," they write. A fundamental condition of productivity improvement, and hence a means to increase international competitiveness—rather than forcing wages down to world market levels—thus is the nurturing of human resources. It is in this sense that the Commission's report prescribes ways in which some of the chief challenges posed by the authors of *Workforce 2000* may be met.

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A basic argument of the Commission's report is that a growing gap exists between the capabilities of much of the American work force and the requirements of productivity improvement. The Commission speaks of a "work force crisis"; the near certainty that the gap referred to will widen rapidly in the decade ahead—the reasons are detailed below—unless remedial steps are taken soon, justifies the use of that term. The Commission accordingly offers "a national strategy to avert economic decline by improving the quality of the work force."<sup>5</sup> We now turn to some of the specific aspects of this strategy, and the reasons that led to its adoption.

### Three problems

The Commission sees three related problems pertaining to low work force quality: (1) High school graduates fail to attain the education of which they are capable; one-fourth of all high school students drop out, that is, fail to graduate. "Employers report that alarming numbers of young job applicants have such poor reading and computation skills that it is impossible to provide them with job-specific training."<sup>6</sup> (2) A growing proportion of workers either lack the skills required by technological or organizational changes at the workplace, or have skills made obsolete by such changes (or by declining industries and shrinking product markets). These workers must be retrained. Yet, retraining of workers below the managerial, professional, or technical levels is generally inadequate or unavailable altogether. (3) Vast numbers of adults—estimates range between 20 million and 40 million—lack literacy, numeracy, and cognitive skills without which they cannot be trained or retrained except at great cost to employers.<sup>7</sup>

These problems are likely to be exacerbated in the years ahead by the changing demographics of the labor force, and by what the Commission believes will be accelerated technological changes accompanied by the shorter life cycle of products, conditions to which much of the work force cannot readily adapt.

Almost one-half of the increase in

the labor force between 1986 and 2000 will consist of blacks and Hispanics.<sup>8</sup> The importance of this large minorities component in the growth of the labor force derives from the lower education levels of blacks and Hispanics than of non-Hispanic whites. According to one of the monographs that underlie the Commission's report, 40 percent of all Hispanics ages 25 to 29 were high school dropouts in 1985, compared to 20 percent of all blacks and 13 percent of whites.<sup>9</sup> Forty-seven percent of all blacks ages 21 to 25 and 29 percent of all Hispanics in the same age group have been found to read below the 8th grade level, as against 15 percent for all young whites.<sup>10</sup>

Another factor that is associated with low levels of educational achievement is the rising proportion of children living in poverty (from 15 percent in 1970 to 20 percent in 1985), together with the increase in single-parent households (from 12 percent to 23 percent). As much as one-third of American youth is thus estimated to be "at risk" of educational failure.<sup>11</sup> Failure on so massive a scale must be viewed as systemic rather than as individual. And it cannot be remedied to any large extent at the workplace, which cannot normally impart more than job-related skills. Yet, even these cannot often be learned by persons lacking the "threshold" or "basic" skills mentioned earlier. Absent appropriate remedies, such as the Commission recommends: "The seriousness of the problem is increasing because of the massive rise in the numbers of students who are at risk in the schools and who will ultimately join the labor force. . . . The response must be substantial and fundamental, moving away from remediation as a strategy and in the direction of acceleration of learning."<sup>12</sup>

Training and retraining workers is frequently intertwined with the need to teach basic skills—reading, figuring, inferring. The Commission's report divides the pertinent discussion between employer programs and government programs, the latter being concentrated upon more or less severely disadvantaged persons, including those with "the most severe skill deficiencies." However, there is evidence that em-

ployers' training (or retraining) programs, insofar as these are designed for the lower level work force, do not escape the difficulties which government programs are meant to remedy. In one case, for example, one-fifth of hourly employees who were to undergo specialized courses in a nearby technical college were unable to meet the college's minimal reading and mathematics entrance requirements—although these workers firmly believed they had no basic skills problem.<sup>13</sup> In another case, one-fourth of the quality circle groups organized in a manufacturing firm had no employee-member capable of taking notes that could clearly communicate to an outsider.<sup>14</sup>

### Employer training

What is the extent of employer training? Who is being trained? Is the training adequate in terms of the emerging needs of the economy? The Commission reports that employers spend about \$30 billion on formal training, provided either by themselves or by outside suppliers.<sup>15</sup> This, however, is the upper end of a range that begins with an estimate of \$12 billion. In addition, expenditures for "informal" training range between \$90 billion and \$180 billion.<sup>16</sup> The wide ranges cited reflect the lack of firm data in addition to differences in estimating approaches. More definitive results have been obtained about the extent of employer training from the Current Population Surveys of the U.S. Bureau of the Census. According to these surveys, employers accounted for the qualifying or skill upgrading of 10 percent of all workers in 1983; or for about one-third of the roughly half of all workers who stated that specific training was necessary for them to qualify for their job.<sup>17</sup> Informal on-the-job training qualified 28 percent of all workers, and upgraded 14 percent. Notwithstanding these data, employers exercise considerable selectivity in whom they train and upgrade. Employer-based formal training "is disproportionately present in industries with high concentrations of managers, professionals, and technicians."<sup>18</sup> Furthermore, blacks and Hispanics receive only about 5 percent and 3 percent of

employer-based training—roughly half their share in the labor force at large. And, finally, the likelihood of receiving such training increases with the formal schooling which the trainee has received—so that college graduates, for example, have a 50-percent better chance than high school graduates of being selected for employer-sponsored training.<sup>19</sup> It is, therefore, not surprising that per-employee outlays for in-house training are significantly higher for the upper levels of the work force than for lower levels.<sup>20</sup>

It is evident that the Commission does not believe that employers' training efforts are adequate, and that they are suboptimal from a social perspective. It advocates a tax credit to encourage employers to raise educational and training outlays, its reasoning being that the requisite employer investment is retarded by workers' taking their skills, learned partially at the employer's expense, with them when they quit. Average tenure at a job in the United States is low compared with other major industrial countries; apprenticeships are limited to a few construction trades; and job turnover is high. Thus, employers find it difficult to recoup their human capital investment. "Public policies are needed to encourage" such investment, states the Commission.<sup>21</sup>

### Government-sponsored training

If private-sector training efforts lag in meeting the emerging needs of the workplace, the success of government-sponsored programs is no less in question, in large part because they lack firm links with employers. The Federal Government funds more than a dozen major training programs, but "few of the programs . . . have formal links with employers to assure that the training and related services meet employer needs."<sup>22</sup> Notable exceptions are the private industry councils which review local programs under the Job Training and Partnership Act (JTPA), thus tending to integrate the programs with workplace needs. Mandated program performance standards also help focus upon this objective. The Commission endorses the JTPA but is critical of the severe funding losses the act has suf-

fered (constant-dollar expenditures run 25 percent below the levels of 1982, when the act was passed); as well as of the small part of the eligible population of disadvantaged persons which the programs reach (5 percent).<sup>23</sup> Furthermore, while placement rates of those who completed the programs have been high (70 percent), only 58 percent have remained on the job in which they had been placed for more than 4 months; 26 percent have been unemployed. The great majority (70 percent) earned \$5 per hour or less.<sup>24</sup> There may well be a relation between the ultimate success of these programs and the wage rates which their graduates can expect.

Linking basic-skills (or "second chance") education with the world of work appears also to be a key to success (or its absence a cause of failure). The Commission reports that only 1 or 2 percent of eligible adults are served by such programs, and that waiting lists for adult basic education classes average 35 percent of enrollment.<sup>25</sup> However, annual dropout rates are high; only 20 percent of leavers persist a year or longer.<sup>26</sup> Yet, "it may take several hundred hours of instruction before a worker who can barely read a product label is able to trouble shoot using a manual for computerized equipment."<sup>27</sup> Nevertheless, the likelihood of such a worker's ultimate success—or that of his perhaps slightly more literate counterpart—is enhanced precisely because of its being employment-related: it has been documented "that learners who master basic skills with materials related to their jobs retain most of what they have learned, while more than half of the gains made with ordinary learning material disappear within 8 weeks."<sup>28</sup> The effectiveness of government-sponsored education and training programs thus depends in large measure upon their links to the workplace, hence upon the appropriate actions of employers. The Commission recognizes this relationship by urging the creation of a permanent tripartite committee (including representatives of business, labor, and the Secretaries of Commerce, Education, Health and Human Resources, and Labor) "to coordinate human resource policy on a continuing basis."<sup>29</sup>

A far closer relation than hitherto between employers and high schools is implicit also in the Commission's pertinent analyses and remedial recommendations concerning the secondary educational system as "the foundation of work force quality."

Citing a study of 13-year-olds in the United States, Canada, the United Kingdom, and Korea, the Commission states that U.S. students are last in average math proficiency and homework; nearly last in average science proficiency and homework; and first only in the percent watching 5 hours or more of TV a day.<sup>30</sup> It concludes that "students lack sufficient incentives to inspire their wholehearted engagement with learning and, furthermore, that many aspects of the American education and employment systems are inconsistent with the interests of learning."<sup>31</sup> It is noteworthy that the Commission places the burden for the inadequate preparation of youth for the workplace equally upon business and the educational system. Its remedial recommendations, only a few of which can be dealt with here, suggest the extent to which the two systems have failed one another.

### Creating incentives

Why is the performance of American high school students so weak? It is weak because adequate economic incentives to study harder and more effectively are lacking. ". . . Students who choose to go directly to work rather than to pursue post-secondary education find that their immediate earnings prospects are unrelated to their school performance, and, hence, see little reason to study."<sup>32</sup> This is the Commission's central argument in affirming the relation between education at the secondary level and the labor market, and is the rationale for its urging greater business involvement in the educational process.

John Bishop, author of an important monograph on this question, writes that "the lack of true engagement in learning and the apathy of local political systems regarding the quality of local schools is to an important degree a consequence of the failures of employers to reward students for real

learning achievements.<sup>33</sup> Subscribing to this view, the Commission reiterates its call that “. . . business must play a significant role in creating incentives for (academic) achievement.”<sup>34</sup> Being reflected by transcripts and test scores, such achievement should be made a selection criterion when hiring recent high school graduates.

The Commission wants business to aid in the development of classroom instruction, and it is of particular interest to note the emphasis on the nature of the aid which the Commission expects of business. In defining emerging workplace needs, the Commission stresses less personal competition, and more cooperative effort, together with greater problem-solving abilities.<sup>35</sup> The recommendation draws upon a thoughtful monograph by two researchers.<sup>36</sup> The schools, they write, emphasize individual learning and abstract knowledge. Yet, more and more the workplace requires shared knowledge, generated by teams of workers rather than individuals. Learning there comes from personal application to the tasks and the problems at hand—it is concrete. Moreover, students do not possess the “technological literacy” to understand the world around them, and readily to adapt to the workplace.<sup>37</sup> The Commission accordingly recommends that course work be combined with applied training “that gives meaning to . . . studies.”<sup>38</sup> It also supports pending proposals to make use of broadened vocational technical education as a vehicle for basic skills instruction—implicitly recognizing here that a work-oriented environment lends meaning to the acquisition and *retention* of basic skills.

### Workplace-family balance

On the more effective uses of the quality of the existing work force, the Commission discusses three somewhat disparate themes—the “balance” between workplace and family; the role of the Employment Service in matching jobseekers and jobs; and employee involvement in workplace decisions as a means to improve productivity.

The Commission argues that one of the ways to promote labor market efficiency is to create “supportive work

environments that ease the tension between work and family responsibilities.”<sup>39</sup> It holds that conflicts between the two sets of responsibilities may arise from the lack (or inadequacy) of child care facilities, resulting in excessive absences, tardiness, lower productivity, and misuse of worktime. The problem is of course intensified by the rising proportion of women in the labor force who have children age 14 or younger. Such women account for roughly one-half of the total female labor force. Yet, less than 10 percent of all large employers, and less than 1 percent of *all* employers provide any kind of child support.<sup>40</sup> Two reasons are given for this—one, the absence of a coherent “infrastructure” of child care, which employers might support; the other, the absence of firm evidence regarding the cost effects of child care support on earnings.<sup>41</sup> In other words, for any one employer, the favorable effects of attractive recruitment, low turnover, low absenteeism, and high morale from providing such support may not offset the higher costs.

The Commission recommends such measures as grants to States to spur community-based child care efforts; a refundable child care tax credit to poor parents; and others. Also, it advocates flexible work schedules and other kinds of scheduling arrangements to better meet parents’ child care needs. It is important to recall the context in which the Commission addresses this particular theme. The link between greater labor market efficiency and evolving demographics—and not least perhaps the pressure of advocacy groups—compel business to become increasingly involved with child care support questions.

### Employee involvement

The Commission deals relatively briefly with worker participation, innovative compensation schemes, and their relation to productivity. Participation, the Commission states, typically lowers turnover, and hence encourages more employer investment in training. Participation may therefore be “an essential component in creating a more productive, high-wage economy.”<sup>42</sup> The diffusion of worker participation

at workplace decisions has been impeded, said the Commission, by lack of information concerning the kinds of programs that work in various workplace environments. There is a role for the Department of Labor to gather such information, and make the results of “best practice” programs broadly available.

While firmer evidence than currently available is needed to judge the effectiveness of employee involvement in raising productivity, some of the monographs underlying this part of the Commission’s report muster a substantial body of experience with this type of organizational innovation. The breadth of business interest was indicated by a New York Stock Exchange survey in 1982, which found that 44 percent of the respondents reported some degree of quality circle activity (a form of employee involvement); a similarly high level of job design or redesign effort; and significant proportions of job enlargement. A 1985 survey of large firms corroborated the earlier findings.<sup>43</sup> The authors of one of the monographs write: “There is a growing consensus among scholars and practitioners that as an advanced industrial society, the United States must achieve and sustain a comparative advantage by developing and fully utilizing its technological and human resources. This, in turn, requires changes in industrial relations and human resource practices to achieve and sustain a highly skilled, motivated, and committed work force; flexibility in the organization of work and the deployment of human resources; and a high level of employee participation and labor-management cooperation.”<sup>44</sup>

Yet, employee participation in and of itself has few significant effects upon plant productivity. It needs to be combined with work design and new technology; experience demonstrates that only such a combination raises productivity on a sustained basis. That, it is argued, is “the central lesson that is emerging from the debate over Japanese management practices . . . it is no single technique or practice that produces significant and sustained differences in outcomes but rather the totality of the approach to integrating technology and human resources with

the long term strategies and values of the firm that appears to be important."<sup>45</sup>

The fourth and last part of the report calls for a much expanded data collection and diffusion effort by the Bureau of Labor Statistics, and a significant increase in the requisite funding. The Commission is particularly critical of the sharp budgetary cuts the Bureau of Labor Statistics experienced in the early 1980's, which led to the elimination of 19 data collection programs in 1982 alone, and made new initiatives and improvements in methods much more difficult.

The Commission also complains of "The dearth of reliable information on many important questions," which "impeded our deliberations," and which it traces mostly to "low levels of government funding for human resource research," stating that since 1975, inflation-adjusted funding levels for such research and evaluation have receded by 52 percent in the Department of Labor, and by 63 percent in the Department of Education.<sup>46</sup>

The Commission wants human resource programs sponsored by governments to be much more closely scrutinized for their effectiveness, so that what works and what does not work will be known. Also, the Commission recommends that emerging labor market trends, among them in particular the growing proportion of minorities men earning low wages, be intensively researched. More generally, research should be reviewed "as a major component of the missions of both the Departments of Labor and Education," and be funded accordingly.

The Department of Labor, through such agencies as the Employment and Training Administration, has conducted a large volume of human resource research since the early 1960's; such research has also been a key function of the National Commission for Employment Policy, of which the Secretary of Labor, among other Cabinet officials, is an *ex officio* member. A history and evaluation of this research in one of the background papers appended to the report would have been

helpful. The Department addressed problems in many ways similar to those with which the report deals, and the question naturally arises why the predicaments of human resource policy which the earlier research confronted have persisted and perhaps intensified. □

### Footnotes

<sup>1</sup> The full report is available for \$3.75 from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9328.

<sup>2</sup> The monographs are reproduced in *Investing in People, Background Papers*, Vol. I (pp. 1-1204), and Vol. II (pp. 1207-2403), and are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

<sup>3</sup> William B. Johnston and Arnold E. Packer, *Workforce 2000: Work and Workers for the Twenty-First Century* (Indianapolis, IN, Hudson Institute, June 1987). *Workforce 2000* was written at the initiative of the U.S. Department of Labor. The Commission states that its report "responds to the challenge posed by *Workforce 2000*."

<sup>4</sup> For a listing and review of 11 national studies on education, many with reference to education's relation to jobs, see Gwen C. Cooke, *Toward Excellence in Vocational Education: Improving Teaching* (Columbus, OH, The Ohio State University, The National Center for Research in Vocational Education, 1985), pp. 3-8. See also Appendix D, "Selected Bibliography," in *Building a Quality Workforce* (Washington, National Alliance of Business).

<sup>5</sup> It should be noted that the Commission's concerns have been shared throughout the 1980's by a number of public and private bodies. Perhaps most closely linked to the Commission's work is *Building a Quality Workforce*, representing a joint endeavor of analysis and inquiry by the Departments of Labor, Education, and Commerce (1988). It was meant to be "the beginning of an effort to identify . . . the needs of the business community for work preparation, and to foster better understanding . . . about the deficiencies in our entry workers. . . ."

<sup>6</sup> *Investing in People*, p. 2.

<sup>7</sup> "Employers' retraining costs are much larger for employees with limited reading and computation abilities. *Ibid.*, p. 3.

<sup>8</sup> Russell W. Rumberger and Henry M. Levin, *Schooling for the Modern Workplace*, Background Paper 2, p. 107 and table 5. See also "Outlook 2000: Projections of U.S. Economy," *Monthly Labor Review*, November 1989.

<sup>9</sup> Rumberger and Levin, *Schooling for the Modern Workplace*, p. 108.

<sup>10</sup> *Ibid.*, p. 22

<sup>11</sup> *Ibid.*

<sup>12</sup> *Ibid.*, p. 113.

<sup>13</sup> Larry Mikulecki, *Second Chance Basic Skills Education*, Background Paper 5, p. 236.

<sup>14</sup> *Ibid.*, p. 237.

<sup>15</sup> *Investing in People*, p. 16.

<sup>16</sup> Stephen L. Mangum, *Evidence on Private Sector Training*, Background Paper 7b, presents a range of estimates, p. 342 ff.

<sup>17</sup> *Ibid.*, p. 346.

<sup>18</sup> *Ibid.*, p. 347.

<sup>19</sup> *Ibid.*, p. 351.

<sup>20</sup> *Ibid.*, p. 353.

<sup>21</sup> *Investing in People*, p. 16.

<sup>22</sup> Burt S. Barnow and Laudan Y. Aron, *Survey of Government-Provided Training Programs*. Background Paper 9, p. 495 ff; p. 558.

<sup>23</sup> *Investing in People*, p. 22.

<sup>24</sup> Margaret C. Simms, *The Effectiveness of Government Training Programs*, Background Paper 10, p. 583.

<sup>25</sup> *Investing in People*, p. 21.

<sup>26</sup> Mikulecki, *Second Chance Basic Skills Education*, p. 226-27.

<sup>27</sup> *Ibid.*, p. 237-38.

<sup>28</sup> *Ibid.*, p. 240.

<sup>29</sup> *Investing in People*, p. 23.

<sup>30</sup> *Ibid.*, p. 8.

<sup>31</sup> *Ibid.*, p. 8.

<sup>32</sup> *Ibid.*, p. 8.

<sup>33</sup> John Bishop, *Incentives for Learning: Why American High School Students Compare so Poorly to Their Counterparts Overseas*, Background Paper 1, p. 24. Also, James E. Rosenbaum, *Empowering Schools and Teachers: A New Link to Jobs for The Non-College Bound*, Background Paper 4, p. 202.

<sup>34</sup> *Investing in People*, p. 9.

<sup>35</sup> *Ibid.*, p. 10.

<sup>36</sup> Rumberger and Levin, *Schooling for The Modern Workplace*.

<sup>37</sup> *Ibid.*, p. 123.

<sup>38</sup> *Investing in People*, p. 10.

<sup>39</sup> *Ibid.*, p. 25.

<sup>40</sup> Dana E. Friedman, *Impact of Child Care on the Bottom-Line*, Background Paper 27, p. 1429.

<sup>41</sup> See Executive Summary of Background Paper 27.

<sup>42</sup> *Investing in People*, p. 33.

<sup>43</sup> Thomas Kochan, Joel Cutcher-Gershenfeld, and John Paul MacDuffie, *Employee Participation, Work Redesign and New Technology: Implications for Public Policy in the 1990s*, Background Paper 35a, p. 1834.

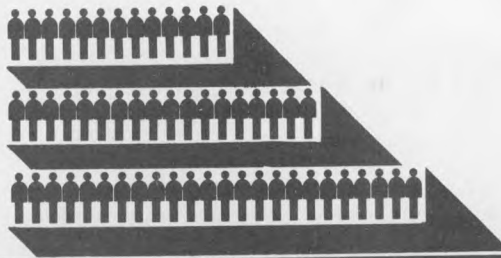
<sup>44</sup> *Ibid.*, p. 1835.

<sup>45</sup> *Ibid.*, p. 1844.

<sup>46</sup> *Investing in People*, p. 36.



# Current labor statistics



## Notes on Current Labor Statistics ..... 88

### Comparative indicators

1. Labor market indicators ..... 98
2. Annual and quarterly percent changes in compensation, prices, and productivity ..... 99
3. Alternative measures of wage and compensation changes ..... 99

### Labor force data

4. Employment status of the total population, data seasonally adjusted ..... 100
5. Employment status of the civilian population, data seasonally adjusted ..... 101
6. Selected employment indicators, data seasonally adjusted ..... 102
7. Selected unemployment indicators, data seasonally adjusted ..... 103
8. Unemployment rates by sex and age, data seasonally adjusted ..... 104
9. Unemployed persons by reason for unemployment, data seasonally adjusted ..... 104
10. Duration of unemployment, data seasonally adjusted ..... 104
11. Unemployment rates of civilian workers, by State ..... 105
12. Employment of workers, by State ..... 105
13. Employment of workers, by industry, data seasonally adjusted ..... 106
14. Average weekly hours, by industry, data seasonally adjusted ..... 107
15. Average hourly earnings, by industry, data seasonally adjusted ..... 108
16. Average hourly earnings, by industry ..... 108
17. Average weekly earnings, by industry ..... 109
18. Diffusion indexes of employment change, data seasonally adjusted ..... 110
19. Annual data: Employment status of the noninstitutional population ..... 111
20. Annual data: Employment levels, by industry ..... 111
21. Annual data: Average hours and earnings levels, by industry ..... 112

### Labor compensation and collective bargaining data

22. Employment Cost Index, compensation, by occupation and industry group ..... 113
23. Employment Cost Index, wages and salaries, by occupation and industry group ..... 114
24. Employment Cost Index, benefits, private industry workers, by occupation and industry group ..... 115
25. Employment Cost Index, private nonfarm workers, by bargaining status, region, and area size ..... 116
26. Specified compensation and wage adjustments from contract settlements, and effective wage adjustments, situations covering 1,000 workers or more ..... 117

### Labor compensation and collective bargaining data—Continued

27. Average specified compensation and wage adjustments, bargaining situations covering 1,000 workers or more .... 117
28. Average effective wage adjustments, bargaining situations covering 1,000 workers or more ..... 118
29. Specified compensation and wage adjustments, State and local government bargaining situations covering 1,000 workers or more ..... 118
30. Work stoppages involving 1,000 workers or more ..... 118

### Price data

31. Consumer Price Index: U.S. city average, by expenditure category and commodity and service groups ..... 119
32. Consumer Price Index: U.S. city average and local data, all items ..... 122
33. Annual data: Consumer Price Index, all items and major groups ..... 123
34. Producer Price Indexes, by stage of processing ..... 124
35. Producer Price Indexes, by durability of product ..... 124
36. Producer Price Indexes for the net output of major industry groups ..... 125
37. Annual data: Producer Price Indexes, by stage of processing ..... 125
38. U.S. export price indexes, by Standard International Trade Classification ..... 126
39. U.S. import price indexes, by Standard International Trade Classification ..... 127
40. U.S. export price indexes by end-use category ..... 128
41. U.S. import price indexes by end-use category ..... 128
42. U.S. export price indexes, by Standard Industrial Classification ..... 129
43. U.S. import price indexes, by Standard Industrial Classification ..... 129

### Productivity data

44. Indexes of productivity, hourly compensation, and unit costs, data seasonally adjusted ..... 130
45. Annual indexes of multifactor productivity ..... 131
46. Annual indexes of productivity, hourly compensation, unit costs, and prices ..... 132
47. Annual productivity indexes for selected industries ..... 133

### International comparisons data

48. Unemployment rates in nine countries, data seasonally adjusted ..... 135
49. Annual data: Employment status of civilian working-age population, 10 countries ..... 136
50. Annual indexes of productivity and related measures, 12 countries ..... 137

### Injury and illness data

51. Annual data: Occupational injury and illness incidence rates ..... 138

# Notes on Current Labor Statistics

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

## General notes

The following notes apply to several tables in this section:

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

Seasonally adjusted data appear in tables 1-3, 4-10, 13-15, 17-18, 44, and 48.) Seasonally adjusted labor force data in tables 12 and 4-10 were revised in the February 1989 issue of the *Review* and reflect the experience through 1988. Seasonally adjusted establishment survey data shown in tables 13-15 and 17-18 were revised in the July 1989 *Review* and reflect the experience through March 1989. A brief explanation of the seasonal adjustment methodology appears in "Notes on the data."

Revisions in the productivity data in table 44 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month-to-month and quarter-to-quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All Items CPI. Only seasonally adjusted percent changes are available for this series.

**Adjustments for price changes.** Some data—such as the "real" earnings shown in table 15—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 1977 = 100, the hourly rate expressed in 1977 dollars is \$2 ( $\$3/150 \times 100 = \$2$ ). The \$2 (or any other resulting values) are described as "real," "constant," or "1977" dollars.

## Additional information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule preceding these general notes. More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in *Employment and Earnings*, a monthly publication of the Bureau. More data from the household survey are published in the data books—*Revised Seasonally Adjusted Labor Force Statistics*, Bulletin 2306, and *Labor Force Statistics Derived From the Current Population Survey*, Bulletin 2307. More data from the establishment survey appear in two data books—*Employment, Hours, and Earnings, United States*, and *Employment, Hours, and Earnings, States and Areas*, and the supplements to these data books. More detailed information on employee compensation and collective bargaining settlements is published in the monthly periodical, *Current Wage Developments*. More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report*, and *Producer Price Indexes*. Detailed data on all of the series in this section are provided in the *Handbook of Labor Statistics*, which is published biennially by the Bureau. BLS bulletins are issued covering productivity, injury and illness, and other data in this section. Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

## Symbols

n.e.c. = not elsewhere classified.

n.e.s. = not elsewhere specified.

p = preliminary. To increase the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.

r = revised. Generally, this revision reflects the availability of later data but may also reflect other adjustments.

## Comparative Indicators

(Tables 1-3)

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

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

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

**Alternative measures of wage and compensation rates of change**, which

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

### Notes on the data

Definitions of each series and notes on the data are contained in later sections of these notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), as well as the additional bulletins, articles, and other publications noted in the separate sections of the *Review's* "Current Labor Statistics Notes." Users may also wish to consult *Major Programs, Bureau of Labor Statistics*, Report 718 (Bureau of Labor Statistics, 1985).

## Employment and Unemployment Data

(Tables 1; 4-21)

### Household survey data

#### Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 55,800 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 **civilian unemployment rate** 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 household, 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 intercensal years. These adjustments affect the comparability of historical data. A description of these adjustments and their effect on the various data series appear in the Explanatory Notes of *Employment and Earnings*.

Labor force data in tables 1 and 4-10 are seasonally adjusted based on the experience through December 1988. Since January 1980, national labor force data have been seasonally adjusted with a procedure called X-11 ARIMA which was developed at Statistics Canada as an extension of the standard X-11 method previously used by BLS. 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).

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

### Additional sources of information

For detailed explanations of the data, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). Historical unadjusted data from 1948 to 1987 are available in *Labor Force Statistics Derived from the Current Population Survey*, Bulletin 2307 (Bureau of Labor Statistics, 1988). Historical seasonally adjusted data appear in *Labor Force Statistics Derived from the Current Population Survey: A Databook*, Vol. II, Bulletin 2096 (Bureau of Labor Statistics, 1982), and *Revised Seasonally Adjusted Labor Force Statistics, 1978-87*, Bulletin 2306 (Bureau of Labor Statistics, 1988).

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.

### Establishment survey data

#### Description of the series

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by more than 300,000 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

An **establishment** is an economic unit which produces goods or services (such as a factory or store) at a single location and is

engaged in one type of economic activity.

**Employed persons** are all persons who received pay (including holiday and sick pay) for any part of the payroll period including the 12th 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 working supervisors and nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12-17 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in the following industries: transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. 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).

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

**The Diffusion Index** represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. Data are centered within the span. The March 1989 *Review* introduced an expanded index on private nonagricultural employment based on 349 industries, and a new manufacturing index based on 141 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

### Notes on the data

Establishment survey data are annually adjusted to comprehensive counts of employ-

ment (called "benchmarks"). The latest adjustment, which incorporated March 1988 benchmarks, was made with the release of May 1989 data, published in the July 1989 issue of the *Review*. Coincident with the benchmark adjustments, seasonally adjusted data were revised to reflect the experience through March 1989. Unadjusted data have been revised back to April 1987; seasonally adjusted data back to January 1984. These revisions were published in the *Supplement to Employment and Earnings* (Bureau of Labor Statistics, 1989). Unadjusted data from April 1988 forward and seasonally adjusted data from January 1985 forward are subject to revision in future benchmarks.

The BLS also uses the X-11 ARIMA methodology to seasonally adjust establishment survey data. Beginning in June 1989, projected seasonal adjustment factors are calculated only for the first 6 months after benchmarking, rather than for 12 months (April-March) as was previously done. A second set of projected factors, which incorporate the experience through October, will be produced for the subsequent period and introduced with the publication of data for October. The change makes the procedure used for the establishment survey data more parallel to that used in adjusting the household survey data. Revisions of historical data will continue to be made once a year coincident with the benchmark revisions.

In the establishment survey, estimates for the 2 most recent months are based on incomplete returns and are published as preliminary in the tables (13 to 18 in the *Review*). When all returns have been received, the estimates are revised and published as "final" (prior to any benchmark revisions) in the third month of their appearance. Thus, December data are published as preliminary in January and February and as final in March. For the same reasons, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Thus, fourth-quarter data are published as preliminary in January and February and final in March.

### Additional sources of information

Detailed national data from the establishment survey are published monthly in the BLS periodical, *Employment and Earnings*. Earlier comparable unadjusted and seasonally adjusted data are published in *Employment, Hours, and Earnings, United States, 1909-84*, Bulletin 1312-12 (Bureau of Labor Statistics, 1985) and its annual supplement. For a detailed discussion of the methodology of the survey, see *BLS Hand-*

*book of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988).

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.

## Unemployment data by State

### Description of the series

Data presented in this section are obtained from two major sources—the Current Population Survey (CPS) and the Local Area Unemployment Statistics (LAUS) program, which is conducted in cooperation with State employment security agencies.

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

### Notes on the data

Data refer to State of residence. Monthly data for 11 States—California, Florida, Illinois, Massachusetts, Michigan, New York, New Jersey, North Carolina, Ohio, Pennsylvania, and Texas—are obtained directly from the CPS, because the size of the sample is large enough to meet BLS standards of reliability. Data for the remaining 39 States and the District of Columbia are derived using standardized procedures established by BLS. Once a year, estimates for the 11 States are revised to new population controls. For the remaining States and the District of Columbia, data are benchmarked to annual average CPS levels.

### Additional sources of information

Information on the concepts, definitions, and technical procedures used to develop labor force data for States and sub-State areas as well as additional data on sub-States are provided in the monthly Bureau of Labor Statistics periodical, *Employment and Earnings*, and the annual report, *Geographic Profile of Employment and Unemployment* (Bureau of Labor Statistics). See also *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988).

## Compensation and Wage Data

(Tables 1-3; 22-30)

COMPENSATION AND WAGE DATA are gathered by the Bureau from business establishments, State and local governments, labor unions, collective bargaining agreements on file with the Bureau, and secondary sources.

### Employment Cost Index

#### Description of the series

The **Employment Cost Index (ECI)** is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor. The index is not seasonally adjusted.

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

The Employment Cost Index probability sample consists of about 4,200 private nonfarm establishments providing about 22,000 occupational observations and 800 State and local government establishments providing 4,200 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

Beginning with June 1986 data, fixed employment weights from the 1980 Census of Population are used each quarter to calculate the civilian and private indexes and the index for State and local governments. (Prior to June 1986, the employment weights are from the 1970 Census of Population.) These fixed weights, also used to derive all of the industry and occupation series indexes, ensure that changes in these indexes reflect only changes in compensation, not employment shifts among industries or occupations with different levels of wages and compensation. For the bargain-

ing status, region, and metropolitan/non-metropolitan area series, however, employment data by industry and occupation are not available from the census. Instead, the 1980 employment weights are reallocated within these series each quarter based on the current sample. Therefore, these indexes are not strictly comparable to those for the aggregate, industry, and occupation series.

#### Definitions

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

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

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

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

#### Notes on the data

The Employment Cost Index for changes in wages and salaries in the private nonfarm economy was published beginning in 1975. Changes in total compensation cost—wages and salaries and benefits combined—were published beginning in 1980. The series of changes in wages and salaries and for total compensation in the State and local government sector and in the civilian nonfarm economy (excluding Federal employees) were published beginning in 1981. Historical indexes (June 1981=100) of the quarterly rates of change are presented in the March issue of the BLS periodical, *Current Wage Developments*.

#### Additional sources of information

For a more detailed discussion of the Employment Cost Index, see the *Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), *Employment Cost Indexes and Levels, 1975-88*, Bulletin 2319 (Bureau of Labor Statistics, 1988), and the following *Monthly Labor Review* articles: "Estimation procedures for the Employment Cost Index," May 1982; and "Introducing new weights for the Employment Cost Index," June 1985.

Data on the ECI are also available in BLS quarterly press releases issued in the month

following the reference months of March, June, September, and December; and from the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

### Collective bargaining settlements

#### Description of the series

**Collective bargaining settlements** data provide statistical measures of negotiated adjustments (increases, decreases, and freezes) in compensation (wage and benefit costs) and wages alone, quarterly for private industry and semiannually for State and local government. Compensation measures cover all collective bargaining situations involving 5,000 workers or more and wage measures cover all situations involving 1,000 workers or more. These data, covering private nonagricultural industries and State and local governments, are calculated using information obtained from bargaining agreements on file with the Bureau, parties to the agreements, and secondary sources, such as newspaper accounts. The data are not seasonally adjusted.

Settlement data are measured in terms of future specified adjustments: those that will occur within 12 months of the contract effective date—first-year—and all adjustments that will occur over the life of the contract expressed as an average annual rate. Adjustments are worker weighted. Both first-year and over-the-life measures exclude wage changes that may occur under cost-of-living clauses that are triggered by future movements in the Consumer Price Index.

**Effective wage adjustments** measure all adjustments occurring in the reference period, regardless of the settlement date. Included are changes from settlements reached during the period, changes deferred from contracts negotiated in earlier periods, and changes under cost-of-living adjustment clauses. Each wage change is worker weighted. The changes are prorated over all workers under agreements during the reference period yielding the average adjustment.

#### Definitions

**Wage rate changes** are calculated by dividing newly negotiated wages by the average straight-time hourly wage rate plus shift premium at the time the agreement is reached. Compensation changes are calculated by dividing the change in the value of the newly negotiated wage and benefit package by existing average hourly compensation, which includes the cost of previously negotiated benefits, legally required

social insurance programs, and average hourly earnings.

**Compensation changes** are calculated by placing a value on the benefit portion of the settlements at the time they are reached. The cost estimates are based on the assumption that conditions existing at the time of settlement (for example, methods of financing pensions or composition of labor force) will remain constant. The data, therefore, are measures of negotiated changes and not of total changes of employer cost.

**Contract duration** runs from the effective date of the agreement to the expiration date or first wage reopening date, if applicable. Average annual percent changes over the contract term take account of the compounding of successive changes.

### Notes on the data

Comparisons of major collective bargaining settlements for State and local government with those for private industry should note differences in occupational mix, bargaining practices, and settlement characteristics. Professional and white-collar employees, for example, make up a much larger proportion of the workers covered by government than by private industry settlements. Lump-sum payments and cost-of-living adjustments (COLA) clauses, on the other hand, are rare in government but common in private industry settlements. Also, State and local government bargaining frequently excludes items such as pension benefits and holidays, that are prescribed by law, while these items are typical bargaining issues in private industry.

### Additional sources of information

For a more detailed discussion on the series, see the *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). Comprehensive data are published in press releases issued quarterly (in January, April, July, and October) for private industry, and semiannually (in February and August) for State and local government. Historical data and additional detailed tabulations for the prior calendar year appear in the April issue of the BLS periodical, *Current Wage Developments*.

### Work stoppages

#### Description of the series

Data on **work stoppages** measure the number and duration of major strikes or lockouts (involving 1,000 workers or more) occurring during the month (or year), the number of workers involved, and the

amount of time lost because of stoppage.

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

### Definitions

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

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

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

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

### Notes on the data

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

### Additional sources of information

Data for each calendar year are reported in a BLS press release issued in the first quarter of the following year. Monthly and historical data appear in the BLS periodical, *Current Wage Developments*. Historical data appear in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

### Other compensation data

Other BLS data on pay and benefits, not included in the Current Labor Statistics section of the *Monthly Labor Review*, appear in and consist of the following:

*Industry Wage Surveys* provide data for specific occupations selected to represent an industry's wage structure and the types of activities performed by its workers. The Bureau collects information on weekly work schedules, shift operations and pay differentials, paid holiday and vacation practices, and information on incidence of health, insurance, and retirement plans. Reports are issued throughout the year as the surveys are completed. Summaries of the data and special analyses also appear in the *Monthly Labor Review*.

*Area Wage Surveys* annually provide data for selected office, clerical, profes-

sional, technical, maintenance, toolroom, powerplant, material movement, and custodial occupations common to a wide variety of industries in the areas (labor markets) surveyed. Reports are issued throughout the year as the surveys are completed. Summaries of the data and special analyses also appear in the *Review*.

*The National Survey of Professional, Administrative, Technical, and Clerical Pay* provides detailed information annually on salary levels and distributions for the types of jobs mentioned in the survey's title in private employment. Although the definitions of the jobs surveyed reflect the duties and responsibilities in private industry, they are designed to match specific pay grades of Federal white-collar employees under the General Schedule pay system. Accordingly, this survey provides the legally required information for comparing the pay of salaried employees in the Federal civil service with pay in private industry. (See Federal Pay Comparability Act of 1970, 5 U.S.C. 5305.) Data are published in a BLS news release issued in the summer and in a bulletin each fall; summaries and analytical articles also appear in the *Review*.

*Employee Benefits Survey* provides nationwide information on the incidence and characteristics of employee benefit plans in medium and large establishments in the United States, excluding Alaska and Hawaii. Data are published in an annual BLS news release and bulletin, as well as in special articles appearing in the *Review*.

### Price Data

(Tables 2; 31-43)

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 (1982 = 100 for many Producer Price Indexes or 1982-84 = 100 for many Consumer Price Indexes, unless otherwise noted).

### Consumer Price Indexes

#### Description of the series

The **Consumer Price Index** (CPI) is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of

wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI-W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all urban consumer index (CPI-U), introduced in 1978, is representative of the 1982-84 buying habits of about 80 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI-W. In addition to wage earners and clerical workers, the CPI-U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

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

Data collected from more than 21,000 retail establishments and 60,000 housing units in 91 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 27 major urban centers are presented in table 31. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

### Notes on the data

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

### Additional sources of information

For a discussion of the general method for computing the CPI, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988). The recent change in the measurement of homeownership costs is

discussed in Robert Gillingham and Walter Lane, "Changing the treatment of shelter costs for homeowners in the CPI," *Monthly Labor Review*, July 1982, pp. 9-14. An overview of the recently introduced revised CPI, reflecting 1982-84 expenditure patterns, is contained in *The Consumer Price Index: 1987 Revision*, Report 736 (Bureau of Labor Statistics, 1987).

Additional detailed CPI data and regular analyses of consumer price changes are provided in the *CPI Detailed Report*, a monthly publication of the Bureau. Historical data for the overall CPI and for selected groupings may be found in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

## Producer Price Indexes

### Description of the series

**Producer Price Indexes (PPI)** measure average changes in prices received by domestic producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,100 commodities and about 75,000 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 stage of processing structure of Producer Price Indexes organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition. The industry and product structure of PPI organizes data in accordance with the Standard Industrial Classification (SIC) and the product code extension of the SIC developed by the U.S. Bureau of the Census.

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

Since January 1987, price changes for the various commodities have been averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1982. The detailed data are aggregated to obtain indexes for stage-of-processing groupings, commodity groupings, durability-of-product groupings, and

a number of special composite groups. All Producer Price Index data are subject to revision 4 months after original publication.

### Notes on the data

Beginning with the January 1986 issue, the *Review* is no longer presenting tables of Producer Price Indexes for commodity groupings or special composite groups. However, these data will continue to be presented in the Bureau's monthly publication *Producer Price Indexes*.

The Bureau has completed the first major stage of its comprehensive overhaul of the theory, methods, and procedures used to construct the Producer Price Indexes. Changes include the replacement of judgment sampling with probability sampling techniques; expansion to systematic coverage of the net output of virtually all industries in the mining and manufacturing sectors; a shift from a commodity to an industry orientation; the exclusion of imports from, and the inclusion of exports in, the survey universe; and the respecification of commodities priced to conform to Bureau of the Census definitions. These and other changes have been phased in gradually since 1978. The result is a system of indexes that is easier to use in conjunction with data on wages, productivity, and employment and other series that are organized in terms of the Standard Industrial Classification and the Census product class designations.

### Additional sources of information

For a discussion of the methodology for computing Producer Price Indexes, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988).

Additional detailed data and analyses of price changes are provided monthly in *Producer Price Indexes*. Selected historical data may be found in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

## International Price Indexes

### Description of the series

The BLS **International Price Program** produces quarterly export and import price indexes for nonmilitary goods traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national

income accounts: it includes corporations, businesses, and individuals but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents. With publication of an all-import index in February 1983 and an all-export index in February 1984, all U.S. merchandise imports and exports now are represented in these indexes. The reference period for the indexes is 1985 = 100, unless otherwise indicated.

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

To the extent possible, the data gathered refer to prices at the U.S. border for exports and at either the foreign border or the U.S. border for imports. For nearly all products, the prices refer to transactions completed during the first 2 weeks of the third month of each calendar quarter—March, June, September, and December. Survey respondents are asked to indicate all discounts, allowances, and rebates applicable to the reported prices, so that the price used in the calculation of the indexes is the actual price for which the product was bought or sold.

In addition to general indexes of prices for U.S. exports and imports, indexes are also published for detailed product categories of exports and imports. These categories are defined by the 4- and 5-digit level of detail of the Standard Industrial Trade Classification System (SITC). The calculation of indexes by SITC category facilitates the comparison of U.S. price trends and sector production with similar data for other countries. Detailed indexes are also computed and published on a Standard Industrial Classification (SIC-based) basis, as well as by end-use class.

### Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. Price relatives are assigned equal importance within each weight category and are then aggregated to the SITC level. The values assigned to each weight category are based on trade value figures compiled by the Bureau of the Census. The trade weights currently used to compute both indexes relate to 1985.

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

For the export price indexes, the preferred pricing basis is f.a.s. (free alongside ship) U.S. port of exportation. When firms report export prices f.o.b. (free on board), production point information is collected which enables the Bureau to calculate a shipment cost to the port of exportation. An attempt is made to collect two prices for imports. The first is the import price f.o.b. at the foreign port of exportation, which is consistent with the basis for valuation of imports in the national accounts. The second is the import price c.i.f. (cost, insurance, and freight) at the U.S. port of importation, which also includes the other costs associated with bringing the product to the U.S. border. It does not, however, include duty charges. For a given product, only one price basis series is used in the construction of an index.

Beginning in 1988, the Bureau has also been publishing a series of indexes which represent the price of U.S. exports and imports in foreign currency terms.

### Additional sources of information

For a discussion of the general method of computing International Price Indexes, see *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988).

Additional detailed data and analyses of international price developments are presented in the Bureau's quarterly publication *U.S. Import and Export Price Indexes* and in occasional *Monthly Labor Review* articles prepared by BLS analysts. Selected historical data may be found in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). For further information on the foreign currency indexes, see "BLS publishes average exchange rate and foreign currency price indexes,"

*Monthly Labor Review*, December 1987, pp. 47-49.

## Productivity Data

(Tables 2; 44-47)

### Business sector and major sectors

#### Description of the series

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

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

#### Definitions

**Output per hour of all persons** (labor productivity) is the value of goods and services in constant prices produced per hour of labor input. **Output per unit of capital services** (capital productivity) is the value of goods and services in constant dollars produced per unit of capital services input.

**Multifactor productivity** is the ratio of output per unit of labor and capital inputs combined. Changes in this measure reflect changes in a number of factors which affect the production process such as changes in technology, shifts in the composition of the labor force, changes in capacity utilization, research and development, skill and efforts of the work force, management, and so forth. Changes in the output per hour measures reflect the impact of these factors as well as the substitution of capital for labor.

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

**Unit labor costs** are the labor compensation costs expended in the production of a unit of output and are derived by dividing compensation by output. **Unit nonlabor**



**payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from current dollar value of output and dividing by output. **Unit nonlabor costs** contain all the components of unit nonlabor payments *except* unit profits.

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

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

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

**Labor and capital inputs** combined are derived by combining changes in labor and capital inputs with weights which represent each component's share of total output. The indexes for capital services and combined units of labor and capital are based on changing weights which are averages of the shares in the current and preceding year (the Tornquist index-number formula).

## Notes on the data

Output measures for the **business sector** is equal to constant-dollar gross national product but excludes the rental value of owner-occupied dwellings, the rest-of-world sector, the output of nonprofit institutions, the output of paid employees of private households, general government, and the statistical discrepancy. Output of the **nonfarm business sector** is equal to business sector output less farming. The measures are derived from data 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 manufacturing output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are developed from data of the Bureau of Labor Statistics and the Bureau of Economic Analysis.

The productivity and associated cost measures in tables 44–47 describe the relationship between output in real terms and the labor time and capital services involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input. Although these measures relate output to hours and capital services, they do not measure the contributions of labor, cap-

ital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; capital investment; level of output; utilization of capacity, energy, and materials; the organization of production; managerial skill; and the characteristics and efforts of the work force.

## Additional sources of information

Descriptions of methodology underlying the measurement of output per hour and multifactor productivity are found in the *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), chapter 11. Historical data are provided in *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985).

## Industry productivity measures

### Description of the series

The BLS industry productivity data supplement the measures for the business economy and major sectors with annual measures of labor productivity for selected industries at the 3- and 4-digit levels of the Standard Industrial Classification system. The industry measures differ in methodology and data sources from the productivity measures for the major sectors because the industry measures are developed independently of the National Income and Product Accounts framework used for the major sector measures.

### Definitions

Output per employee hour is derived by dividing an index of industry output by an index of aggregate hours of all employees. Output indexes are based on quantifiable units of products or services, or both, combined with fixed-period weights. Whenever possible, physical quantities are used as the unit of measurement for output. If quantity data are not available for a given industry, data on the constant-dollar value of production are used.

The labor input series consist of the hours of all employees (production and nonproduction workers), the hours of all persons (paid employees, partners, proprietors, and unpaid family workers), or the number of employees, depending upon the industry.

### Notes on the data

The industry measures are compiled from data produced by the Bureau of Labor Statistics, the Departments of Commerce, Interior, and Agriculture, the Federal Re-

serve Board, regulatory agencies, trade associations, and other sources.

For most industries, the productivity indexes refer to the output per hour of all employees. For some transportation industries, only indexes of output per employee are prepared. For some trade and service industries, indexes of output per hour of all persons (including the self-employed) are constructed.

## Additional sources of information

For a complete listing of available industry productivity indexes and their components, see *Productivity Measures for Selected Industries and Government Services (1985)*, Bulletin 2322 (Bureau of Labor Statistics, 1989). For additional information about the methodology for computing the industry productivity measures see *Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), chapter 11.

There are breaks in the data series for Germany (1983), Italy (1986), the Netherlands (1983), and Sweden (1987). For both Germany and the Netherlands, the breaks reflect the replacement of labor force survey results tabulated by the national statistical offices with those tabulated by the European Community Statistical Office (EUROSTAT)—the Dutch figures for 1983 onward also reflect the replacement of man-year employment data with data from the Dutch Survey of Employed Persons. The impact of the changes was to lower the adjusted unemployment rate by 0.3 percentage point for Germany and by about 2 percentage points for the Netherlands.

For Italy, the break in series reflects more accurate enumeration of time of last job search. This resulted in a significant increase in the number of people reported as seeking work in the last 30 days. The impact was to increase the Italian unemployment rates approximating U.S. concepts by about 1 percentage point.

Sweden introduced a new questionnaire. Questions regarding current availability were added and the period of active work-seeking was reduced from 60 days to 4 weeks. These changes result in lowering Sweden's unemployment rate by 0.5 percentage point.

## International Comparisons

(Tables 48–50)

## Labor force and unemployment

### Description of the series

Tables 48 and 49 present comparative measures of the labor force, employment,

and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and several European countries. The unemployment statistics (and, to a lesser extent, employment statistics) published by other industrial countries are not, in most cases, comparable to U.S. unemployment statistics. Therefore, the Bureau adjusts the figures for selected countries, where necessary, for all known major definitional differences. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country.

### Definitions

For the principal U.S. definitions of the **labor force**, **employment**, and **unemployment**, see the Notes section on EMPLOYMENT AND UNEMPLOYMENT DATA: Household Survey Data.

### Notes on the data

The adjusted statistics have been adapted to the age at which compulsory schooling ends in each country, rather than to the U.S. standard of 16 years of age and over. Therefore, the adjusted statistics relate to the population age 16 and over in France, Sweden, and from 1973 onward, the United Kingdom; 15 and over in Canada, Australia, Japan, Germany, the Netherlands, and prior to 1973, the United Kingdom; and 14 and over in Italy. The institutional population is included in the denominator of the labor force participation rates and employment-population ratios for Japan and Germany; it is excluded for the United States and the other countries.

In the U.S. labor force survey, persons on layoff who are awaiting recall to their job are classified as unemployed. European and Japanese layoff practices are quite different in nature from those in the United States; therefore, strict application of the U.S. definition has not been made on this point. For further information, see *Monthly Labor Review*, December 1981, pp. 8–11.

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

There are breaks in the data series for Germany (1983 and 1987), Italy (1986), the Netherlands (1983), and Sweden

(1987). For both Germany and the Netherlands, the 1983 breaks reflect the replacement of labor force survey results tabulated by the national statistical offices with those tabulated by the European Community Statistical Office (EUROSTAT). The Dutch figures for 1983 onward also reflect the replacement of man-year employment data with data from the Dutch Survey of Employed Persons. The impact of the changes was to lower the adjusted unemployment rate by 0.3 percentage point for Germany and by about 2 percentage points for the Netherlands. The 1987 break for Germany reflects the incorporation of employment statistics based on the 1987 Population Census, which indicated that the level of employment was about one million higher than previously estimated. The impact of this change was to lower the adjusted unemployment rate by 0.3 percentage point. When historical data benchmarked to the 1987 Census became available, BLS will revise its comparative measures for Germany.

For Italy, the break in series reflects more accurate enumeration of time of last job search. This resulted in a significant increase in the number of people reported as seeking work in the last 30 days. The impact was to increase the Italian unemployment rates approximating U.S. concepts by about 1 percentage point.

Sweden introduced a new questionnaire. Questions regarding current availability were added and the period of active work-seeking was reduced from 60 days to 4 weeks. These changes result in lowering Sweden's unemployment rate by 0.5 percent point.

### Additional sources of information

For further information, see *International Comparisons of Unemployment*, Bulletin 1979 (Bureau of Labor Statistics, 1978), Appendix B, and Supplements to Appendix B. The statistics are also analyzed periodically in the *Monthly Labor Review*. Additional historical data, generally beginning with 1959, are published in the *Handbook of Labor Statistics* and are available in statistical supplements to Bulletin 1979.

### Manufacturing productivity and labor costs

#### Description of the series

Table 50 presents comparative measures of manufacturing labor productivity, hourly compensation costs, and unit labor costs for the United States, Canada, Japan, and nine European countries. These measures are limited to trend comparisons—

that is, intercountry series of changes over time—rather than level comparisons because reliable international comparisons of the levels of manufacturing output are unavailable.

### Definitions

**Output** is constant value output (value added), generally taken from the national accounts of each country. While the national accounting methods for measuring real output differ considerably among the 12 countries, the use of different procedures does not, in itself, connote lack of comparability—rather, it reflects differences among countries in the availability and reliability of underlying data series.

**Hours** refer to all employed persons including the self-employed in the United States and Canada; to all wage and salary employees in the other countries. The U.S. hours measure is hours paid; the hours measures for the other countries are hours worked.

**Compensation (labor cost)** includes all payments in cash or kind made directly to employees plus employer expenditures for legally required insurance programs and contractual and private benefit plans. In addition, for some countries, compensation is adjusted for other significant taxes on payrolls or employment (or reduced to reflect subsidies), even if they are not for the direct benefit of workers, because such taxes are regarded as labor costs. However, compensation does not include all items of labor cost. The costs of recruitment, employee training, and plant facilities and services—such as cafeterias and medical clinics—are not covered because data are not available for most countries. Self-employed workers are included in the U.S. and Canadian compensation figures by assuming that their hourly compensation is equal to the average for wage and salary employees.

### Notes on the data

For most of the countries, the measures refer to total manufacturing as defined by the International Standard Industrial Classification. However, the measures for France (beginning 1959), Italy (beginning 1970), and the United Kingdom (beginning 1971), refer to manufacturing and mining less energy-related products and the figures for the Netherlands exclude petroleum refining from 1969 to 1976. For all countries, manufacturing includes the activities of government enterprises.

The figures for one or more recent years are generally based on current indicators of manufacturing output, employment, hours,

and hourly compensation and are considered preliminary until the national accounts and other statistics used for the long-term measures become available.

### Additional sources of information

For additional information, see the *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988), and periodic *Monthly Labor Review* articles. Historical data are provided in the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985). The statistics are issued twice per year—in a news release (generally in June) and in a *Monthly Labor Review* article.

## Occupational Injury and Illness Data

(Table 51)

### Description of the series

The Annual Survey of Occupational Injuries and Illnesses is designed to collect data on injuries and illnesses based on records which employers in the following industries maintain under the Occupational Safety and Health Act of 1970: agriculture, forestry, and fishing; oil and gas extraction; construction; manufacturing; transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. Excluded from the survey are self-employed individuals, farmers with fewer than 11 employees, employers regulated by other Federal safety and health laws, and Federal, State, and local government agencies.

Because the survey is a Federal-State cooperative program and the data must meet the needs of participating State agencies, an independent sample is selected for each State. The sample is selected to represent all private industries in the States and territories. The sample size for the survey is dependent upon (1) the characteristics for which estimates are needed; (2) the industries for which estimates are desired; (3) the characteristics of the population being sampled; (4) the target reliability of the estimates; and (5) the survey design employed.

While there are many characteristics upon which the sample design could be based, the total recorded case incidence rate is used because it is one of the most important characteristics and the least variable; therefore, it requires the smallest sample size.

The survey is based on stratified random sampling with a Neyman allocation and a

ratio estimator. The characteristics used to stratify the establishments are the Standard Industrial Classification (sic) code and size of employment.

### Definitions

**Recordable occupational injuries and illnesses** are: (1) occupational deaths, regardless of the time between injury and death, or the length of the illness; or (2) nonfatal occupational illnesses; or (3) nonfatal occupational injuries which involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment (other than first aid).

**Occupational injury** is any injury such as a cut, fracture, sprain, amputation, and so forth, which results from a work accident or from exposure involving a single incident in the work environment.

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

**Lost workday cases** are cases which involve days away from work, or days of restricted work activity, or both.

**Lost workday cases involving restricted work activity** are those cases which result in restricted work activity only.

**Lost workdays away from work** are the number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness.

**Lost workdays—restricted work activity** are the number of workdays (consecutive or not) on which, because of injury or illness: (1) the employee was assigned to another job on a temporary basis; or (2) the employee worked at a permanent job less than full time; or (3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

**The number of days away from work or days of restricted work activity** does not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

**Incidence rates** represent the number of injuries and/or illnesses or lost workdays per 100 full-time workers.

### Notes on the data

Estimates are made for industries and employment-size classes and for severity classification: fatalities, lost workday

cases, and nonfatal cases without lost workdays. Lost workday cases are separated into those where the employee would have worked but could not and those in which work activity was restricted. Estimates of the number of cases and the number of days lost are made for both categories.

Most of the estimates are in the form of incidence rates, defined as the number of injuries and illnesses, or lost workdays, per 100 full-time employees. For this purpose, 200,000 employee hours represent 100 employee years (2,000 hours per employee). Only a few of the available measures are included in the *Handbook of Labor Statistics*. Full detail is presented in the annual bulletin, *Occupational Injuries and Illnesses in the United States, by Industry*.

Comparable data for individual States are available from the BLS Office of Safety, Health, and Working Conditions.

Mining and railroad data are furnished to BLS by the Mine Safety and Health Administration and the Federal Railroad Administration, respectively. Data from these organizations are included in BLS and State publications. Federal employee experience is compiled and published by the Occupational Safety and Health Administration. Data on State and local government employees are collected by about half of the States and territories; these data are not compiled nationally.

### Additional sources of information

The Supplementary Data System provides detailed information describing various factors associated with work-related injuries and illnesses. These data are obtained from information reported by employers to State workers' compensation agencies. The Work Injury Report program examines selected types of accidents through an employee survey which focuses on the circumstances surrounding the injury. These data are not included in the *Handbook of Labor Statistics* but are available from the BLS Office of Safety, Health, and Working Conditions.

The definitions of occupational injuries and illnesses and lost workdays are from *Recordkeeping Requirements under the Occupational Safety and Health Act of 1970*. For additional data, see *Occupational Injuries and Illnesses in the United States, by Industry*, annual Bureau of Labor Statistics bulletin; *BLS Handbook of Methods*, Bulletin 2285 (Bureau of Labor Statistics, 1988); *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985), pp. 411-14; annual reports in the *Monthly Labor Review*; and annual U.S. Department of Labor press releases.

Current Labor Statistics: Comparative Indicators

1. Labor market indicators

Selected indicators	1987	1988	1987		1988				1989	
			III	IV	I	II	III	IV	I	II
<b>Employment data</b>										
Employment status of the civilian noninstitutionalized population (household survey): <sup>1</sup>										
Labor force participation rate .....	65.6	65.9	65.6	65.7	65.8	65.8	65.9	66.1	66.4	66.5
Employment-population ratio .....	61.5	62.3	61.7	61.9	62.1	62.2	62.3	62.5	62.9	63.0
Unemployment rate .....	6.2	5.5	6.0	5.9	5.7	5.5	5.5	5.3	5.2	5.3
Men .....	6.2	5.5	6.0	5.8	5.6	5.4	5.4	5.4	5.2	5.1
16 to 24 years .....	12.6	11.4	12.2	11.9	11.8	11.2	11.4	11.3	11.2	11.1
25 years and over .....	4.8	4.2	4.6	4.4	4.3	4.2	4.1	4.1	4.0	3.9
Women .....	6.2	5.6	6.0	6.0	5.8	5.6	5.6	5.3	5.2	5.4
16 to 24 years .....	11.7	10.6	11.4	11.2	11.0	10.7	10.5	10.3	10.2	10.4
25 years and over .....	4.8	4.3	4.7	4.6	4.5	4.3	4.4	4.2	4.0	4.3
Unemployment rate, 15 weeks and over .....	1.7	1.3	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.1
Employment, nonagricultural (payroll data), in thousands: <sup>1</sup>										
Total .....	102,200	105,584	102,500	103,491	104,355	105,184	105,976	106,799	107,680	108,339
Private sector .....	85,190	88,212	85,481	86,336	87,111	87,851	88,577	89,288	90,104	90,661
Goods-producing .....	24,708	25,249	24,751	24,961	25,022	25,202	25,313	25,452	25,634	25,664
Manufacturing .....	19,024	19,403	19,061	19,199	19,271	19,360	19,435	19,550	19,659	19,663
Service-producing .....	77,492	80,335	77,749	78,530	79,333	79,983	80,663	81,346	82,047	82,676
Average hours:										
Private sector .....	34.8	34.7	34.8	34.8	34.7	34.7	34.7	34.7	34.7	34.7
Manufacturing .....	41.0	41.1	40.9	41.2	41.0	41.1	41.1	41.1	41.1	41.1
Overtime .....	3.7	3.9	3.8	3.9	3.8	3.9	3.9	3.9	3.9	3.8
<b>Employment Cost Index</b>										
Percent change in the ECI, compensation:										
All workers (excluding farm, household, and Federal workers) .....	3.6	5.0	1.2	.8	1.4	1.1	1.3	1.0	1.2	1.1
Private industry workers .....	3.3	4.9	1.0	.7	1.5	1.2	1.0	1.0	1.3	1.2
Goods-producing <sup>2</sup> .....	3.1	4.4	.8	1.0	1.8	1.1	.6	.8	1.0	1.1
Service-producing <sup>2</sup> .....	3.7	5.1	1.0	.5	1.3	1.4	1.2	1.2	1.5	1.2
State and local government workers .....	4.4	5.6	2.3	.9	1.3	.3	2.7	1.1	1.2	.6
Workers by bargaining status (private industry):										
Union .....	2.8	3.9	.6	1.1	1.6	1.0	.7	.5	.8	1.0
Nonunion .....	3.6	5.1	1.1	.6	1.5	1.3	1.1	1.2	1.5	1.2

<sup>1</sup> Quarterly data seasonally adjusted.

<sup>2</sup> Goods-producing industries include mining, construction, and manufacturing. Service-producing industries include all other private sector industries.

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

Selected measures	1987	1988	1987		1988				1989	
			III	IV	I	II	III	IV	I	II
<b>Compensation data<sup>1, 2</sup></b>										
Employment Cost Index--compensation (wages, salaries, benefits):										
Civilian nonfarm .....	3.6	5.0	1.2	0.8	1.4	1.1	1.3	1.0	1.2	1.1
Private nonfarm .....	3.3	4.9	1.0	.7	1.5	1.2	1.0	1.0	1.3	1.2
Employment Cost Index--wages and salaries										
Civilian nonfarm .....	3.5	4.3	1.3	.7	1.0	.9	1.3	1.0	1.1	.8
Private nonfarm .....	3.3	4.1	1.0	.6	1.0	1.1	1.0	1.0	1.1	1.0
<b>Price data<sup>1</sup></b>										
Consumer Price Index (All urban consumers): All items .....	4.4	4.4	1.3	.3	1.0	1.3	1.5	.6	1.5	1.5
Producer Price Index:										
Finished goods .....	2.2	4.0	.2	.1	.5	1.3	.8	1.3	1.9	1.8
Finished consumer goods .....	2.6	4.0	.3	-.2	.4	1.4	1.0	1.1	2.2	2.2
Capital equipment .....	1.3	3.6	-.2	1.1	.7	.6	.4	1.8	.9	.9
Intermediate materials, supplies, components .....	5.4	5.6	1.2	.9	1.1	2.6	1.2	.6	1.9	1.0
Crude materials .....	8.9	3.1	.6	-1.4	-.3	4.0	-1.2	.6	6.1	.7
<b>Productivity data<sup>3</sup></b>										
Output per hour of all persons:										
Business sector .....	1.2	1.8	3.9	2.9	2.7	-2.0	3.1	.2	1.0	1.3
Nonfarm business sector .....	1.1	2.1	3.6	2.7	3.0	-1.5	3.4	1.9	-1.3	.7
Nonfinancial corporations <sup>4</sup> .....	2.2	2.6	5.3	1.9	4.3	.6	1.4	-4	-1.8	-.2

<sup>1</sup> Annual changes are December-to-December change. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted and the price data are not compounded.

<sup>2</sup> Excludes Federal and private household workers.

<sup>3</sup> Annual rates of change are computed by comparing annual averages. Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

<sup>4</sup> Output per hour of all employees.

## 3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ended--					
	1988				1989		1988				1989	
	I	II	III	IV	I	II	I	II	III	IV	I	II
Average hourly compensation: <sup>1</sup>												
All persons, business sector .....	2.8	5.9	5.8	5.2	4.8	6.8	4.4	5.2	5.4	4.9	5.4	5.7
All persons, nonfarm business sector .....	2.7	5.5	5.5	5.9	4.8	5.6	4.3	5.1	5.2	4.9	5.4	5.5
Employment Cost Index--compensation:												
Civilian nonfarm <sup>2</sup> .....	1.4	1.1	1.3	1.0	1.2	1.1	4.1	4.6	4.7	5.0	4.8	4.8
Private nonfarm .....	1.5	1.2	1.0	1.0	1.3	1.2	3.9	4.5	4.5	4.9	4.6	4.5
Union .....	1.6	1.0	.7	.5	.8	1.0	3.9	4.3	4.5	3.9	3.0	3.1
Nonunion .....	1.5	1.3	1.1	1.2	1.5	1.2	4.0	4.5	4.5	5.1	5.1	5.0
State and local governments .....	1.3	.3	2.7	1.1	1.2	.6	4.9	5.0	5.4	5.6	5.5	5.8
Employment Cost Index--wages and salaries:												
Civilian nonfarm <sup>2</sup> .....	1.0	.9	1.3	1.0	1.1	.8	3.5	3.9	3.9	4.3	4.4	4.3
Private nonfarm .....	1.0	1.1	1.0	1.0	1.1	1.0	3.3	3.7	3.7	4.1	4.2	4.1
Union .....	.4	.8	.7	.4	.7	.8	2.6	2.9	2.9	2.2	2.5	2.6
Nonunion .....	1.0	1.2	1.0	1.1	1.3	1.0	3.5	4.0	3.9	4.5	4.8	4.6
State and local governments .....	.9	.3	2.6	1.0	.8	.5	4.4	4.4	4.7	4.8	4.8	5.0
Total effective wage adjustments <sup>3</sup> .....	.4	.9	.8	.5	.5	1.0	3.2	3.0	2.9	2.6	2.7	2.8
From current settlements .....	.1	.3	.2	.1	.1	.3	.8	1.0	1.0	.7	.7	.7
From prior settlements .....	.3	.5	.4	.2	.3	.5	1.8	1.6	1.4	1.3	1.3	1.3
From cost-of-living provision .....	-.1	-.1	.2	.2	.1	.2	.5	.5	.5	.6	.6	.8
Negotiated wage adjustments from settlements: <sup>3</sup>												
First-year adjustments .....	2.1	2.6	2.7	2.6	3.2	3.9	2.4	2.4	2.5	2.5	2.7	3.2
Annual rate over life of contract .....	2.3	2.2	2.8	2.2	3.1	3.3	2.2	2.0	2.2	2.4	2.5	2.9
Negotiated wage and benefit adjustments from settlements: <sup>4</sup>												
First-year adjustment .....	1.8	3.1	3.4	3.5	3.2	5.0	3.1	3.0	3.1	3.1	3.3	3.8
Annual rate over life of contract .....	1.8	2.4	3.2	2.1	3.4	3.4	2.5	2.3	2.5	2.5	2.6	3.0

<sup>1</sup> Seasonally adjusted.

<sup>2</sup> Excludes Federal and household workers.

<sup>3</sup> Limited to major collective bargaining units of 1,000 workers or more. The

most recent data are preliminary.

<sup>4</sup> Limited to major collective bargaining units of 5,000 workers or more. The most recent data are preliminary.

4. Employment status of the total population, by sex, monthly data seasonally adjusted

(Numbers in thousands)

Employment status	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>TOTAL</b>															
Noninstitutional population <sup>1, 2</sup> .....	184,490	186,322	186,666	186,801	186,949	187,098	187,340	187,461	187,581	187,708	187,854	187,995	188,149	188,286	188,428
Labor force <sup>2</sup> .....	121,602	123,378	123,688	123,778	124,215	124,259	125,124	124,865	124,948	125,343	125,283	125,768	125,622	125,706	125,742
Participation rate <sup>3</sup> .....	65.9	66.2	66.3	66.3	66.4	66.4	66.8	66.6	66.6	66.8	66.7	66.9	66.8	66.8	66.7
Total employed <sup>2</sup> .....	114,177	116,677	117,074	117,260	117,652	117,705	118,407	118,537	118,820	118,797	118,888	119,207	119,125	119,285	119,158
Employment-population ratio <sup>4</sup> .....	61.9	62.6	62.7	62.8	62.9	62.9	63.2	63.2	63.3	63.3	63.3	63.4	63.3	63.4	63.2
Resident Armed Forces <sup>1</sup> .....	1,737	1,709	1,704	1,687	1,705	1,696	1,696	1,684	1,684	1,684	1,673	1,666	1,666	1,688	1,702
Civilian employed .....	112,440	114,968	115,370	115,573	115,947	116,009	116,711	116,853	117,136	117,113	117,215	117,541	117,459	117,597	117,456
Agriculture .....	3,208	3,169	3,176	3,238	3,238	3,193	3,300	3,223	3,206	3,104	3,112	3,096	3,219	3,307	3,257
Nonagricultural industries .....	109,232	111,800	112,194	112,335	112,709	112,816	113,411	113,630	113,930	114,009	114,102	114,445	114,240	114,290	114,199
Unemployed .....	7,425	6,701	6,614	6,518	6,563	6,554	6,716	6,328	6,128	6,546	6,395	6,561	6,497	6,421	6,584
Unemployment rate <sup>5</sup> .....	6.1	5.4	5.3	5.3	5.3	5.3	5.4	5.1	4.9	5.2	5.1	5.2	5.2	5.1	5.2
Not in labor force .....	62,888	62,944	62,978	63,023	62,734	62,839	62,216	62,596	62,633	62,365	62,571	62,228	62,527	62,580	62,686
<b>Men, 16 years and over</b>															
Noninstitutional population <sup>1, 2</sup> .....	88,476	89,404	89,577	89,637	89,716	89,792	89,914	89,973	90,032	90,094	90,167	90,237	90,315	90,384	90,456
Labor force <sup>2</sup> .....	67,784	68,474	68,604	68,569	68,686	68,638	69,032	69,113	69,190	69,360	69,114	69,507	69,245	69,337	69,272
Participation rate <sup>3</sup> .....	76.6	76.6	76.6	76.5	76.6	76.4	76.8	76.8	76.9	77.0	76.7	77.0	76.7	76.7	76.6
Total employed <sup>2</sup> .....	63,684	64,820	65,015	64,976	65,074	65,055	65,322	65,572	65,920	65,767	65,713	66,110	65,961	65,934	65,601
Employment-population ratio <sup>4</sup> .....	72.0	72.5	72.6	72.5	72.5	72.5	72.6	72.9	73.2	73.0	72.9	73.3	73.0	72.9	72.5
Resident Armed Forces <sup>1</sup> .....	1,577	1,547	1,540	1,526	1,542	1,534	1,532	1,521	1,521	1,521	1,511	1,501	1,499	1,519	1,531
Civilian employed .....	62,107	63,273	63,475	63,450	63,532	63,521	63,790	64,051	64,399	64,246	64,202	64,609	64,462	64,415	64,071
Unemployed .....	4,101	3,655	3,589	3,593	3,612	3,583	3,710	3,540	3,270	3,593	3,401	3,397	3,284	3,403	3,672
Unemployment rate <sup>5</sup> .....	6.1	5.3	5.2	5.2	5.3	5.2	5.4	5.1	4.7	5.2	4.9	4.9	4.7	4.9	5.3
<b>Women, 16 years and over</b>															
Noninstitutional population <sup>1, 2</sup> .....	96,013	96,918	97,089	97,164	97,234	97,306	97,427	97,488	97,550	97,614	97,687	97,758	97,834	97,902	97,972
Labor force <sup>2</sup> .....	53,818	54,904	55,084	55,209	55,529	55,621	56,091	55,752	55,758	55,983	56,169	56,261	56,377	56,370	56,470
Participation rate <sup>3</sup> .....	56.1	56.6	56.7	56.8	57.1	57.2	57.6	57.2	57.2	57.4	57.5	57.6	57.6	57.6	57.6
Total employed <sup>2</sup> .....	50,494	51,858	52,059	52,284	52,578	52,650	53,085	52,965	52,900	53,029	53,175	53,097	53,164	53,352	53,557
Employment-population ratio <sup>4</sup> .....	52.6	53.5	53.6	53.8	54.1	54.1	54.5	54.3	54.2	54.3	54.4	54.3	54.3	54.5	54.7
Resident Armed Forces <sup>1</sup> .....	160	162	164	161	163	162	164	163	163	163	162	165	167	169	171
Civilian employed .....	50,334	51,696	51,895	52,123	52,415	52,488	52,921	52,802	52,737	52,866	53,013	52,932	52,997	53,183	53,386
Unemployed .....	3,324	3,046	3,025	2,925	2,951	2,971	3,006	2,787	2,858	2,953	2,994	3,164	3,213	3,018	2,912
Unemployment rate <sup>5</sup> .....	6.2	5.5	5.5	5.3	5.3	5.3	5.4	5.0	5.1	5.3	5.3	5.6	5.7	5.4	5.2

<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).

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

(Numbers in thousands)

Employment status	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>TOTAL</b>															
Civilian noninstitutional population <sup>1</sup>	182,753	184,613	184,962	185,114	185,244	185,402	185,644	185,777	185,897	186,024	186,181	186,329	186,483	186,598	186,726
Civilian labor force	119,865	121,669	121,984	122,091	122,510	122,563	123,428	123,181	123,264	123,659	123,610	124,102	123,956	124,018	124,040
Participation rate	65.6	65.9	66.0	66.0	66.1	66.1	66.5	66.3	66.5	66.6	66.4	66.6	66.5	66.5	66.4
Employed	112,440	114,968	115,370	115,573	115,947	116,009	116,711	116,853	117,136	117,113	117,215	117,541	117,459	117,597	117,456
Employment-population ratio <sup>2</sup>	61.5	62.3	62.4	62.4	62.6	62.6	62.9	62.9	63.0	63.0	63.0	63.1	63.0	63.0	62.9
Unemployed	7,425	6,701	6,614	6,518	6,563	6,554	6,716	6,328	6,128	6,546	6,395	6,561	6,497	6,421	6,584
Unemployment rate	6.2	5.5	5.4	5.3	5.4	5.3	5.4	5.1	5.0	5.3	5.2	5.3	5.2	5.2	5.3
Not in labor force	62,888	62,944	62,978	63,023	62,734	62,839	62,216	62,596	62,633	62,365	62,571	62,228	62,527	62,580	62,686
<b>Men, 20 years and over</b>															
Civilian noninstitutional population <sup>1</sup>	79,565	80,553	80,751	80,851	80,924	81,001	81,162	81,256	81,333	81,413	81,524	81,592	81,679	81,754	81,790
Civilian labor force	62,095	62,768	62,884	62,915	62,995	63,002	63,358	63,490	63,557	63,709	63,503	63,831	63,656	63,643	63,721
Participation rate	78.0	77.9	77.9	77.8	77.8	77.8	78.1	78.1	78.1	78.3	77.9	78.2	77.9	77.8	77.9
Employed	58,726	59,781	59,979	60,004	59,999	60,049	60,420	60,636	60,869	60,757	60,798	61,093	60,921	60,853	60,683
Employment-population ratio <sup>2</sup>	73.8	74.2	74.3	74.2	74.1	74.1	74.4	74.6	74.8	74.6	74.6	74.9	74.6	74.4	74.2
Agriculture	2,329	2,271	2,249	2,315	2,313	2,292	2,277	2,320	2,317	2,252	2,284	2,256	2,342	2,364	2,339
Nonagricultural industries	56,397	57,510	57,730	57,689	57,686	57,757	58,143	58,316	58,552	58,505	58,514	58,837	58,579	58,489	58,344
Unemployed	3,369	2,987	2,905	2,911	2,996	2,953	2,938	2,853	2,688	2,952	2,705	2,737	2,734	2,790	3,038
Unemployment rate	5.4	4.8	4.6	4.6	4.8	4.7	4.6	4.5	4.2	4.6	4.3	4.3	4.3	4.4	4.8
<b>Women, 20 years and over</b>															
Civilian noninstitutional population <sup>1</sup>	88,583	89,532	89,735	89,807	89,887	89,954	90,072	90,153	90,242	90,318	90,432	90,526	90,607	90,684	90,771
Civilian labor force	49,783	50,870	50,991	51,201	51,558	51,587	51,998	51,821	51,851	51,992	52,171	52,231	52,463	52,373	52,443
Participation rate	56.2	56.8	56.8	57.0	57.4	57.3	57.7	57.5	57.5	57.6	57.7	57.7	57.9	57.8	57.8
Employed	47,074	48,383	48,535	48,788	49,113	49,165	49,543	49,514	49,484	49,544	49,690	49,661	49,850	49,905	50,089
Employment-population ratio <sup>2</sup>	53.1	54.0	54.1	54.3	54.6	54.7	55.0	54.9	54.8	54.9	54.9	54.9	55.0	55.0	55.2
Agriculture	622	625	638	640	640	646	715	666	664	615	628	610	627	644	701
Nonagricultural industries	46,453	47,757	47,897	48,148	48,473	48,519	48,827	48,849	48,819	48,929	49,062	49,051	49,223	49,261	49,388
Unemployed	2,709	2,487	2,456	2,413	2,445	2,422	2,455	2,306	2,367	2,448	2,480	2,570	2,613	2,468	2,353
Unemployment rate	5.4	4.9	4.8	4.7	4.7	4.7	4.7	4.5	4.6	4.7	4.8	4.9	5.0	4.7	4.5
<b>Both sexes, 16 to 19 years</b>															
Civilian noninstitutional population <sup>1</sup>	14,606	14,527	14,477	14,456	14,433	14,447	14,410	14,367	14,323	14,293	14,224	14,211	14,196	14,160	14,166
Civilian labor force	7,988	8,031	8,109	8,197	8,257	8,330	8,401	8,471	8,556	8,628	8,696	8,737	8,787	8,803	8,816
Participation rate	54.7	55.3	55.9	56.7	57.3	57.5	58.4	58.9	59.6	60.2	60.7	61.0	61.3	61.6	61.7
Employed	6,640	6,805	6,856	6,911	6,995	7,065	7,138	7,203	7,273	7,343	7,413	7,483	7,553	7,623	7,693
Employment-population ratio <sup>2</sup>	45.5	46.8	47.4	47.9	48.4	48.9	49.5	49.8	50.1	50.3	50.5	50.5	50.5	50.5	50.5
Agriculture	258	273	289	283	285	255	307	237	224	237	200	230	249	300	216
Nonagricultural industries	6,382	6,532	6,567	6,498	6,550	6,540	6,441	6,466	6,559	6,575	6,526	6,556	6,438	6,540	6,467
Unemployed	1,347	1,226	1,253	1,194	1,122	1,179	1,323	1,168	1,073	1,146	1,210	1,254	1,150	1,163	1,193
Unemployment rate	16.9	15.3	15.5	15.0	14.1	14.8	16.4	14.8	13.7	14.4	15.2	15.6	14.7	14.5	15.1
<b>White</b>															
Civilian noninstitutional population <sup>1</sup>	156,958	158,194	158,422	158,524	158,603	158,705	158,865	158,947	159,020	159,098	159,200	159,297	159,400	159,470	159,549
Civilian labor force	103,290	104,756	105,036	105,051	105,395	105,411	106,106	105,798	105,988	106,312	106,164	106,455	106,424	106,446	106,325
Participation rate	65.8	66.2	66.3	66.3	66.5	66.4	66.8	66.6	66.7	66.8	66.7	66.8	66.8	66.8	66.6
Employed	97,789	99,812	100,058	100,199	100,543	100,567	101,183	101,278	101,554	101,458	101,465	101,693	101,581	101,670	101,535
Employment-population ratio <sup>2</sup>	62.3	63.1	63.2	63.2	63.4	63.4	63.7	63.7	63.9	63.8	63.7	63.8	63.7	63.8	63.6
Unemployed	5,501	4,944	4,978	4,852	4,852	4,844	4,923	4,521	4,434	4,854	4,699	4,762	4,843	4,777	4,791
Unemployment rate	5.3	4.7	4.7	4.6	4.6	4.6	4.6	4.3	4.2	4.6	4.4	4.5	4.6	4.5	4.5
<b>Black</b>															
Civilian noninstitutional population <sup>1</sup>	20,352	20,692	20,762	20,786	20,811	20,842	20,877	20,905	20,930	20,956	20,986	21,012	21,038	21,060	21,085
Civilian labor force	12,993	13,205	13,201	13,290	13,330	13,405	13,477	13,476	13,425	13,287	13,444	13,600	13,555	13,448	13,515
Participation rate	63.8	63.8	63.6	63.9	64.1	64.3	64.6	64.5	64.1	63.4	64.1	64.7	64.4	63.9	64.1
Employed	11,309	11,658	11,758	11,807	11,831	11,856	11,860	11,873	11,961	11,846	11,968	11,982	12,082	11,958	11,940
Employment-population ratio <sup>2</sup>	55.6	56.3	56.6	56.8	56.8	56.9	56.8	56.8	57.1	56.5	57.0	57.0	57.4	56.8	56.6
Unemployed	1,684	1,547	1,443	1,483	1,499	1,549	1,617	1,603	1,464	1,442	1,476	1,618	1,473	1,490	1,574
Unemployment rate	13.0	11.7	10.9	11.2	11.2	11.6	12.0	11.9	10.9	10.8	11.0	11.9	10.9	11.1	11.6

See footnotes at end of table.

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

(Numbers in thousands)

Employment status	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>Hispanic origin</b>															
Civilian noninstitutional population <sup>1</sup> .....	12,867	13,325	13,419	13,458	13,495	13,533	13,564	13,606	13,649	13,690	13,731	13,772	13,813	13,853	13,894
Civilian labor force .....	8,541	8,982	9,061	9,075	9,148	9,133	9,205	9,219	9,210	9,262	9,428	9,272	9,433	9,364	9,326
Participation rate .....	66.4	67.4	67.5	67.4	67.8	67.5	67.9	67.8	67.5	67.7	68.7	67.3	68.3	67.6	67.1
Employed .....	7,790	8,250	8,378	8,368	8,419	8,441	8,434	8,596	8,607	8,495	8,686	8,524	8,587	8,521	8,550
Employment-population ratio <sup>2</sup> .....	60.5	61.9	62.4	62.2	62.4	62.4	62.2	63.2	63.1	62.1	63.3	61.9	62.2	61.5	61.5
Unemployed .....	751	732	683	707	729	692	771	624	603	767	742	748	846	843	776
Unemployment rate .....	8.8	8.2	7.5	7.8	8.0	7.6	8.4	6.8	6.5	8.3	7.9	8.1	9.0	9.0	8.3

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

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

because data for 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

**6. Selected employment indicators, monthly data seasonally adjusted**

(In thousands)

Selected categories	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>CHARACTERISTIC</b>															
Civilian employed, 16 years and over .....	112,440	114,968	115,370	115,573	115,947	116,009	116,711	116,853	117,136	117,113	117,215	117,541	117,459	117,597	117,456
Men .....	62,107	63,273	63,475	63,450	63,532	63,521	63,790	64,051	64,399	64,246	64,202	64,609	64,462	64,415	64,070
Women .....	50,334	51,696	51,895	52,123	52,415	52,488	52,921	52,802	52,737	52,866	53,013	52,932	52,997	53,183	53,386
Married men, spouse present ..	40,265	40,472	40,513	40,504	40,407	40,483	40,925	40,928	41,083	40,890	40,902	41,102	41,089	40,636	40,572
Married women, spouse present .....	28,107	28,756	28,836	28,890	28,995	29,053	29,589	29,412	29,569	29,656	29,739	29,481	29,552	29,220	29,461
Women who maintain families ..	6,060	6,211	6,253	6,344	6,375	6,399	6,416	6,385	6,256	6,243	6,331	6,403	6,456	6,342	6,437
<b>MAJOR INDUSTRY AND CLASS OF WORKER</b>															
Agriculture:															
Wage and salary workers .....	1,632	1,621	1,612	1,661	1,672	1,698	1,684	1,645	1,656	1,554	1,610	1,550	1,695	1,803	1,671
Self-employed workers .....	1,423	1,398	1,421	1,405	1,450	1,349	1,387	1,419	1,403	1,419	1,358	1,412	1,434	1,420	1,441
Unpaid family workers .....	153	150	137	177	125	149	189	150	138	124	127	126	126	137	135
Nonagricultural industries:															
Wage and salary workers .....	100,771	103,021	103,501	103,733	103,770	103,904	104,510	104,797	104,982	104,985	105,245	105,519	105,321	105,259	105,355
Government .....	16,800	17,114	17,145	17,240	17,387	17,423	17,393	17,311	17,382	17,180	17,230	17,261	17,519	17,591	17,619
Private industries .....	83,970	85,907	86,356	86,493	86,383	86,481	87,117	87,486	87,600	87,806	88,015	88,259	87,803	87,668	87,737
Private households .....	1,208	1,153	1,119	1,152	1,209	1,210	1,196	1,135	1,163	1,117	1,128	1,140	1,093	1,146	1,054
Other .....	82,762	84,754	85,237	85,341	85,174	85,271	85,921	86,350	86,437	86,689	86,887	87,118	86,710	86,522	86,682
Self-employed workers .....	8,201	8,519	8,570	8,479	8,619	8,602	8,718	8,517	8,645	8,671	8,516	8,570	8,606	8,625	8,569
Unpaid family workers .....	260	260	230	232	300	266	298	285	332	281	322	241	239	264	296
<b>PERSONS AT WORK PART TIME<sup>1</sup></b>															
All industries:															
Part time for economic reasons ..	5,401	5,206	5,097	4,963	5,061	5,321	5,097	4,981	4,968	5,143	4,837	4,957	4,750	4,785	4,882
Slack work .....	2,385	2,350	2,266	2,220	2,279	2,549	2,302	2,303	2,232	2,373	2,296	2,318	2,311	2,282	2,330
Could only find part-time work ..	2,672	2,487	2,389	2,399	2,375	2,410	2,352	2,333	2,393	2,425	2,343	2,289	2,138	2,107	2,171
Voluntary part time .....	14,395	14,963	15,270	15,161	15,446	15,363	15,401	15,126	15,561	15,498	15,316	15,416	15,652	15,614	15,542
Nonagricultural industries:															
Part time for economic reasons ..	5,122	4,965	4,862	4,727	4,819	5,033	4,837	4,697	4,709	4,930	4,609	4,801	4,505	4,553	4,612
Slack work .....	2,201	2,199	2,102	2,095	2,116	2,377	2,144	2,105	2,048	2,243	2,102	2,190	2,185	2,129	2,174
Could only find part-time work ..	2,587	2,408	2,317	2,319	2,288	2,307	2,283	2,272	2,317	2,369	2,301	2,236	2,057	2,024	2,090
Voluntary part time .....	13,928	14,509	14,819	14,679	14,986	14,928	14,970	14,688	15,127	15,060	14,976	14,977	15,219	15,094	15,109

<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.



## 7. Selected unemployment indicators, monthly data seasonally adjusted

(Unemployment rates)

Selected categories	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>CHARACTERISTIC</b>															
Total, all civilian workers .....	6.2	5.5	5.4	5.3	5.4	5.3	5.4	5.1	5.0	5.3	5.2	5.3	5.2	5.2	5.3
Both sexes, 16 to 19 years .....	16.9	15.3	15.5	15.0	14.1	14.8	16.4	14.8	13.7	14.4	15.2	15.6	14.7	14.5	15.1
Men, 20 years and over .....	5.4	4.8	4.6	4.6	4.8	4.7	4.6	4.5	4.2	4.6	4.3	4.3	4.3	4.4	4.8
Women, 20 years and over .....	5.4	4.9	4.8	4.7	4.7	4.7	4.7	4.5	4.6	4.7	4.8	4.9	5.0	4.7	4.5
White, total .....	5.3	4.7	4.7	4.6	4.6	4.6	4.6	4.3	4.2	4.6	4.4	4.5	4.6	4.5	4.5
Both sexes, 16 to 19 years .....	14.4	13.1	13.4	12.9	11.9	12.6	14.1	12.1	11.3	12.3	13.1	13.0	12.8	12.8	12.1
Men, 16 to 19 years .....	15.5	13.9	14.5	14.4	12.6	13.4	16.4	14.0	12.3	13.1	14.8	13.4	12.4	12.9	13.3
Women, 16 to 19 years .....	13.4	12.3	12.3	11.3	11.3	11.8	11.7	10.2	10.2	11.5	11.2	12.6	13.4	12.7	10.8
Men, 20 years and over .....	4.8	4.1	4.1	4.1	4.2	4.1	4.0	3.8	3.6	4.0	3.6	3.7	3.8	3.8	4.2
Women, 20 years and over .....	4.6	4.1	4.1	4.0	4.0	3.9	3.9	3.6	3.8	4.1	4.1	4.1	4.3	4.1	3.8
Black, total .....	13.0	11.7	10.9	11.2	11.2	11.6	12.0	11.9	10.9	10.8	11.0	11.9	10.9	11.1	11.6
Both sexes, 16 to 19 years .....	34.7	32.4	31.9	30.9	31.1	29.6	34.5	32.4	31.6	30.8	32.4	36.5	27.4	31.6	37.3
Men, 16 to 19 years .....	34.4	32.7	31.9	32.8	32.1	29.8	36.7	33.1	28.6	35.5	36.9	33.5	22.1	30.0	34.1
Women, 16 to 19 years .....	34.9	32.0	31.9	28.6	29.9	29.3	32.0	31.6	34.8	26.2	28.4	40.2	33.1	33.4	40.3
Men, 20 years and over .....	11.1	10.1	9.1	9.6	9.8	10.0	10.4	10.5	9.8	10.0	9.4	9.4	9.3	9.8	10.0
Women, 20 years and over .....	11.6	10.4	9.7	9.8	9.8	10.5	10.4	10.3	9.1	8.8	9.5	10.5	9.9	9.4	9.6
Hispanic origin, total .....	8.8	8.2	7.5	7.8	8.0	7.6	8.4	6.8	6.5	8.3	7.9	8.1	9.0	9.0	8.3
Married men, spouse present .....	3.9	3.3	3.1	3.1	3.3	3.1	3.1	3.1	2.9	3.2	2.9	2.8	2.9	3.1	3.4
Married women, spouse present .....	4.3	3.9	3.8	3.7	3.8	3.7	3.6	3.4	3.5	4.0	3.8	3.8	3.8	3.9	3.8
Women who maintain families .....	9.2	8.1	8.1	7.9	7.7	8.2	8.0	8.0	7.9	7.6	8.3	7.9	8.7	8.0	7.6
Full-time workers .....	5.8	5.2	5.1	5.0	5.0	5.1	5.0	4.8	4.8	5.0	4.8	4.8	4.9	4.9	5.0
Part-time workers .....	8.4	7.6	7.4	7.4	7.1	7.0	7.9	7.3	6.2	7.2	6.9	7.7	7.2	6.9	7.3
Unemployed 15 weeks and over .....	1.7	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.2	1.1	1.0	1.2	1.1	1.1
Labor force time lost <sup>1</sup> .....	7.1	6.3	6.3	6.1	6.2	6.3	6.2	5.9	5.8	6.0	5.9	6.1	6.0	5.9	5.9
<b>INDUSTRY</b>															
Nonagricultural private wage and salary workers ....	6.2	5.5	5.4	5.4	5.5	5.4	5.6	5.1	5.0	5.4	5.2	5.3	5.4	5.4	5.4
Mining .....	10.0	7.9	8.6	8.8	8.9	7.7	6.1	8.0	7.0	5.6	4.5	3.7	5.5	6.5	8.5
Construction .....	11.6	10.6	9.6	10.0	10.6	10.4	10.4	10.0	9.4	9.7	9.3	10.0	10.5	10.3	10.4
Manufacturing .....	6.0	5.3	5.4	5.3	5.1	5.2	5.3	4.9	4.8	4.9	4.9	5.2	5.0	5.2	5.1
Durable goods .....	5.8	5.0	5.2	5.0	4.9	5.0	5.0	4.4	4.7	4.7	4.5	4.6	4.7	4.8	4.7
Nondurable goods .....	6.3	5.7	5.8	5.7	5.3	5.5	5.7	5.5	4.9	5.2	5.5	6.1	5.5	5.9	5.5
Transportation and public utilities .....	4.5	3.9	3.8	3.5	4.0	3.8	3.8	3.9	3.9	4.0	4.0	4.4	4.2	3.6	4.7
Wholesale and retail trade .....	6.9	6.2	6.2	6.0	6.2	6.3	6.3	5.6	5.6	5.9	5.5	6.0	6.2	6.0	5.8
Finance and service industries .....	4.9	4.5	4.4	4.5	4.6	4.1	4.7	4.3	4.1	4.8	4.7	4.3	4.4	4.4	4.5
Government workers .....	3.5	2.8	2.7	2.6	2.5	2.7	2.7	2.7	2.6	2.7	2.9	3.0	2.8	2.7	2.8
Agricultural wage and salary workers .....	10.5	10.6	10.8	10.2	9.3	8.8	9.5	8.9	8.9	10.5	10.3	11.0	8.5	8.6	7.7

<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.



**11. Unemployment rates of civilian workers by State, data not seasonally adjusted**

State	Aug. 1988	Aug. 1989	State	Aug. 1988	Aug. 1989
Alabama	7.6	7.6	Montana	5.6	4.9
Alaska	8.3	5.9	Nebraska	3.6	3.1
Arizona	7.1	6.4	Nevada	4.5	4.5
Arkansas	7.6	6.0	New Hampshire	2.6	3.6
California	5.6	4.7	New Jersey	3.6	4.2
Colorado	5.7	4.9	New Mexico	7.8	6.6
Connecticut	3.4	3.7	New York	4.2	4.8
Delaware	2.6	3.2	North Carolina	3.0	3.5
District of Columbia	5.0	5.0	North Dakota	4.9	4.0
Florida	5.0	5.4	Ohio	5.6	4.7
Georgia	5.3	5.6	Oklahoma	7.4	4.9
Hawaii	3.2	1.8	Oregon	5.5	4.7
Idaho	5.2	4.9	Pennsylvania	4.2	3.9
Illinois	6.7	5.8	Rhode Island	3.0	3.6
Indiana	4.9	4.1	South Carolina	4.3	4.3
Iowa	4.3	4.0	South Dakota	4.3	4.2
Kansas	4.7	4.1	Tennessee	5.9	5.0
Kentucky	7.1	5.6	Texas	6.7	7.2
Louisiana	11.1	8.3	Utah	5.1	4.0
Maine	2.4	3.0	Vermont	2.0	3.6
Maryland	4.4	3.9	Virginia	3.8	3.0
Massachusetts	3.1	3.9	Washington	6.0	5.3
Michigan	7.0	6.7	West Virginia	9.5	7.4
Minnesota	4.6	3.9	Wisconsin	3.7	3.8
Mississippi	9.1	7.3	Wyoming	5.8	6.0
Missouri	5.4	4.8			

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the database.

**12. Employment of workers on nonagricultural payrolls by State, data not seasonally adjusted**

(In thousands)

State	Aug. 1988	July 1989	Aug. 1989 <sup>P</sup>	State	Aug. 1988	July 1989	Aug. 1989 <sup>P</sup>
Alabama	1,546.4	1,571.3	1,576.6	Nebraska	687.8	709.4	710.8
Alaska	226.7	237.9	238.3	Nevada	544.3	577.5	579.5
Arizona	1,381.5	1,394.1	1,401.2	New Hampshire	533.9	531.4	534.9
Arkansas	861.0	881.7	886.0	New Jersey	3,685.6	3,721.7	3,704.9
California	12,041.7	12,368.1	12,342.1	New Mexico	539.9	551.5	553.6
Colorado	1,423.8	1,439.7	1,440.8	New York	8,204.6	8,271.5	8,239.0
Connecticut	1,660.7	1,690.0	1,681.3	North Carolina	2,950.4	2,989.0	3,001.0
Delaware	333.0	340.0	345.2	North Dakota	256.1	260.3	259.0
District of Columbia	683.6	699.2	694.5	Ohio	4,679.1	4,791.5	4,807.0
Florida	5,014.5	5,196.9	5,199.8	Oklahoma	1,130.9	1,135.9	1,132.3
Georgia	2,888.2	2,933.4	2,935.1	Oregon	1,162.6	1,192.5	1,202.8
Hawaii	478.0	493.2	493.4	Pennsylvania	5,049.7	5,100.0	5,084.5
Idaho	351.5	363.6	365.2	Rhode Island	456.3	456.9	455.9
Illinois	5,095.5	5,155.9	5,161.2	South Carolina	1,442.6	1,498.2	1,505.5
Indiana	2,410.7	2,458.9	2,465.6	South Dakota	266.4	268.1	269.0
Iowa	1,150.4	1,184.1	1,183.8	Tennessee	2,064.7	2,069.7	2,082.2
Kansas	1,031.3	1,041.7	1,044.8	Texas	6,643.1	6,776.2	6,771.1
Kentucky	1,369.4	1,391.2	1,398.9	Utah	660.6	682.2	688.6
Louisiana	1,500.2	1,513.4	1,512.6	Vermont	251.2	254.4	253.7
Louisiana	1,500.2	1,513.4	1,512.6	Virginia	2,793.0	2,902.2	2,895.3
Maine	535.0	531.5	535.6	Washington	1,945.0	2,029.7	2,046.0
Maryland	2,103.7	2,135.6	2,123.0	West Virginia	618.0	606.5	613.6
Massachusetts	3,119.3	3,134.5	3,122.4	Wisconsin	2,164.2	2,203.8	2,214.2
Michigan	3,752.7	3,827.1	3,832.7	Wyoming	187.1	190.2	189.2
Minnesota	2,036.1	2,084.1	2,090.9	Puerto Rico	806.2	848.0	810.8
Mississippi	888.6	905.8	902.5	Virgin Islands	41.1	42.2	42.0
Missouri	2,230.0	2,262.0	2,265.6				
Montana	280.8	281.5	282.6				

<sup>P</sup> = preliminary

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the database.



**14. Average weekly hours of production or nonsupervisory workers on private nonagricultural payrolls by industry, monthly data seasonally adjusted**

Industry	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. <sup>P</sup>	Sept. <sup>P</sup>
<b>PRIVATE SECTOR</b> .....	34.8	34.7	34.7	34.8	34.7	34.7	34.8	34.6	34.7	34.9	34.6	34.6	34.8	34.6	34.6
<b>MANUFACTURING</b> .....	41.0	41.1	41.1	41.2	41.2	41.0	41.1	41.1	41.0	41.3	41.0	41.0	41.0	40.9	41.0
Overtime hours .....	3.7	3.9	3.9	4.0	3.9	3.9	3.9	3.9	4.0	3.9	3.8	3.8	3.9	3.7	3.8
<b>Durable goods</b> .....	41.5	41.8	41.9	41.9	41.9	41.7	41.8	41.8	41.7	41.9	41.5	41.5	41.5	41.5	41.5
Overtime hours .....	3.8	4.1	4.1	4.2	4.2	4.1	4.1	4.1	4.1	4.1	3.9	3.9	4.0	3.9	3.9
Lumber and wood products .....	40.6	40.3	40.1	40.7	40.3	40.3	40.3	39.6	40.0	40.5	39.7	39.8	39.6	40.2	40.0
Furniture and fixtures .....	40.0	39.4	39.6	39.4	39.5	39.4	39.8	39.7	39.8	39.9	39.4	39.4	39.5	39.6	39.6
Stone, clay, and glass products .....	42.3	42.3	42.3	42.5	42.6	42.4	42.5	42.2	42.2	42.5	41.9	42.2	42.3	42.5	42.3
Primary metal industries .....	43.1	43.6	43.9	43.7	43.7	43.5	43.6	43.4	43.5	43.3	43.2	43.3	43.0	42.9	42.5
Blast furnaces and basic steel products .....	43.4	44.0	44.5	44.2	44.0	43.8	44.0	43.8	44.1	43.5	43.6	43.7	43.2	43.4	42.3
Fabricated metal products .....	41.6	41.9	42.0	41.9	42.1	41.8	41.9	41.9	41.8	41.9	41.7	41.5	41.5	41.4	41.4
Machinery except electrical .....	42.2	42.6	42.7	42.7	42.5	42.5	42.5	42.6	42.5	42.7	42.5	42.5	42.4	42.2	42.2
Electrical and electronic equipment .....	40.9	41.0	40.9	41.0	41.0	40.8	40.9	40.9	40.6	41.0	40.7	40.7	40.6	40.9	41.1
Transportation equipment .....	42.0	42.7	43.0	43.1	43.1	42.8	42.8	43.1	43.1	42.8	42.5	42.5	42.6	42.5	42.7
Motor vehicles and equipment .....	42.2	43.5	44.1	43.9	44.1	43.7	43.6	43.9	43.9	43.3	42.8	42.7	42.6	42.8	43.7
Instruments and related products .....	41.4	41.5	41.6	41.8	41.6	41.1	41.5	41.5	41.1	41.5	41.1	41.3	41.4	41.0	40.8
Miscellaneous manufacturing .....	39.4	39.2	39.2	39.1	39.3	39.0	39.4	39.5	39.5	39.8	39.6	39.4	39.3	39.5	39.5
<b>Nondurable goods</b> .....	40.2	40.1	40.2	40.2	40.2	40.0	40.1	40.2	40.1	40.4	40.2	40.3	40.2	40.2	40.2
Overtime hours .....	3.6	3.7	3.7	3.7	3.6	3.6	3.6	3.7	3.8	3.8	3.7	3.6	3.8	3.6	3.7
Food and kindred products .....	40.2	40.3	40.3	40.4	40.6	40.2	40.1	40.3	40.4	40.7	40.5	40.7	41.0	40.7	40.7
Textile mill products .....	41.8	41.1	41.0	41.0	41.0	40.5	40.9	40.8	41.1	41.7	41.4	41.4	41.2	41.0	40.7
Apparel and other textile products .....	37.0	37.0	37.1	36.9	37.0	36.8	37.0	37.1	36.9	37.6	37.1	37.1	37.0	37.0	37.1
Paper and allied products .....	43.4	43.2	43.2	43.2	43.1	43.2	43.1	43.2	43.3	43.4	43.3	43.3	43.2	43.4	43.2
Printing and publishing .....	38.0	38.0	38.1	38.0	37.9	37.8	38.0	38.0	37.9	37.9	37.7	37.8	37.6	37.7	37.9
Chemicals and allied products .....	42.3	42.3	42.3	42.5	42.3	42.3	42.3	42.3	42.3	42.6	42.1	42.5	42.5	42.3	42.7
Rubber and miscellaneous plastics products .....	41.6	41.7	41.7	41.6	41.7	41.4	41.7	41.7	41.6	41.6	41.5	41.5	41.4	41.4	41.5
Leather and leather products .....	38.2	37.5	37.5	37.8	37.3	37.7	38.0	38.6	38.0	38.3	37.4	37.9	37.7	38.2	38.3
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	39.2	39.3	39.4	39.4	39.3	39.4	39.6	39.4	39.4	40.1	39.5	39.4	39.4	38.9	39.3
<b>WHOLESALE TRADE</b> .....	37.5	37.4	38.1	38.1	38.0	38.1	38.1	38.1	38.1	38.3	37.9	38.0	38.1	38.0	38.1
<b>RETAIL TRADE</b> .....	29.2	29.1	29.1	29.2	29.0	29.1	29.1	28.9	28.9	29.1	28.9	28.9	29.2	28.8	28.7
<b>SERVICES</b> .....	32.5	32.6	32.6	32.7	32.5	32.7	32.7	32.5	32.6	32.8	32.5	32.5	32.8	32.6	32.7

<sup>P</sup> = preliminary

NOTE: See "Notes on the data" for a description of the most recent benchmark adjustment.

**15. Average hourly earnings of production or nonsupervisory workers on private nonagricultural payrolls by industry, seasonally adjusted**

Industry	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. <sup>P</sup>	Sept. <sup>P</sup>
<b>PRIVATE SECTOR (in current dollars)<sup>1</sup></b> .....	\$8.98	\$9.29	\$9.37	\$9.43	\$9.42	\$9.45	\$9.49	\$9.52	\$9.54	\$9.61	\$9.60	\$9.62	\$9.69	\$9.68	\$9.73
Construction .....	12.71	13.01	13.07	13.08	13.10	13.15	13.18	13.22	13.26	13.33	13.32	13.32	13.42	13.37	13.39
Manufacturing .....	9.91	10.18	10.25	10.29	10.30	10.31	10.33	10.37	10.40	10.40	10.42	10.45	10.48	10.52	10.54
Excluding overtime .....	9.48	9.72	9.78	9.80	9.83	9.85	9.87	9.89	9.92	9.92	9.97	9.99	10.01	10.05	10.07
Transportation and public utilities .....	12.03	12.32	12.37	12.41	12.39	12.36	12.45	12.48	12.50	12.52	12.54	12.54	12.61	12.51	12.64
Wholesale trade .....	9.60	9.94	10.03	10.14	10.06	10.11	10.19	10.18	10.21	10.36	10.28	10.33	10.44	10.39	10.44
Retail trade .....	6.12	6.31	6.36	6.38	6.40	6.43	6.44	6.45	6.47	6.51	6.49	6.52	6.54	6.56	6.58
Finance, insurance, and real estate .....	8.73	9.09	9.18	9.35	9.26	9.35	9.40	9.35	9.36	9.54	9.45	9.53	9.68	9.56	9.64
Services .....	8.49	8.91	9.00	9.07	9.05	9.10	9.15	9.19	9.24	9.32	9.33	9.34	9.46	9.43	9.48
<b>PRIVATE SECTOR (in constant (1977) dollars)<sup>1</sup></b> .....	4.86	4.84	4.83	4.84	4.82	4.82	4.81	4.81	4.80	4.80	4.77	4.77	4.79	4.79	-

<sup>1</sup> Includes mining, not shown separately  
 - Data not available.  
<sup>P</sup> = preliminary

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

**16. Average hourly earnings of production or nonsupervisory workers on private nonagricultural payrolls by industry**

Industry	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. <sup>P</sup>	Sept. <sup>P</sup>
<b>PRIVATE SECTOR</b> .....	\$8.98	\$9.29	\$9.40	\$9.45	\$9.46	\$9.46	\$9.54	\$9.55	\$9.56	\$9.62	\$9.59	\$9.58	\$9.63	\$9.60	\$9.76
<b>MINING</b> .....	12.54	12.75	12.82	12.79	12.89	13.03	13.20	13.22	13.15	13.19	13.13	13.03	12.95	13.04	13.19
<b>CONSTRUCTION</b> .....	12.71	13.01	13.16	13.17	13.08	13.19	13.26	13.21	13.26	13.30	13.28	13.24	13.33	13.33	13.48
<b>MANUFACTURING</b> .....	9.91	10.18	10.25	10.25	10.31	10.37	10.37	10.38	10.41	10.41	10.42	10.44	10.47	10.44	10.54
<b>Durable goods</b> .....	10.44	10.71	10.78	10.79	10.85	10.90	10.90	10.91	10.93	10.93	10.94	10.98	10.99	10.98	11.09
Lumber and wood products .....	8.40	8.61	8.69	8.77	8.69	8.76	8.71	8.69	8.68	8.76	8.79	8.85	8.92	8.93	8.97
Furniture and fixtures .....	7.67	7.94	8.09	8.06	8.02	8.06	8.10	8.08	8.13	8.12	8.16	8.23	8.26	8.29	8.41
Stone, clay, and glass products .....	10.25	10.47	10.55	10.57	10.60	10.57	10.59	10.62	10.62	10.71	10.69	10.73	10.75	10.76	10.81
Primary metal industries .....	11.94	12.15	12.24	12.19	12.22	12.26	12.27	12.27	12.27	12.26	12.25	12.32	12.40	12.35	12.41
Blast furnaces and basic steel products .....	13.77	13.97	14.07	14.03	14.01	14.07	14.04	14.13	14.13	14.06	14.06	14.18	14.33	14.28	14.35
Fabricated metal products .....	10.00	10.26	10.34	10.34	10.36	10.44	10.45	10.46	10.47	10.48	10.49	10.51	10.53	10.50	10.63
Machinery, except electrical .....	10.72	11.01	11.09	11.11	11.22	11.24	11.21	11.23	11.25	11.26	11.29	11.32	11.35	11.34	11.46
Electrical and electronic equipment .....	9.88	10.13	10.19	10.16	10.24	10.29	10.27	10.26	10.30	10.31	10.33	10.37	10.41	10.41	10.46
Transportation equipment .....	12.94	13.31	13.44	13.45	13.56	13.59	13.58	13.59	13.65	13.60	13.58	13.65	13.61	13.70	13.83
Motor vehicles and equipment .....	13.53	14.00	14.10	14.09	14.18	14.23	14.20	14.19	14.28	14.20	14.17	14.22	14.07	14.21	14.42
Instruments and related products .....	9.72	9.98	9.99	10.08	10.07	10.13	10.12	10.14	10.17	10.17	10.17	10.25	10.31	10.28	10.33
Miscellaneous manufacturing .....	7.76	8.01	8.01	8.10	8.12	8.20	8.22	8.23	8.23	8.21	8.24	8.24	8.29	8.19	8.35
<b>Nondurable goods</b> .....	9.18	9.43	9.50	9.49	9.54	9.61	9.62	9.62	9.66	9.65	9.68	9.70	9.77	9.71	9.80
Food and kindred products .....	8.93	9.10	9.11	9.03	9.15	9.25	9.27	9.26	9.33	9.32	9.34	9.37	9.35	9.27	9.32
Tobacco manufactures .....	14.07	14.68	14.09	14.01	14.56	14.31	14.39	14.75	15.34	15.87	16.13	16.48	16.34	15.61	14.21
Textile mill products .....	7.17	7.37	7.43	7.45	7.47	7.52	7.60	7.59	7.59	7.60	7.62	7.65	7.66	7.70	7.76
Apparel and other textile products .....	5.94	6.12	6.21	6.22	6.25	6.29	6.32	6.34	6.32	6.32	6.32	6.33	6.28	6.32	6.40
Paper and allied products .....	11.43	11.65	11.72	11.68	11.74	11.81	11.78	11.80	11.84	11.83	11.89	11.91	12.04	11.92	12.01
Printing and publishing .....	10.28	10.52	10.70	10.68	10.67	10.70	10.73	10.74	10.79	10.73	10.76	10.75	10.83	10.90	11.04
Chemicals and allied products .....	12.37	12.67	12.75	12.78	12.86	12.90	12.85	12.88	12.91	12.92	12.98	12.98	13.12	13.09	13.15
Petroleum and coal products .....	14.58	14.98	15.01	15.14	15.18	15.21	15.24	15.45	15.46	15.50	15.34	15.23	15.34	15.25	15.45
Rubber and miscellaneous plastics products .....	8.92	9.14	9.22	9.23	9.26	9.31	9.32	9.31	9.33	9.35	9.40	9.41	9.45	9.44	9.51
Leather and leather products .....	6.08	6.27	6.30	6.33	6.41	6.44	6.48	6.49	6.54	6.55	6.58	6.59	6.54	6.54	6.60
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	12.03	12.32	12.40	12.42	12.46	12.42	12.47	12.50	12.46	12.51	12.49	12.48	12.58	12.50	12.67
<b>WHOLESALE TRADE</b> .....	9.60	9.94	10.04	10.10	10.07	10.14	10.23	10.23	10.21	10.36	10.28	10.31	10.40	10.35	10.44
<b>RETAIL TRADE</b> .....	6.12	6.31	6.38	6.39	6.43	6.43	6.48	6.47	6.48	6.52	6.49	6.49	6.49	6.49	6.61
<b>FINANCE, INSURANCE, AND REAL ESTATE</b> .....	8.73	9.09	9.14	9.29	9.27	9.32	9.46	9.47	9.43	9.59	9.48	9.48	9.59	9.49	9.60
<b>SERVICES</b> .....	8.49	8.91	9.00	9.09	9.11	9.16	9.25	9.28	9.29	9.34	9.30	9.26	9.33	9.29	9.48

<sup>P</sup> = preliminary  
 NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

**17. Average weekly earnings of production or nonsupervisory workers on private nonagricultural payrolls by industry**

Industry	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug. <sup>P</sup>	Sept. <sup>P</sup>
<b>PRIVATE SECTOR</b>	\$312.50	\$322.36	\$327.12	\$329.81	\$328.26	\$330.15	\$329.13	\$327.57	\$328.86	\$334.78	\$330.86	\$333.38	\$338.01	\$335.04	\$338.67
Current dollars .....	169.28	167.81	168.10	168.96	167.99	168.70	167.41	165.94	165.76	167.39	164.53	165.37	167.08	165.62	-
Seasonally adjusted .....															
Constant (1977) dollars .....	531.70	539.33	541.00	544.85	540.09	557.68	557.04	551.27	552.30	564.53	551.46	555.08	550.38	558.11	567.17
<b>MINING</b> .....	480.44	493.08	505.34	514.95	494.42	491.99	483.99	478.20	495.92	504.07	500.66	503.12	518.54	518.54	520.33
<b>CONSTRUCTION</b> .....	406.31	418.40	423.33	423.33	427.87	432.43	425.17	423.50	426.81	426.81	426.18	429.08	424.04	425.95	433.19
<b>MANUFACTURING</b>	220.10	217.80	217.54	216.87	218.97	220.97	216.26	214.54	215.13	213.41	211.92	212.84	209.61	210.55	-
Current dollars .....	433.26	447.68	452.76	453.18	457.87	463.25	455.62	452.77	455.78	455.78	454.01	457.87	449.49	452.38	461.34
Constant (1977) dollars .....	341.04	346.98	350.21	359.57	347.60	353.90	345.79	338.91	345.46	354.78	352.48	357.54	352.34	360.77	360.59
<b>Durable goods</b> .....	306.80	312.84	324.41	323.21	320.00	326.43	319.14	315.93	321.95	319.12	318.24	324.26	320.49	329.94	337.24
Lumber and wood products .....	433.58	442.88	451.54	454.51	452.62	446.05	439.49	436.48	444.98	456.25	453.26	457.10	456.88	460.53	461.59
Furniture and fixtures .....	514.61	529.74	538.56	531.48	536.46	540.67	536.20	532.52	533.75	529.63	527.98	533.46	528.24	524.88	528.67
Stone, clay, and glass products .....	597.62	614.68	628.93	615.92	616.44	621.89	617.76	617.48	621.72	613.02	613.02	622.50	619.06	614.04	609.88
Primary metal industries .....	416.00	429.89	435.31	434.28	441.34	445.79	438.90	435.14	436.60	437.02	435.34	438.27	428.57	431.55	441.15
Blast furnaces and basic steel products .....	452.38	469.03	473.54	473.29	480.22	488.94	477.55	477.28	479.25	478.55	477.57	482.23	475.57	472.88	483.61
Fabricated metal products .....	404.09	415.33	417.79	416.56	423.94	430.12	422.10	416.56	417.15	419.62	417.33	423.10	416.40	423.69	429.91
Machinery, except electrical .....	543.48	568.34	577.92	579.70	591.22	591.17	582.58	584.37	591.05	584.80	579.87	581.49	566.18	569.92	590.54
Electrical and electronic equipment .....	570.97	609.00	621.81	619.96	632.43	633.24	619.12	621.52	631.18	620.54	613.56	611.46	582.50	588.29	630.15
Transportation equipment .....	402.41	414.17	415.58	420.34	422.94	425.46	420.99	420.81	419.00	420.02	414.94	423.33	420.65	418.40	421.46
Motor vehicles and equipment .....	305.74	313.99	314.79	320.76	323.18	325.54	323.05	322.62	324.26	325.12	324.66	324.66	319.99	321.87	330.66
Instruments and related products .....	369.04	378.14	384.75	382.45	386.37	389.21	383.84	382.88	385.43	386.97	387.20	390.91	390.80	390.34	396.90
Miscellaneous manufacturing .....	358.99	366.73	371.69	367.52	374.24	377.40	369.87	366.70	372.27	372.80	377.34	381.36	382.42	381.00	383.98
<b>Nondurable goods</b> .....	548.73	584.26	580.51	578.61	586.77	570.97	546.82	557.55	556.84	604.65	637.14	660.85	619.29	582.25	562.72
Food and kindred products .....	299.71	302.91	307.60	306.94	309.26	308.32	309.32	307.40	311.19	313.12	313.94	318.24	311.00	318.01	318.94
Tobacco manufactures .....	219.78	226.44	230.39	230.76	233.13	233.99	232.58	233.21	233.95	234.47	233.84	236.74	230.48	234.47	237.44
Textile mill products .....	496.06	503.28	512.16	505.74	509.52	519.64	508.90	506.22	509.12	509.87	512.46	514.51	516.52	513.75	524.84
Apparel and other textile products .....	390.64	399.76	411.95	406.91	406.53	410.88	404.52	404.90	408.94	405.59	402.42	402.05	405.04	412.02	422.83
Paper and allied products .....	523.25	535.94	539.33	540.59	547.84	553.41	544.84	544.82	546.09	549.10	546.46	551.65	553.66	549.78	561.51
Printing and publishing .....	641.52	665.11	672.45	676.76	670.96	673.80	662.94	679.80	667.87	686.65	673.43	679.26	679.56	666.43	681.35
Chemicals and allied products .....	371.07	381.14	384.47	384.89	388.92	391.95	390.51	387.30	387.20	388.03	390.10	391.46	385.56	387.98	394.67
Petroleum and coal products .....	232.26	235.13	236.25	239.91	239.73	246.65	244.94	245.32	244.60	247.59	247.41	255.03	247.21	251.79	252.78
Rubber and miscellaneous plastics products .....															
Leather and leather products .....	471.58	484.18	489.80	490.59	489.68	490.59	490.07	488.75	488.43	497.90	490.86	494.21	500.68	491.25	499.20
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	365.76	378.71	382.52	385.82	382.66	387.35	387.72	386.69	386.96	395.75	389.61	392.81	398.32	394.34	397.76
<b>WHOLESALE TRADE</b> .....	178.70	183.62	185.66	185.95	185.18	190.33	184.03	183.10	184.68	188.43	186.91	189.51	194.05	192.10	190.37
<b>RETAIL TRADE</b> .....	316.90	326.33	327.21	334.44	330.94	333.66	341.51	339.03	337.59	348.12	337.49	339.38	348.12	339.74	342.72
<b>FINANCE, INSURANCE, AND REAL ESTATE</b> .....	275.93	290.47	292.50	297.24	296.08	298.62	301.55	300.67	301.00	306.35	301.32	302.80	308.82	305.64	309.05
<b>SERVICES</b> .....															

- Data not available.  
P = preliminary

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

18. Diffusion indexes of employment change, seasonally adjusted

(In percent)

Time span and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Private nonagricultural payrolls, 349 industries												
Over 1-month span:												
1987 .....	55.6	59.3	61.0	61.9	58.6	59.7	65.3	60.6	63.0	67.8	64.5	60.7
1988 .....	60.7	63.5	63.0	62.8	61.3	67.2	63.6	58.0	55.4	63.9	68.2	64.6
1989 .....	68.3	60.5	61.0	58.2	55.6	59.7	55.6	56.3	47.4	-	-	-
Over 3-month span:												
1987 .....	60.7	62.0	66.6	65.2	65.8	65.9	67.8	71.1	71.2	72.3	70.9	65.9
1988 .....	64.8	65.6	69.5	70.2	71.1	71.9	71.2	64.2	65.3	70.1	73.4	74.6
1989 .....	71.6	70.1	64.5	61.9	61.6	60.7	62.5	52.1	-	-	-	-
Over 6-month span:												
1987 .....	67.3	65.8	64.8	66.8	67.6	69.5	71.3	73.5	73.2	71.5	71.8	72.2
1988 .....	69.9	70.2	71.5	73.9	73.9	69.1	70.2	74.6	73.5	73.9	74.5	75.8
1989 .....	75.1	69.5	68.2	66.0	63.5	58.5	-	-	-	-	-	-
Over 12-month span:												
1987 .....	66.6	68.2	68.2	71.8	71.9	72.5	72.2	74.1	75.4	72.5	73.8	76.9
1988 .....	76.2	76.1	74.8	74.6	75.8	74.9	78.1	75.5	75.5	74.8	74.9	74.1
1989 .....	73.2	72.5	69.1	-	-	-	-	-	-	-	-	-
Manufacturing payrolls, 141 industries												
Over 1-month span:												
1987 .....	44.3	53.9	54.3	55.7	55.3	54.3	62.8	59.9	63.8	59.9	65.6	56.4
1988 .....	58.5	56.0	55.0	59.9	58.5	61.7	59.6	51.1	49.3	62.8	64.9	58.5
1989 .....	62.4	53.5	53.2	49.6	46.8	48.6	49.6	47.2	34.8	-	-	-
Over 3-month span:												
1987 .....	52.1	51.4	59.6	61.3	58.5	62.8	67.0	71.6	68.4	70.6	67.7	64.5
1988 .....	63.1	61.0	62.4	64.9	67.4	67.0	64.5	58.2	62.1	66.7	71.3	70.9
1989 .....	67.4	63.8	55.7	51.8	49.3	48.6	49.6	35.5	-	-	-	-
Over 6-month span:												
1987 .....	57.4	56.7	55.3	62.4	64.9	67.0	67.4	70.6	71.3	69.5	69.5	68.1
1988 .....	66.3	66.3	67.7	69.5	66.7	64.2	66.0	70.9	68.8	69.9	71.6	74.1
1989 .....	69.5	58.5	55.7	52.8	50.4	40.4	-	-	-	-	-	-
Over 12-month span:												
1987 .....	55.3	58.5	58.5	63.5	66.3	67.4	71.6	72.7	71.6	69.1	68.4	72.3
1988 .....	73.8	70.2	70.9	71.6	72.0	69.9	70.9	69.1	71.6	70.2	69.9	67.0
1989 .....	63.1	63.1	55.3	-	-	-	-	-	-	-	-	-

- Data not available.

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing

employment. Data for the 2 most recent months shown in each span are preliminary. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.



## 19. Annual data: Employment status of the noninstitutional population

(Numbers in thousands)

Employment status	1980	1981	1982	1983	1984	1985	1986	1987	1988
Noninstitutional population .....	169,349	171,775	173,939	175,891	178,080	179,912	182,293	184,490	186,322
Labor force:									
Total (number) .....	108,544	110,315	111,872	113,226	115,241	117,167	119,540	121,602	123,378
Percent of population .....	64.1	64.2	64.3	64.4	64.7	65.1	65.6	65.9	66.2
Employed:									
Total (number) .....	100,907	102,042	101,194	102,510	106,702	108,856	111,303	114,177	116,677
Percent of population .....	59.6	59.4	58.2	58.3	59.9	60.5	61.1	61.9	62.6
Resident Armed Forces .....	1,604	1,645	1,668	1,676	1,697	1,706	1,706	1,737	1,709
Civilian									
Total .....	99,303	100,397	99,526	100,834	105,005	107,150	109,597	112,440	114,968
Agriculture .....	3,364	3,368	3,401	3,383	3,321	3,179	3,163	3,208	3,169
Nonagricultural industries .....	95,938	97,030	96,125	97,450	101,685	103,971	106,434	109,232	111,800
Unemployed:									
Total (number) .....	7,637	8,273	10,678	10,717	8,539	8,312	8,237	7,425	6,701
Percent of labor force .....	7.0	7.5	9.5	9.5	7.4	7.1	6.9	6.1	5.4
Not in labor force (number) .....	60,806	61,460	62,067	62,665	62,839	62,744	62,752	62,888	62,944

## 20. Annual data: Employment levels by industry

(Numbers in thousands)

Industry	1980	1981	1982	1983	1984	1985	1986	1987	1988
Total employment .....	90,406	91,156	89,566	90,200	94,496	97,519	99,525	102,200	105,584
Private sector .....	74,166	75,126	73,729	74,330	78,472	81,125	82,832	85,190	88,212
Goods-producing .....	25,658	25,497	23,813	23,334	24,727	24,859	24,558	24,708	25,249
Mining .....	1,027	1,139	1,128	952	966	927	777	717	721
Construction .....	4,346	4,188	3,905	3,948	4,383	4,673	4,816	4,967	5,125
Manufacturing .....	20,285	20,170	18,781	18,434	19,378	19,260	18,965	19,024	19,403
Service-producing .....	64,748	65,659	65,753	66,866	69,769	72,660	74,967	77,492	80,335
Transportation and public utilities .....	5,146	5,165	5,082	4,954	5,159	5,238	5,255	5,372	5,548
Wholesale trade .....	5,275	5,358	5,278	5,268	5,555	5,717	5,753	5,844	6,029
Retail trade .....	15,035	15,189	15,179	15,613	16,545	17,356	17,930	18,483	19,110
Finance, insurance, and real estate .....	5,160	5,298	5,341	5,468	5,689	5,955	6,283	6,547	6,676
Services .....	17,890	18,619	19,036	19,694	20,797	22,000	23,053	24,236	25,600
Government .....	16,241	16,031	15,837	15,869	16,024	16,394	16,693	17,010	17,372
Federal .....	2,866	2,772	2,739	2,774	2,807	2,875	2,899	2,943	2,971
State .....	3,610	3,640	3,640	3,662	3,734	3,832	3,893	3,967	4,063
Local .....	9,765	9,619	9,458	9,434	9,482	9,687	9,901	10,100	10,339

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

**21. Annual data: Average hours and earnings of production or nonsupervisory workers on nonagricultural payrolls, by industry**

Industry	1980	1981	1982	1983	1984	1985	1986	1987	1988
<b>Private sector:</b>									
Average weekly hours .....	35.3	35.2	34.8	35.0	35.2	34.9	34.8	34.8	34.7
Average hourly earnings (in dollars) .....	6.66	7.25	7.68	8.02	8.32	8.57	8.76	8.98	9.29
Average weekly earnings (in dollars) .....	235.10	255.20	267.26	280.70	292.86	299.09	304.85	312.50	322.36
<b>Mining:</b>									
Average weekly hours .....	43.3	43.7	42.7	42.5	43.3	43.4	42.2	42.4	42.3
Average hourly earnings (in dollars) .....	9.17	10.04	10.77	11.28	11.63	11.98	12.46	12.54	12.75
Average weekly earnings (in dollars) .....	397.06	438.75	459.88	479.40	503.58	519.93	525.81	531.70	539.33
<b>Construction:</b>									
Average weekly hours .....	37.0	36.9	36.7	37.1	37.8	37.7	37.4	37.8	37.9
Average hourly earnings (in dollars) .....	9.94	10.82	11.63	11.94	12.13	12.32	12.48	12.71	13.01
Average weekly earnings (in dollars) .....	367.78	399.26	426.82	442.97	458.51	464.46	466.75	480.44	493.08
<b>Manufacturing:</b>									
Average weekly hours .....	39.7	39.8	38.9	40.1	40.7	40.5	40.7	41.0	41.1
Average hourly earnings (in dollars) .....	7.27	7.99	8.49	8.83	9.19	9.54	9.73	9.91	10.18
Average weekly earnings (in dollars) .....	288.62	318.00	330.26	354.08	374.03	386.37	396.01	406.31	418.40
<b>Transportation and public utilities:</b>									
Average weekly hours .....	39.6	39.4	39.0	39.0	39.4	39.5	39.2	39.2	39.3
Average hourly earnings (in dollars) .....	8.87	9.70	10.32	10.79	11.12	11.40	11.70	12.03	12.32
Average weekly earnings (in dollars) .....	351.25	382.18	402.48	420.81	438.13	450.30	458.64	471.58	484.18
<b>Wholesale trade:</b>									
Average weekly hours .....	38.5	38.5	38.3	38.5	38.5	38.4	38.3	38.1	38.1
Average hourly earnings (in dollars) .....	6.96	7.56	8.09	8.55	8.89	9.16	9.35	9.60	9.94
Average weekly earnings (in dollars) .....	267.96	291.06	309.85	329.18	342.27	351.74	358.11	365.76	378.71
<b>Retail trade:</b>									
Average weekly hours .....	30.2	30.1	29.9	29.8	29.8	29.4	29.2	29.2	29.1
Average hourly earnings (in dollars) .....	4.88	5.25	5.48	5.74	5.85	5.94	6.03	6.12	6.31
Average weekly earnings (in dollars) .....	147.98	158.03	163.85	171.05	174.33	174.64	176.08	178.70	183.62
<b>Finance, insurance, and real estate:</b>									
Average weekly hours .....	36.2	36.3	36.2	36.2	36.5	36.4	36.4	36.3	35.9
Average hourly earnings (in dollars) .....	5.79	6.31	6.78	7.29	7.63	7.94	8.36	8.73	9.09
Average weekly earnings (in dollars) .....	209.60	229.05	245.44	263.90	278.50	289.02	304.30	316.90	326.33
<b>Services:</b>									
Average weekly hours .....	32.6	32.6	32.6	32.7	32.6	32.5	32.5	32.5	32.6
Average hourly earnings (in dollars) .....	5.85	6.41	6.92	7.31	7.59	7.90	8.18	8.49	8.91
Average weekly earnings (in dollars) .....	190.71	208.97	225.59	239.04	247.43	256.75	265.85	275.93	290.47

## 22. Employment Cost Index, compensation,<sup>1</sup> by occupation and industry group

(June 1981 = 100)

Series	1987			1988			1989		Percent change		
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
	June 1989										
<b>Civilian workers</b> <sup>2</sup> .....	135.9	137.5	138.6	140.6	142.1	144.0	145.5	147.3	148.9	1.1	4.8
Workers, by occupational group:											
White-collar workers .....	139.3	141.2	142.2	144.2	145.7	147.9	149.7	151.9	153.4	1.0	5.3
Blue-collar workers .....	130.1	131.3	132.5	134.7	136.2	137.2	138.2	139.6	141.3	1.2	3.7
Service occupations .....	138.9	139.9	140.8	142.9	144.3	147.2	148.5	150.0	151.2	.8	4.8
Workers, by industry division:											
Goods-producing .....	131.1	132.2	133.5	135.8	137.3	138.2	139.3	140.7	142.3	1.1	3.6
Manufacturing .....	131.5	132.7	134.1	136.8	138.1	139.0	140.1	141.9	143.5	1.1	3.9
Service-producing .....	138.9	140.8	141.7	143.6	145.1	147.6	149.2	151.4	152.9	1.0	5.4
Services .....	145.8	149.2	150.6	152.8	153.8	157.7	159.7	161.8	163.1	.8	6.0
Health services .....	-	-	-	-	-	-	-	-	-	1.2	6.2
Hospitals .....	-	-	-	-	-	-	-	-	-	1.3	6.5
Public administration <sup>3</sup> .....	144.7	146.4	148.1	150.3	151.2	154.0	154.4	156.7	157.9	.8	4.4
Nonmanufacturing .....	137.8	139.6	140.5	142.3	143.9	146.1	147.7	149.7	151.2	1.0	5.1
<b>Private industry workers</b> .....	133.8	135.1	136.0	138.1	139.8	141.2	142.6	144.4	146.1	1.2	4.5
Excluding sales occupations .....	134.1	135.5	136.6	138.7	140.2	141.7	142.9	144.7	146.2	1.0	4.3
Workers, by occupational group:											
White-collar workers .....	137.0	138.5	139.3	141.2	143.0	144.6	146.3	148.6	150.3	1.1	5.1
Excluding sales occupations .....	138.2	140.0	141.1	143.0	144.6	146.4	147.6	149.9	151.4	1.0	4.7
Professional specialty and technical occupations .....	-	-	-	-	-	-	-	-	-	1.0	4.8
Executive, administrative, and managerial occupations .....	-	-	-	-	-	-	-	-	-	.9	4.4
Sales occupations .....	-	-	-	-	-	-	-	-	-	1.8	6.9
Administrative support occupations, including clerical .....	-	-	-	-	-	-	-	-	-	1.1	4.9
Blue-collar workers .....	129.5	130.6	131.8	134.1	135.6	136.5	137.6	138.9	140.6	1.2	3.7
Precision production, craft, and repair occupation .....	-	-	-	-	-	-	-	-	-	1.3	3.4
Machine operators, assemblers, and inspectors .....	-	-	-	-	-	-	-	-	-	1.1	4.3
Transportation and material moving occupations .....	-	-	-	-	-	-	-	-	-	1.0	3.1
Handlers, equipment cleaners, helpers, and laborers .....	-	-	-	-	-	-	-	-	-	1.2	4.0
Service occupations .....	135.2	135.9	136.7	138.6	140.1	142.2	143.9	145.4	146.5	.8	4.6
Workers, by industry division:											
Goods-producing .....	130.8	131.9	133.2	135.6	137.1	137.9	139.0	140.4	142.0	1.1	3.6
Excluding sales occupations .....	130.5	131.6	132.9	135.2	136.8	137.6	138.7	140.2	141.7	1.1	3.6
Construction .....	-	-	-	-	-	-	-	-	-	1.0	3.7
Manufacturing .....	131.5	132.7	134.1	136.8	138.1	139.0	140.1	141.9	143.5	1.1	3.9
Durables .....	-	-	-	-	-	-	-	-	-	1.0	3.6
Nondurables .....	-	-	-	-	-	-	-	-	-	1.2	4.6
Service-producing .....	136.3	137.7	138.4	140.2	142.1	143.8	145.5	147.7	149.5	1.2	5.2
Excluding sales occupations .....	137.4	139.1	140.0	141.9	143.5	145.4	146.7	148.8	150.4	1.1	4.8
Transportation and public utilities .....	-	-	-	-	-	-	-	-	-	1.3	3.3
Transportation .....	-	-	-	-	-	-	-	-	-	1.3	3.2
Public utilities .....	-	-	-	-	-	-	-	-	-	1.2	3.4
Communications .....	-	-	-	-	-	-	-	-	-	1.5	-
Electric, gas, and sanitary services .....	-	-	-	-	-	-	-	-	-	.8	-
Wholesale and retail trade .....	-	-	-	-	-	-	-	-	-	1.1	4.4
Excluding sales occupations .....	-	-	-	-	-	-	-	-	-	.8	3.9
Wholesale trade .....	-	-	-	-	-	-	-	-	-	1.5	5.6
Excluding sales occupations .....	-	-	-	-	-	-	-	-	-	1.1	3.9
Retail trade .....	-	-	-	-	-	-	-	-	-	.9	3.9
Food stores .....	-	-	-	-	-	-	-	-	-	.2	-
Finance, insurance, and real estate .....	-	-	-	-	-	-	-	-	-	1.7	7.8
Excluding sales occupations .....	-	-	-	-	-	-	-	-	-	1.6	5.7
Banking, savings and loan, and other credit agencies .....	-	-	-	-	-	-	-	-	-	1.2	4.1
Insurance .....	-	-	-	-	-	-	-	-	-	1.7	-
Service .....	-	-	-	-	-	-	-	-	-	1.0	5.8
Business services .....	-	-	-	-	-	-	-	-	-	1.9	5.4
Health services .....	-	-	-	-	-	-	-	-	-	1.1	6.2
Hospitals .....	-	-	-	-	-	-	-	-	-	1.2	6.9
Nonmanufacturing .....	135.1	136.4	137.1	138.9	140.8	142.4	143.9	145.9	147.6	1.2	4.8
<b>State and local government workers</b> .....	146.3	149.7	151.1	153.1	153.6	157.8	159.6	161.5	162.5	.6	5.8
Workers, by occupational group:											
White-collar workers .....	147.5	151.2	152.7	154.8	155.2	159.6	161.8	163.7	164.6	.5	6.1
Blue-collar workers .....	141.3	143.3	144.3	145.9	145.9	148.4	149.1	151.9	153.0	.7	4.9

See footnotes at end of table.

**22. Continued—Employment Cost Index, compensation,<sup>1</sup> by occupation and industry group**

(June 1981=100)

Series	1987			1988				1989			Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended	
	June 1989											
Workers, by industry division:												
Services .....	147.6	151.8	153.1	155.2	155.6	160.5	163.0	164.6	165.5	0.5	6.4	
Hospitals and other services <sup>4</sup> .....	143.3	145.1	146.3	150.3	150.4	153.2	155.2	157.2	158.7	1.0	5.5	
Health services .....	-	-	-	-	-	-	-	-	-	1.3	5.9	
Schools .....	149.1	154.1	155.5	156.8	157.3	163.1	165.7	167.2	167.8	.4	6.7	
Elementary and secondary .....	150.7	156.5	157.8	158.9	159.4	165.4	168.3	169.3	169.9	.4	6.6	
Public administration <sup>2</sup> .....	144.7	146.4	148.1	150.3	151.2	154.0	154.4	156.7	157.9	.8	4.4	

<sup>1</sup> Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

<sup>2</sup> Consist of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

<sup>3</sup> Consist of legislative, judicial, administrative, and regulatory activities.

<sup>4</sup> Includes, for example, library, social, and health services.

- Data not available.

**23. Employment Cost Index, wages and salaries, by occupation and industry group**

(June 1981=100)

Series	1987			1988				1989			Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended	
	June 1989											
Civilian workers <sup>1</sup> .....	133.5	135.2	136.1	137.4	138.7	140.5	141.9	143.4	144.6	0.8	4.3	
Workers, by occupational group:												
White-collar workers .....	137.3	139.4	140.2	141.5	143.0	145.2	146.8	148.6	149.8	.8	4.8	
Blue-collar workers .....	127.1	128.3	129.4	130.4	131.6	132.5	133.4	134.6	136.0	1.0	3.3	
Service occupations .....	134.7	136.0	136.6	138.0	139.3	141.8	142.9	143.9	144.8	.6	3.9	
Workers, by industry division:												
Goods-producing .....	128.5	129.8	131.0	132.2	133.4	134.1	135.1	136.3	137.7	1.0	3.2	
Manufacturing .....	129.5	130.8	132.2	133.3	134.4	135.1	136.2	137.4	138.8	1.0	3.3	
Service-producing .....	136.5	138.5	139.2	140.5	141.9	144.2	145.8	147.5	148.7	.8	4.8	
Services .....	143.4	146.8	148.2	149.5	150.4	154.0	155.7	157.4	158.4	.6	5.3	
Health services .....	-	-	-	-	-	-	-	-	-	1.0	5.9	
Hospitals .....	-	-	-	-	-	-	-	-	-	1.1	6.1	
Public administration <sup>2</sup> .....	141.0	142.6	143.8	145.5	146.4	148.9	149.4	150.9	151.8	.6	3.7	
Nonmanufacturing .....	135.2	137.1	137.8	139.0	140.5	142.7	144.1	145.8	147.0	.8	4.6	
Private industry workers .....	131.7	133.0	133.8	135.1	136.6	137.9	139.3	140.8	142.2	1.0	4.1	
Excluding sales occupations .....	132.1	133.6	134.7	135.9	137.2	138.6	139.7	141.2	142.5	.9	3.9	
Workers, by occupational group:												
White-collar workers .....	135.4	137.0	137.6	139.0	140.8	142.4	144.0	145.9	147.3	1.0	4.6	
Excluding sales occupations .....	137.1	139.1	140.1	141.5	142.9	144.7	146.0	147.8	149.0	.8	4.3	
Professional specialty and technical occupations .....	139.1	141.2	142.6	144.0	145.8	148.1	148.9	151.0	152.1	.7	4.3	
Executive, administrative, and managerial occupations .....	136.4	138.6	139.2	139.9	141.3	142.5	144.4	146.2	147.3	.8	4.2	
Sales occupations .....	127.1	127.0	126.1	127.5	130.8	131.5	134.4	136.7	138.7	1.5	6.0	
Administrative support occupations, including clerical .....	135.5	137.1	138.1	140.2	141.2	143.2	144.1	146.0	147.4	1.0	4.4	
Blue-collar workers .....	126.6	127.7	128.9	129.9	131.1	131.9	132.9	134.0	135.4	1.0	3.3	
Precision production, craft, and repair occupations .....	128.8	130.2	131.1	132.1	133.4	134.0	134.9	136.1	137.8	1.2	3.3	
Machine operators, assemblers, and inspectors .....	126.7	127.5	129.2	129.9	131.2	131.9	133.3	134.5	135.9	1.0	3.6	
Transportation and material moving occupations .....	121.5	122.3	122.9	123.7	125.4	126.7	126.9	127.8	128.7	.7	2.6	
Handlers, equipment cleaners, helpers, and laborers .....	122.6	123.7	125.0	126.7	127.5	128.4	129.3	130.4	131.6	.9	3.2	
Service occupations .....	131.9	132.6	133.2	134.5	135.8	137.6	139.1	140.0	140.9	.6	3.8	
Workers, by industry division:												
Goods-producing .....	128.3	129.6	130.8	132.0	133.2	133.9	134.9	136.1	137.4	1.0	3.2	
Excluding sales occupations .....	128.3	129.5	130.8	131.8	133.2	133.8	134.9	136.1	137.4	1.0	3.2	
Construction .....	122.7	123.8	124.7	125.9	127.6	128.6	129.4	130.4	131.6	.9	3.1	

See footnotes at end of table.

### 23. Continued— Employment Cost Index, wages and salaries, by occupation and industry group

(June 1981 = 100)

Series	1987			1988			1989		Percent change		
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
	June 1989										
Manufacturing .....	129.5	130.8	132.2	133.3	134.4	135.1	136.2	137.4	138.8	1.0	3.3
Durables .....	128.7	129.7	131.1	132.1	133.1	133.7	134.6	135.9	137.3	1.0	3.2
Nondurables .....	131.0	132.8	134.1	135.6	136.7	137.6	139.1	140.2	141.6	1.0	3.6
Service-producing .....	134.3	135.7	136.2	137.5	139.3	141.0	142.6	144.5	145.8	.9	4.7
Excluding sales occupations .....	135.5	137.3	138.1	139.4	140.8	142.7	143.9	145.7	146.9	.8	4.3
Transportation and public utilities .....	129.3	130.0	130.2	131.3	132.5	133.5	133.4	134.6	135.3	.5	2.1
Transportation .....	-	-	-	-	-	-	-	-	-	.6	1.9
Public utilities .....	-	-	-	-	-	-	-	-	-	.5	2.5
Communications .....	-	-	-	-	-	-	-	-	-	.1	-
Electric, gas, and sanitary services .....	-	-	-	-	-	-	-	-	-	1.0	-
Wholesale and retail trade .....	129.9	130.6	130.7	131.9	134.6	136.0	136.9	138.6	139.9	.9	3.9
Excluding sales occupations .....	130.5	131.7	132.3	133.4	135.2	136.5	137.8	139.2	140.0	.6	3.6
Wholesale trade .....	137.2	137.8	138.5	139.0	141.7	143.2	143.6	147.5	149.0	1.0	5.2
Excluding sales occupations .....	133.3	134.9	136.0	136.8	138.2	139.6	140.4	141.8	142.9	.8	3.4
Retail trade .....	127.1	127.8	127.7	129.2	131.7	133.2	134.3	135.1	136.3	.9	3.5
Food stores .....	-	-	-	-	-	-	-	-	-	.0	-
Finance, insurance, and real estate .....	131.5	131.8	131.6	132.9	134.9	134.9	139.9	142.7	145.2	1.8	7.6
Excluding sales occupations .....	131.5	131.8	131.6	132.9	134.9	134.9	139.9	142.7	145.2	1.8	7.6
Banking, savings and loan, and other credit agencies .....	-	-	-	-	-	-	-	-	-	1.2	4.2
Insurance .....	-	-	-	-	-	-	-	-	-	1.6	-
Services .....	142.8	145.9	147.1	148.6	149.8	152.9	154.4	156.4	157.8	.9	5.3
Business services .....	-	-	-	-	-	-	-	-	-	1.6	5.2
Health services .....	-	-	-	-	-	-	-	-	-	.9	5.9
Hospitals .....	-	-	-	-	-	-	-	-	-	1.1	6.4
Nonmanufacturing .....	132.8	134.2	134.8	136.0	137.8	139.4	140.8	142.6	143.9	.9	4.4
<b>State and local government workers .....</b>	<b>142.8</b>	<b>146.1</b>	<b>147.4</b>	<b>148.7</b>	<b>149.1</b>	<b>153.0</b>	<b>154.5</b>	<b>155.8</b>	<b>156.6</b>	<b>.5</b>	<b>5.0</b>
Workers, by occupational group:											
White-collar workers .....	144.1	147.7	149.3	150.5	150.8	154.9	156.8	158.0	158.7	.4	5.2
Blue-collar workers .....	136.9	139.0	139.6	141.1	141.1	143.5	144.1	146.1	146.8	.5	4.0
Workers, by industry division:											
Services .....	144.2	148.2	149.5	150.7	151.1	155.6	157.6	158.6	159.3	.4	5.4
Hospitals and other services <sup>3</sup> .....	139.4	141.2	142.2	144.5	144.7	147.4	148.7	150.2	151.5	.9	4.7
Health services .....	-	-	-	-	-	-	-	-	-	1.1	5.9
Schools .....	145.6	150.3	151.8	152.6	153.0	158.0	160.3	161.2	161.7	.3	5.7
Elementary and secondary .....	146.6	152.0	153.4	154.0	154.3	159.7	162.1	162.8	163.3	.3	5.8
Public administration <sup>2</sup> .....	141.0	142.6	143.8	145.5	146.4	148.9	149.4	150.9	151.8	.6	3.7

<sup>1</sup> Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.  
<sup>2</sup> Consists of legislative, judicial, administrative, and regulatory activities.

<sup>3</sup> Includes, for example, library, social and health services.  
 - Data not available.

### 24. Employment Cost Index, benefits, private industry workers by occupation and industry group

(June 1981 = 100)

Series	1987			1988			1989		Percent change		
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
	June 1989										
<b>Private industry workers .....</b>	<b>139.3</b>	<b>140.3</b>	<b>141.7</b>	<b>146.1</b>	<b>148.2</b>	<b>149.7</b>	<b>151.3</b>	<b>154.0</b>	<b>156.5</b>	<b>1.6</b>	<b>5.6</b>
Workers, by occupational group:											
White-collar workers .....	141.2	142.4	143.7	147.3	149.3	150.9	152.7	156.1	158.8	1.7	6.4
Blue-collar workers .....	136.3	137.3	138.7	144.1	146.3	147.5	148.9	150.7	152.9	1.5	4.5
Workers, by industry group:											
Goods-producing .....	136.5	137.4	138.8	144.1	146.1	147.3	148.6	150.7	152.7	1.3	4.5
Service-producing .....	141.9	143.1	144.4	148.1	150.1	151.9	153.9	157.2	160.1	1.8	6.7
Manufacturing .....	136.0	136.9	138.4	144.5	146.4	147.8	149.0	152.3	154.2	1.2	5.3
Nonmanufacturing .....	141.4	142.6	143.8	147.2	149.3	150.9	152.9	155.2	158.0	1.8	5.8

**25. Employment Cost Index, private nonfarm workers, by bargaining status, region, and area size**

(June 1981 = 100)

Series	1987			1988				1989		Percent change	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	3 months ended	12 months ended
										June 1989	
<b>COMPENSATION</b>											
<b>Workers, by bargaining status<sup>1</sup></b>											
Union .....	131.2	132.0	133.4	135.6	136.9	137.9	138.6	139.7	141.1	1.0	3.1
Goods-producing .....	128.7	129.5	131.3	134.1	135.3	136.2	137.2	137.9	139.4	1.1	3.0
Service-producing .....	135.2	135.9	136.7	138.0	139.4	140.5	140.9	142.6	143.9	.9	3.2
Manufacturing .....	128.7	129.5	131.5	135.0	136.2	137.0	138.2	139.9	141.3	1.0	3.7
Nonmanufacturing .....	133.5	134.3	135.1	136.2	137.5	138.6	138.9	139.5	141.0	1.1	2.5
Nonunion .....	134.6	136.1	136.9	138.9	140.7	142.2	143.9	146.0	147.7	1.2	5.0
Goods-producing .....	131.8	133.1	134.1	136.2	137.8	138.7	139.9	141.6	143.2	1.1	3.9
Service-producing .....	136.4	137.9	138.6	140.5	142.5	144.4	146.3	148.6	150.5	1.3	5.6
Manufacturing .....	133.2	134.6	135.6	137.8	139.2	140.1	141.3	143.1	144.8	1.2	4.0
Nonmanufacturing .....	135.3	136.8	137.5	139.4	141.5	143.2	145.0	147.3	149.1	1.2	5.4
<b>Workers, by region<sup>1</sup></b>											
Northeast .....	138.6	140.3	141.9	143.7	145.9	147.8	150.4	153.5	155.5	1.3	6.6
South .....	133.2	134.2	135.4	137.1	139.3	140.4	141.3	142.7	144.1	1.0	3.4
Midwest (formerly North Central) .....	130.2	131.2	131.7	134.4	135.5	136.7	138.0	139.3	140.9	1.1	4.0
West .....	134.2	135.8	136.3	138.3	139.5	140.6	141.5	143.2	144.9	1.2	3.9
<b>Workers, by area size<sup>1</sup></b>											
Metropolitan areas .....	134.4	135.8	136.7	138.9	140.5	142.0	143.6	145.6	147.4	1.2	4.9
Other areas .....	130.2	131.3	132.0	133.6	135.5	136.2	136.8	137.5	138.3	.6	2.1
<b>WAGES AND SALARIES</b>											
<b>Workers, by bargaining status<sup>1</sup></b>											
Union .....	128.3	129.1	130.5	131.0	132.0	132.9	133.4	134.3	135.4	.8	2.6
Goods-producing .....	125.8	126.5	128.5	128.7	129.7	130.4	131.2	132.0	133.4	1.1	2.9
Service-producing .....	132.2	132.9	133.6	134.4	135.4	136.7	136.8	137.8	138.4	.4	2.2
Manufacturing .....	126.2	127.0	129.3	129.6	130.4	131.0	132.1	133.0	134.4	1.1	3.1
Nonmanufacturing .....	130.1	130.8	131.5	132.1	133.3	134.5	134.6	135.4	136.2	.6	2.2
Nonunion .....	132.8	134.3	135.0	136.4	138.1	139.5	141.1	142.9	144.4	1.0	4.6
Goods-producing .....	129.6	131.1	132.1	133.6	135.0	135.7	136.8	138.2	139.5	.9	3.3
Service-producing .....	134.6	136.2	136.7	138.0	140.0	141.8	143.6	145.6	147.2	1.1	5.1
Manufacturing .....	131.5	133.0	133.9	135.5	136.7	137.4	138.6	139.9	141.4	1.1	3.4
Nonmanufacturing .....	133.4	134.9	135.4	136.8	138.8	140.4	142.2	144.1	145.6	1.0	4.9
<b>Workers, by region<sup>1</sup></b>											
Northeast .....	136.6	138.3	139.7	140.9	142.9	144.6	147.3	150.1	152.0	1.3	6.4
South .....	131.1	132.1	133.0	134.0	136.1	137.1	137.8	138.9	140.0	.8	2.9
Midwest (formerly North Central) .....	128.5	129.6	129.9	131.3	132.1	133.3	134.5	135.6	136.9	1.0	3.6
West .....	131.1	133.1	133.5	134.9	136.0	137.4	138.1	139.4	140.7	.9	3.5
<b>Workers, by area size<sup>1</sup></b>											
Metropolitan areas .....	132.4	133.7	134.6	135.8	137.3	138.7	140.2	141.9	143.4	1.1	4.4
Other areas .....	127.8	129.1	129.8	130.9	133.0	133.5	133.7	134.6	135.2	.4	1.7

<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 the

Monthly Labor Review Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

**26. Specified compensation and wage adjustments from contract settlements, and effective wage adjustments, private industry collective bargaining situations covering 1,000 workers or more (in percent)**

Measure	Annual average		Quarterly average							
	1987	1988	1987		1988				1989	
			III	IV	I	II	III	IV <sup>P</sup>	I <sup>P</sup>	II <sup>P</sup>
<b>Specified adjustments:</b>										
Total compensation <sup>1</sup> adjustments, <sup>2</sup> settlements covering 5,000 workers or more:										
First year of contract .....	3.0	3.1	2.5	3.4	1.8	3.1	3.4	3.5	3.2	5.0
Annual rate over life of contract .....	2.6	2.5	2.1	2.4	1.8	2.4	3.2	2.1	3.4	3.4
Wage adjustments, settlements covering 1,000 workers or more:										
First year of contract .....	2.2	2.5	2.1	2.4	2.1	2.6	2.7	2.6	3.2	3.9
Annual rate over life of contract .....	2.1	2.4	2.0	1.8	2.3	2.2	2.8	2.2	3.1	3.3
<b>Effective adjustments:</b>										
Total effective wage adjustment <sup>3</sup> .....										
From settlements reached in period .....	3.1	2.6	.9	.8	.4	.9	.8	.5	.5	1.0
Deferred from settlements reached in earlier periods .....	.7	.7	.2	.3	.1	.3	.2	.1	.1	.3
From cost-of-living-adjustments clauses .....	1.8	1.3	.6	.3	.3	.5	.4	.2	.3	.5
	.5	.6	.1	.2	.1	.1	.2	.2	.1	.2

<sup>1</sup> Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.

<sup>2</sup> Adjustments are the net result of increases, decreases, and no changes in

compensation or wages.

<sup>3</sup> Because of rounding, total may not equal sum of parts.

<sup>P</sup> = preliminary.

**27. Average specified compensation and wage adjustments, major collective bargaining settlements in private industry situations covering 1,000 workers or more during 4-quarter periods (in percent)**

Measure	Average for four quarters ending--							
	1987		1988				1989	
	III	IV	I	II	III	IV <sup>P</sup>	I <sup>P</sup>	II <sup>P</sup>
<b>Specified total compensation adjustments, settlements covering 5,000 workers or more, all industries:</b>								
First year of contract .....	2.7	3.0	3.1	3.0	3.1	3.1	3.3	3.8
Annual rate over life of contract .....	2.6	2.6	2.5	2.3	2.5	2.5	2.6	3.0
<b>Specified wage adjustments, settlements covering 1,000 workers or more:</b>								
<b>All industries:</b>								
First year of contract .....	2.0	2.2	2.4	2.4	2.5	2.5	2.7	3.2
Contracts with COLA clauses .....	2.1	2.3	2.2	2.4	2.4	2.4	2.4	2.2
Contracts without COLA clauses .....	2.0	2.1	2.5	2.4	2.6	2.7	2.9	3.4
Annual rate over life of contract .....	2.2	2.1	2.2	2.0	2.2	2.4	2.5	2.9
Contracts with COLA clauses .....	1.7	1.5	1.4	1.5	1.5	1.8	1.8	1.8
Contracts without COLA clauses .....	2.5	2.5	2.7	2.5	2.8	2.8	2.9	3.2
<b>Manufacturing:</b>								
First year of contract .....	1.1	2.1	2.4	2.5	2.6	2.2	2.2	2.6
Contracts with COLA clauses .....	2.1	2.4	2.4	2.5	2.4	2.1	2.1	2.0
Contracts without COLA clauses .....	-1	1.3	2.4	2.5	3.0	2.5	2.5	3.1
Annual rate over life of contract .....	1.0	1.3	1.5	1.6	1.9	2.1	2.1	2.4
Contracts with COLA clauses .....	1.0	1.0	1.0	1.3	1.4	1.8	1.8	1.7
Contracts without COLA clauses .....	1.2	2.1	2.7	2.5	3.1	2.6	2.8	3.1
<b>Nonmanufacturing:</b>								
First year of contract .....	2.4	2.3	2.3	2.3	2.4	2.8	3.0	3.5
Contracts with COLA clauses .....	2.1	1.9	1.6	2.2	2.4	2.9	2.9	2.9
Contracts without COLA clauses .....	2.6	2.4	2.5	2.4	2.5	2.7	3.0	3.5
Annual rate over life of contract .....	2.8	2.7	2.7	2.4	2.4	2.5	2.7	3.2
Contracts with COLA clauses .....	2.4	2.7	2.4	1.9	1.8	1.7	1.7	2.3
Contracts without COLA clauses .....	2.9	2.7	2.7	2.6	2.7	2.8	3.0	3.3
<b>Construction:</b>								
First year of contract .....	3.0	2.9	2.9	2.6	2.1	2.2	2.4	2.4
Contracts with COLA clauses .....	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Contracts without COLA clauses .....	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	2.6	2.1	2.2	2.4	2.4
Annual rate over life of contract .....	3.2	3.1	3.1	2.7	2.4	2.6	2.7	2.9
Contracts with COLA clauses .....	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Contracts without COLA clauses .....	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	2.7	2.4	2.6	2.7	2.9

<sup>1</sup> Data do not meet publication standards.

<sup>2</sup> Between -0.05 and 0.05 percent.

<sup>P</sup> = preliminary.

**28. Average effective wage adjustments, private industry collective bargaining situations covering 1,000 workers or more during 4-quarter periods (in percent)**

Effective wage adjustment	Average for four quarters ending--						
	1987	1988				1989	
	IV	I	II	III	IV <sup>P</sup>	I <sup>P</sup>	II <sup>P</sup>
<b>For all workers:<sup>1</sup></b>							
Total .....	3.1	3.2	3.0	2.9	2.6	2.7	2.8
From settlements reached in period .....	.7	.8	1.0	1.0	.7	.7	.7
Deferred from settlements reached in earlier period .....	1.8	1.8	1.6	1.4	1.3	1.3	1.3
From cost-of-living-adjustments clauses .....	.5	.5	.5	.5	.6	.6	.8
<b>For workers receiving changes:</b>							
Total .....	3.6	3.8	3.7	3.5	3.3	3.5	3.7
From settlements reached in period .....	2.9	2.9	2.9	2.9	3.1	3.2	3.5
Deferred from settlements reached in earlier period .....	3.3	3.3	3.3	3.0	3.0	3.2	3.2
From cost-of-living-adjustments clauses .....	2.6	2.7	2.3	2.5	2.7	2.9	3.2

<sup>1</sup> Because of rounding, total may not equal sum of parts.

<sup>P</sup> = preliminary.

**29. Specified compensation and wage adjustments from contract settlements, and effective wage adjustments, State and local government collective bargaining situations covering 1,000 workers or more (in percent)**

Measure	Annual average		
	1987	1988	First 6 months 1989
<b>Specified adjustments:</b>			
Total compensation <sup>1</sup> adjustments, <sup>2</sup> settlements covering 5,000 workers or more:			
First year of contract .....	4.9	5.4	4.3
Annual rate over life of contract .....	4.8	5.3	4.4
<b>Wage adjustments, settlements covering 1,000 workers or more:</b>			
First year of contract .....	4.9	5.1	4.7
Annual rate over life of contract .....	5.1	5.3	4.7
<b>Effective adjustments:</b>			
Total effective wage adjustment <sup>3</sup> .....	4.9	4.7	1.6
From settlements reached in period .....	2.7	2.3	.5
Deferred from settlements reached in earlier periods .....	2.2	2.4	1.1
From cost-of-living-adjustment clauses .....	( <sup>4</sup> )	( <sup>4</sup> )	( <sup>4</sup> )

<sup>1</sup> Compensation includes wages, salaries, and employers' cost of employee benefits when contract is negotiated.

<sup>3</sup> Because of rounding, total may not equal sum of parts.

<sup>2</sup> Adjustments are the net result of increases, decreases, and no changes in compensation or wages.

<sup>4</sup> Less than 0.05 percent.

**30. Work stoppages involving 1,000 workers or more**

Measure	Annual totals		1988				1989 <sup>P</sup>								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>Number of stoppages:</b>															
Beginning in period .....	46	40	2	3	1	0	3	0	2	4	7	0	4	7	6
In effect during period .....	51	43	14	9	5	1	4	2	4	8	13	5	9	11	13
<b>Workers involved:</b>															
Beginning in period (in thousands) .....	174.4	118.0	4.0	8.6	2.3	.0	7.4	.0	30.3	6.6	54.7	.0	43.3	235.6	14.5
In effect during period (in thousands) .....	377.7	121.4	34.0	25.9	10.6	2.5	9.9	7.7	37.0	43.6	94.3	44.7	100.0	204.0	107.1
<b>Days idle:</b>															
Number (in thousands) .....	4,468.8	4,364.3	510.0	293.2	77.9	52.5	152.7	137.8	949.6	1,064.2	1,227.1	938.2	1,370.7	3,480.2	1,909.4
Percent of estimated working time <sup>1</sup> .....	.02	.02	.02	.01	.04	.02	.01	.01	.04	.05	.05	.04	.06	.14	.08

<sup>1</sup> Agricultural and government employees are included in the total employed and total working time: private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found

in "Total economy" measure of strike idleness," *Monthly Labor Review*, October 1968, pp. 54-56.

<sup>P</sup> = preliminary.



31. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

(1982-84=100, unless otherwise indicated)

Series	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS:</b>															
All items .....	113.6	118.3	119.8	120.2	120.3	120.5	121.1	121.6	122.3	123.1	123.8	124.1	124.4	124.6	125.0
All items (1967=100) .....	340.4	354.3	358.9	360.1	360.5	360.9	362.7	364.1	366.2	368.8	370.8	371.7	372.7	373.1	374.6
Food and beverages .....	113.5	118.2	120.1	120.3	120.2	120.6	122.0	122.7	123.3	124.0	124.7	124.9	125.4	125.6	125.9
Food .....	113.5	118.2	120.2	120.3	120.2	120.7	122.2	122.9	123.5	124.2	124.9	125.0	125.5	125.8	126.1
Food at home .....	111.9	116.6	119.0	119.0	118.7	119.1	121.2	122.0	122.7	123.5	124.4	124.3	124.8	124.9	125.0
Cereals and bakery products .....	114.8	122.1	124.7	125.6	125.9	126.6	127.9	128.9	129.7	130.4	131.5	132.1	133.3	134.1	134.6
Meats, poultry, fish, and eggs .....	110.5	114.3	117.4	116.8	116.4	116.1	118.5	118.2	120.5	120.6	120.7	121.4	121.6	122.3	122.9
Dairy products .....	105.9	108.4	108.9	109.9	110.6	111.4	112.6	113.4	113.8	114.1	113.8	113.6	114.1	114.5	116.1
Fruits and vegetables .....	119.1	128.1	133.2	131.7	129.5	131.0	134.8	137.1	135.7	138.0	142.7	140.2	140.1	138.8	136.6
Other foods at home .....	110.5	113.1	114.0	114.8	114.9	115.3	116.6	117.8	118.1	119.0	118.9	119.2	119.7	119.7	119.7
Sugar and sweets .....	111.0	114.0	115.6	116.0	115.9	116.7	117.2	117.8	118.0	117.9	118.1	119.2	120.1	120.6	120.8
Fats and oils .....	108.1	113.1	115.9	117.1	117.1	118.5	119.6	120.5	120.4	121.6	121.6	121.6	121.6	121.7	121.3
Nonalcoholic beverages .....	107.5	107.5	107.4	108.1	108.2	107.8	109.6	111.3	111.3	111.8	111.5	111.6	112.3	111.2	111.0
Other prepared foods .....	113.8	118.0	119.1	119.9	120.1	120.7	121.9	123.0	123.7	125.2	125.2	125.5	125.9	126.7	126.7
Food away from home .....	117.0	121.8	123.0	123.4	123.7	124.1	124.7	125.2	125.7	126.2	126.7	127.1	127.8	128.1	128.8
Alcoholic beverages .....	114.1	118.6	119.6	119.8	119.9	119.9	120.3	121.1	121.8	122.3	123.1	123.5	124.0	124.5	124.8
Housing .....	114.2	118.5	119.9	119.9	119.9	120.2	120.7	121.1	121.5	121.6	122.1	122.9	123.9	124.2	124.3
Shelter .....	121.3	127.1	128.4	128.8	129.1	129.3	129.8	130.3	131.2	131.2	131.8	132.3	133.6	134.1	134.1
Renters' costs (12/82=100) .....	128.1	133.6	134.7	134.8	134.2	134.1	135.2	136.3	137.8	137.8	138.7	141.5	141.5	139.4	139.4
Rent, residential .....	123.1	127.8	129.1	129.4	129.8	130.1	130.5	130.9	131.1	131.4	131.7	132.3	133.0	133.5	133.9
Other renters' costs .....	127.4	134.8	135.5	134.8	131.1	130.0	132.7	136.2	144.7	140.7	139.7	141.5	150.5	148.8	139.1
Homeowners' costs (12/82=100) .....	124.8	131.1	132.6	133.1	133.8	134.0	134.7	135.0	135.4	136.2	136.5	137.3	138.1	138.9	139.0
Owners' equivalent rent (12/82=100) .....	124.8	131.1	132.7	133.1	133.9	134.1	134.5	134.8	135.1	135.5	136.3	136.6	137.4	138.2	139.0
Household insurance (12/82=100) .....	124.0	129.0	130.2	130.4	130.2	130.6	130.9	131.2	131.3	131.4	132.1	132.8	133.1	133.3	133.6
Maintenance and repairs .....	111.8	114.7	115.3	115.0	115.4	115.8	116.1	117.1	117.1	117.3	117.4	118.3	118.4	118.5	118.6
Maintenance and repair services .....	114.8	117.9	118.1	117.6	118.2	118.4	118.7	119.9	119.6	119.8	120.2	121.0	121.1	121.3	120.9
Maintenance and repair commodities .....	107.8	110.4	111.7	111.6	111.7	112.4	112.8	113.4	113.8	114.1	113.8	114.7	115.0	114.8	115.6
Fuel and other utilities .....	103.0	104.4	106.4	105.4	104.3	105.0	106.0	105.9	105.9	106.2	107.0	109.2	109.7	109.7	109.7
Fuels .....	97.3	98.0	101.0	98.6	98.6	97.4	98.7	98.6	98.5	98.8	99.6	103.2	103.7	103.7	103.5
Fuel oil, coal, and bottled gas .....	77.9	78.1	75.9	74.6	75.0	76.8	80.5	81.4	81.5	82.5	81.5	80.2	79.7	78.9	79.3
Gas (piped) and electricity .....	103.8	104.6	108.5	105.8	103.7	104.1	105.1	104.9	104.8	105.0	106.1	110.5	111.1	111.3	111.0
Other utilities and public services .....	120.1	122.9	123.3	124.5	124.4	125.5	125.9	126.0	125.9	126.2	127.0	127.1	127.7	127.8	128.1
Household furnishings and operations .....	107.1	109.4	110.1	110.3	110.6	110.6	110.9	110.9	110.5	110.7	110.8	111.1	111.4	111.4	111.7
Housefurnishings .....	103.6	105.1	105.7	105.9	106.1	105.9	106.0	105.9	105.1	105.0	104.7	105.1	105.5	105.2	105.7
Housekeeping supplies .....	111.5	114.7	115.5	115.6	116.5	117.0	117.5	117.7	118.5	119.6	120.9	121.2	121.7	122.3	122.3
Housekeeping services .....	110.6	114.3	115.5	115.5	115.7	115.9	116.6	116.8	116.9	117.1	117.3	117.4	117.3	117.5	117.5
Apparel and upkeep .....	110.6	115.4	117.8	120.7	119.9	118.0	115.3	115.3	119.3	120.9	120.4	117.8	115.0	115.0	120.0
Apparel commodities .....	108.9	113.7	116.2	119.3	118.4	116.3	113.3	113.3	117.5	119.3	118.6	115.8	112.9	112.8	118.2
Men's and boys' apparel .....	109.1	113.4	115.2	117.6	118.2	117.3	115.1	114.2	115.9	117.2	117.8	115.9	114.7	114.7	117.7
Women's and girls' apparel .....	110.4	114.9	118.1	121.9	120.2	116.5	111.6	111.4	119.4	121.5	119.5	114.8	109.6	109.5	119.0
Infants' and toddlers' apparel .....	112.1	116.4	119.0	118.1	117.2	117.3	115.6	118.8	118.5	123.6	125.4	123.9	117.9	116.7	118.0
Footwear .....	105.1	109.9	112.2	115.9	114.5	113.5	112.2	112.7	114.1	115.3	114.9	114.0	113.4	112.6	114.1
Other apparel commodities .....	108.0	116.0	117.4	119.4	119.5	119.1	119.2	120.4	120.4	121.5	121.7	121.6	122.5	124.1	124.5
Apparel services .....	119.6	123.7	124.4	125.5	126.3	126.7	127.3	127.8	128.5	128.9	129.9	130.0	129.4	129.5	129.7
Transportation .....	105.4	108.7	109.7	110.0	110.7	110.8	111.1	111.6	111.9	114.6	116.0	115.9	115.4	114.3	113.7
Private transportation .....	104.2	107.6	108.6	109.0	109.6	109.6	109.8	110.3	110.7	113.6	115.0	114.9	114.3	113.1	112.4
New vehicles .....	114.4	116.5	116.2	117.2	118.4	119.0	119.4	119.5	119.4	119.2	119.2	118.9	118.5	117.7	117.1
Used cars .....	114.6	116.9	116.8	117.7	118.7	119.1	119.5	119.6	119.4	119.5	119.1	118.1	116.7	117.0	117.0
Motor fuel .....	113.1	118.0	119.4	119.9	119.7	120.2	120.5	120.5	120.5	121.0	121.0	121.3	121.1	120.3	119.8
Gasoline .....	80.2	80.9	83.1	81.6	81.5	80.3	79.6	80.3	81.5	92.1	96.6	96.0	94.4	91.0	88.8
Maintenance and repair .....	80.1	80.8	83.1	81.6	81.4	80.3	79.4	80.1	81.3	92.1	96.7	96.2	94.6	91.1	88.8
Other private transportation .....	114.8	119.7	120.9	121.1	121.5	121.5	122.4	123.3	123.5	123.8	124.3	124.5	124.8	125.4	126.2
Other private transportation commodities .....	120.8	127.9	129.3	131.0	132.1	132.5	133.5	134.3	134.5	134.7	135.6	135.9	135.6	135.7	135.7
Other private transportation services .....	96.9	98.9	99.7	99.3	99.4	100.3	101.0	101.2	100.1	100.8	101.5	101.9	101.3	102.0	102.0
Public transportation .....	121.1	123.3	124.0	124.2	125.3	126.5	127.5	128.1	128.2	128.4	128.9	129.9	129.7	130.1	130.1
Medical care .....	130.1	138.6	140.4	141.2	141.8	142.3	143.8	145.2	146.1	146.8	147.5	148.5	149.7	150.7	151.7
Medical care commodities .....	131.0	139.9	142.0	143.2	143.3	144.2	145.0	145.8	147.2	148.4	150.0	151.0	151.4	152.1	153.3
Medical care services .....	130.0	138.3	140.1	140.8	141.5	141.9	143.5	145.1	145.9	146.4	146.9	147.9	149.3	150.4	151.3
Professional services .....	128.8	137.5	139.2	139.8	140.4	140.8	142.2	143.5	144.4	144.9	145.2	146.1	147.0	147.5	148.0
Hospital and related services .....	131.6	143.9	146.9	148.5	149.7	150.8	152.9	155.1	155.8	156.6	157.3	158.5	160.8	162.7	164.3
Entertainment .....	115.3	120.3	121.3	121.8	122.2	122.8	123.8	124.3	124.7	125.4	125.5	126.2	126.9	127.3	127.8
Entertainment commodities .....	110.5	115.0	116.0	116.3	117.2	117.5	118.1	118.4	118.5	119.0	119.3	119.5	119.9	120.0	120.5
Entertainment services .....	122.0	127.7	128.6	129.4	129.3	130.0	131.6	132.3	132.9	134.0	133.9	135.0	136.1	136.7	137.2
Other goods and services .....	128.5	137.0	140.0	140.6	141.0	141.3	143.4	144.1	144.4	144.7	145.4	146.3	147.3	148.7	151.2
Tobacco products .....	133.6	145.8	148.9	149.3	149.7	149.9	157.0	158.5	159.2	159.5	161.				

**31. Continued— Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group**

(1982-84=100, unless otherwise indicated)

Series	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
All items .....	113.6	118.3	119.8	120.2	120.3	120.5	121.1	121.6	122.3	123.1	123.8	124.1	124.4	124.6	125.0
Commodities .....	107.7	111.5	113.0	113.5	113.5	113.5	113.9	114.3	115.2	116.7	117.5	117.2	117.0	116.7	117.3
Food and beverages .....	113.5	118.2	120.1	120.3	120.2	120.6	122.0	122.7	123.3	124.0	124.7	124.9	125.4	125.6	125.9
Commodities less food and beverages .....	104.0	107.3	108.5	109.2	109.4	109.0	108.9	109.1	110.1	112.2	112.9	112.4	111.7	111.1	111.9
Nondurables less food and beverages .....	101.1	105.2	107.1	107.8	107.7	106.9	106.4	106.9	108.9	112.5	113.6	112.7	111.6	110.9	112.4
Apparel commodities .....	108.9	113.7	116.2	119.3	118.4	116.3	113.3	113.3	117.5	119.3	118.6	115.8	112.9	112.8	118.2
Nondurables less food, beverages, and apparel .....	99.5	103.2	104.9	104.5	104.6	104.5	105.3	106.1	106.9	111.5	113.6	113.7	113.6	112.5	112.0
Durables .....	108.2	110.4	110.6	111.1	111.8	112.2	112.5	112.4	111.9	111.8	111.9	112.1	111.9	111.4	111.3
Services .....	120.2	125.7	127.3	127.6	127.8	128.1	128.9	129.4	130.0	130.2	130.8	131.6	132.5	133.1	133.4
Rent of shelter (12/82=100) .....	125.9	132.0	133.4	133.8	134.1	134.3	134.8	135.4	136.3	136.3	136.9	137.4	138.8	139.3	139.3
Household services less rent of shelter (12/82=100) .....	113.1	115.3	117.4	116.6	115.6	116.2	117.0	116.9	116.9	117.2	118.0	120.1	120.6	120.7	120.7
Transportation services .....	121.9	128.0	129.3	130.6	131.6	132.1	133.0	133.9	134.3	134.5	135.2	135.6	135.5	135.7	135.9
Medical care services .....	130.0	138.3	140.1	140.8	141.5	141.9	143.5	145.1	145.9	146.4	146.9	147.9	149.3	150.4	151.3
Other services .....	125.7	132.6	134.9	135.5	135.7	136.2	137.3	137.8	138.2	138.8	139.2	139.8	140.4	141.5	143.8
Special indexes:															
All items less food .....	113.6	118.3	119.7	120.2	120.3	120.4	120.8	121.3	122.0	122.9	123.5	123.9	124.2	124.3	124.8
All items less shelter .....	111.6	115.9	117.5	117.9	118.0	118.1	118.7	119.2	119.9	121.0	121.7	122.0	122.0	122.0	122.6
All items less homeowners' costs (12/82=100) .....	115.1	119.5	121.1	121.5	121.5	121.6	122.3	122.9	123.7	124.7	125.3	125.6	125.9	125.9	126.3
All items less medical care .....	112.6	117.0	118.6	118.9	119.0	119.1	119.7	120.1	120.8	121.7	122.3	122.6	122.9	123.0	123.4
Commodities less food .....	104.3	107.7	108.9	109.5	109.7	109.4	109.2	109.5	110.5	112.5	113.2	112.8	112.1	111.6	112.4
Nondurables less food .....	101.8	105.8	107.7	108.3	108.2	107.5	107.1	107.6	109.4	112.8	113.9	113.1	112.2	111.5	112.9
Nondurables less food and apparel .....	100.3	104.0	105.6	105.2	105.4	105.3	106.0	106.8	107.6	111.7	113.6	113.8	113.7	112.8	112.4
Nondurables .....	107.5	111.8	113.7	114.2	114.1	113.9	114.3	114.9	116.2	118.4	119.3	119.0	118.7	118.4	119.3
Services less rent of shelter (12/82=100) .....	123.1	128.3	130.3	130.5	130.6	131.1	132.1	132.7	133.0	133.4	134.0	135.2	135.8	136.3	137.0
Services less medical care .....	119.1	124.3	125.9	126.2	126.3	126.6	127.3	127.8	128.3	128.5	129.1	129.9	130.8	131.3	131.6
Energy .....	88.6	89.3	91.9	89.9	89.9	88.7	89.0	89.3	89.8	94.9	97.4	99.0	98.5	97.0	95.9
All items less energy .....	117.2	122.3	123.8	124.4	124.7	124.8	125.5	126.0	126.7	127.1	127.6	127.7	128.2	128.5	129.1
All items less food and energy .....	118.2	123.4	124.7	125.5	125.8	126.0	126.4	126.9	127.6	128.0	128.3	128.5	129.0	129.3	130.0
Commodities less food and energy .....	111.8	115.8	116.9	118.0	118.2	118.0	117.9	118.1	119.0	119.6	119.7	119.3	118.8	118.8	120.1
Energy commodities .....	80.2	80.8	82.5	81.0	80.9	80.1	79.9	80.6	81.7	91.2	95.0	94.4	92.9	89.8	88.0
Services less energy .....	122.0	127.9	129.3	129.9	130.3	130.6	131.4	132.0	132.7	132.9	133.4	133.9	134.8	135.4	135.8
Purchasing power of the consumer dollar:															
1982-84=\$1.00 .....	88.0	84.6	83.5	83.2	83.1	83.0	82.6	82.3	81.8	81.2	80.8	80.6	80.4	80.3	80.0
1967=\$1.00 .....	29.4	28.2	27.9	27.8	27.7	27.7	27.6	27.5	27.3	27.1	27.0	26.9	26.8	26.8	26.7
<b>CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS:</b>															
All items .....	112.5	117.0	118.5	118.9	119.0	119.2	119.7	120.2	120.8	121.8	122.5	122.8	123.2	123.2	123.6
All items (1967=100) .....	335.0	348.4	353.0	354.2	354.6	355.0	356.7	358.0	360.0	362.9	364.9	365.9	366.8	367.0	368.3
Food and beverages .....	113.3	117.9	119.8	120.0	119.9	120.3	121.7	122.4	123.1	123.7	124.4	124.6	125.1	125.3	125.6
Food .....	113.3	117.9	119.9	120.1	119.9	120.4	121.9	122.6	123.3	123.9	124.6	124.8	125.3	125.5	125.8
Food at home .....	111.7	116.2	118.7	118.7	118.4	118.8	120.8	121.7	122.4	123.2	124.0	123.9	124.4	124.6	124.6
Cereals and bakery products .....	114.8	122.2	124.8	125.7	126.0	126.7	128.0	129.0	129.7	130.5	131.5	132.0	133.3	134.1	134.6
Meats, poultry, fish, and eggs .....	110.4	114.1	117.3	116.6	116.1	115.8	118.3	118.0	120.3	120.4	120.5	121.2	121.5	122.1	122.7
Dairy products .....	105.7	108.1	108.6	109.7	110.4	111.2	112.4	113.3	113.6	114.0	113.6	113.3	113.8	114.2	115.9
Fruits and vegetables .....	118.8	127.6	132.8	131.4	129.1	130.8	134.3	136.8	135.4	137.7	142.5	140.0	139.9	138.6	136.1
Other foods at home .....	110.4	113.0	113.9	114.7	114.8	115.1	116.5	117.7	118.0	118.9	118.8	119.0	119.6	119.6	119.6
Sugar and sweets .....	110.9	113.9	115.6	115.9	115.7	116.7	117.3	117.8	118.0	118.1	118.4	119.2	120.1	120.6	120.9
Fats and oils .....	107.9	113.0	115.8	117.0	117.0	118.3	119.5	120.4	120.3	121.5	121.5	121.5	121.5	121.6	121.2
Nonalcoholic beverages .....	107.5	107.7	107.6	108.3	108.4	107.8	109.8	111.4	111.4	111.9	111.5	111.6	112.2	111.1	111.0
Other prepared foods .....	113.6	117.8	118.8	119.7	119.9	120.5	121.7	122.8	123.6	125.0	125.0	125.3	125.7	126.5	126.6
Food away from home .....	116.9	121.6	122.8	123.2	123.5	124.0	124.6	125.1	125.5	126.1	126.5	127.0	127.6	128.0	128.6
Alcoholic beverages .....	113.9	118.3	119.2	119.5	119.5	119.5	119.8	120.8	121.4	122.0	122.8	123.2	123.6	124.0	124.4
Housing .....	112.8	116.8	118.2	118.2	118.3	118.5	119.0	119.3	119.6	119.8	120.3	121.1	122.1	122.4	122.5
Shelter .....	118.8	124.3	125.6	126.0	126.4	126.5	126.9	127.4	128.1	128.3	128.8	129.3	130.5	131.0	131.1
Renters' costs (12/84=100) .....	114.6	119.2	120.2	120.4	120.1	120.0	120.7	121.5	123.0	122.7	122.8	123.6	125.7	125.9	124.6
Rent, residential .....	122.9	127.5	128.7	129.0	129.4	129.7	130.1	130.4	130.7	131.0	131.2	131.8	132.5	133.0	133.4
Other renters' costs .....	126.2	135.2	136.1	135.1	131.4	129.2	131.8	135.2	144.2	140.9	139.9	142.3	153.7	152.0	140.9
Homeowners' costs (12/84=100) .....	113.8	119.5	120.9	121.3	122.0	122.2	122.5	122.8	123.0	123.4	124.1	124.4	125.2	125.8	126.6
Owners' equivalent rent (12/84=100) .....	113.7	119.5	120.9	121.4	122.1	122.2	122.5	122.8	123.1	123.5	124.2	124.5	125.2	125.9	126.7
Household insurance (12/84=100) .....	114.1	118.2	119.1	119.3	119.2	119.6	119.9	120.0	120.1	120.2	120.9	121.5	121.8	122.0	122.4
Maintenance and repairs .....	111.3	114.0	114.4	114.1	114.6	115.2	115.6	116.7	116.7	116.7	116.9	117.9	118.2	117.9	118.0
Maintenance and repair services .....	114.7	117.7	117.7	117.0	117.6	117.8	118.3	119.5	119.2	119.3	119.8	121.0	121.2	121.3	120.7
Maintenance and repair commodities .....	106.0	108.3	109.1	109.2	109.7	110.6	110.9	111.8	112.1	112.1	112.0	112.7	113.2	112.5	113.3
Fuel and other utilities .....	102.7	104.1	106.1	105.1	104.1	104.8	105.7	105.7	105.7	105.9	106.7	109.0	109.4	109.5	109.5
Fuels .....	97.1	97.7	100.8	98.3	96.6	97.2	98.4	98.2	98.5	99.2	103.0	103.4	103.5	103.3	103.3
Fuel oil, coal, and bottled gas .....	77.6	77.9	75.9	74.6	75.0	76.7	80.3	81.0	81.2	82.1	81.2	80.1	79.6	78.8	79.2
Gas (piped) and electricity .....	103.6	104.4	108.2	105.5	103.5	103.9	104.8	104.6	104.6	104.8	105.8	110.3	110.8	111.0	110.7
Other utilities and public services .....	120.1	122.9	123.3	124.7	124.6	125.6	126.2	126.3	126.2	126.5	127.2	127.4	127.9		

31. Continued— Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

(1982-84=100, unless otherwise indicated)

Series	Annual average		1988				1989								
	1987	1988	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Apparel commodities .....	108.8	113.4	115.8	118.9	118.1	116.0	113.0	112.8	116.7	118.4	117.7	115.0	112.3	112.4	117.6
Men's and boys' apparel .....	108.5	112.8	114.4	116.9	117.5	116.5	114.4	113.4	115.1	116.4	116.9	115.0	113.7	113.9	116.9
Women's and girls' apparel .....	110.3	114.5	117.6	121.5	119.9	116.2	111.3	110.7	118.3	120.2	118.1	113.5	108.7	108.9	118.1
Infants' and toddlers' apparel .....	114.0	118.6	121.5	120.6	120.1	120.3	118.5	121.8	121.7	126.7	128.3	126.7	121.9	120.4	122.0
Footwear .....	105.5	110.4	112.7	116.3	115.0	114.0	112.8	113.1	114.1	115.2	115.0	114.1	113.9	113.1	114.5
Other apparel commodities .....	107.4	114.9	116.2	117.9	118.2	117.8	117.8	119.0	118.5	119.6	119.8	119.8	120.7	122.4	122.5
Apparel services .....	119.2	123.0	123.7	124.7	125.4	125.8	126.4	126.8	127.7	128.1	128.9	129.0	128.6	128.7	128.8
Transportation .....	105.1	108.3	109.4	109.8	110.3	110.4	110.7	111.2	111.6	114.5	116.0	116.0	115.4	114.2	113.5
Private transportation .....	104.1	107.5	108.6	109.0	109.5	109.5	109.7	110.3	110.6	113.7	115.3	115.2	114.6	113.3	112.6
New vehicles .....	114.0	116.2	115.8	116.9	118.1	118.8	119.2	119.3	119.2	118.9	119.0	118.7	118.3	117.6	117.1
New cars .....	114.3	116.6	116.4	117.5	118.5	118.9	119.3	119.5	119.4	119.2	119.3	118.9	118.4	117.6	116.9
Used cars .....	113.1	117.9	119.2	119.8	119.5	120.1	120.3	120.4	120.3	120.5	120.9	121.1	120.9	120.1	119.6
Motor fuel .....	80.3	80.9	83.1	81.6	81.5	80.4	79.6	80.3	81.5	92.3	96.7	96.1	94.5	91.0	89.0
Gasoline .....	80.2	80.8	83.2	81.6	81.5	80.4	79.5	80.2	81.4	92.3	96.9	96.3	94.7	91.2	89.0
Maintenance and repair .....	115.1	119.8	121.0	121.3	121.5	122.4	123.3	123.5	123.9	124.4	124.6	124.8	124.8	125.4	126.2
Other private transportation .....	119.0	125.8	127.2	128.9	130.0	130.4	131.4	132.2	132.5	132.7	133.5	133.9	133.7	133.7	133.6
Other private transportation commodities .....	96.7	98.6	99.3	98.8	99.0	99.9	100.5	100.7	99.8	100.4	101.1	101.5	101.0	101.6	101.6
Other private transportation services .....	123.4	131.7	133.2	135.5	136.8	137.1	138.2	139.2	139.8	139.8	140.7	141.2	141.0	140.8	140.6
Public transportation .....	120.4	122.5	123.1	123.5	124.3	125.4	126.1	126.8	126.9	127.1	127.5	128.2	128.3	129.1	129.1
Medical care .....	130.2	139.0	140.8	141.7	142.2	142.8	144.2	145.6	146.5	147.2	147.9	148.8	150.1	151.1	152.1
Medical care commodities .....	130.2	139.0	141.0	142.1	142.2	143.1	143.9	144.7	146.0	147.4	148.9	149.9	150.3	150.9	152.2
Medical care services .....	130.3	139.0	140.8	141.6	142.2	142.7	144.2	145.8	146.7	147.2	147.6	148.6	150.0	151.1	152.1
Professional services .....	129.0	137.7	139.3	139.9	140.6	141.0	142.4	143.7	144.7	145.1	145.5	146.4	147.3	147.8	148.4
Hospital and related services .....	131.1	143.3	146.3	147.8	148.9	150.0	151.9	154.2	154.8	155.6	156.2	157.3	159.7	161.6	163.3
Entertainment .....	114.8	119.7	120.6	121.2	121.7	122.2	123.1	123.6	124.1	124.8	124.9	125.5	126.1	126.5	127.0
Entertainment commodities .....	110.6	115.1	116.0	116.5	117.3	117.6	118.1	118.4	118.7	119.1	119.5	119.7	120.1	120.1	120.6
Entertainment services .....	121.8	127.2	128.1	128.9	129.0	129.7	131.3	131.9	132.7	133.8	133.6	134.6	135.7	136.4	137.1
Other goods and services .....	127.8	136.5	139.3	139.9	140.3	140.6	143.0	143.7	144.0	144.4	145.2	146.3	147.5	148.8	150.8
Tobacco products .....	133.7	146.0	149.2	149.5	149.9	150.2	156.9	158.2	158.9	159.2	160.7	163.8	167.3	168.5	168.0
Personal care .....	115.0	119.3	120.3	120.9	121.7	122.3	122.7	123.0	123.5	123.9	124.7	124.4	124.6	125.4	125.7
Toilet goods and personal care appliances .....	113.9	118.0	118.8	119.9	120.6	121.5	121.7	121.9	122.3	122.7	122.9	122.4	122.8	123.8	124.1
Personal care services .....	116.1	120.5	121.9	122.0	122.7	123.0	123.6	124.2	124.6	125.2	126.7	126.9	126.8	127.1	127.5
Personal and educational expenses .....	138.2	147.4	151.1	151.7	152.0	152.3	153.3	153.7	153.9	154.3	154.6	155.3	155.7	157.3	161.8
School books and supplies .....	137.9	147.1	150.0	150.8	150.9	151.1	152.0	153.9	154.0	154.1	154.1	154.5	154.7	155.6	161.7
Personal and educational services .....	138.4	147.7	151.5	152.0	152.3	152.7	153.7	154.0	154.1	154.6	154.9	155.7	156.1	157.8	162.1
All items .....	112.5	117.0	118.5	118.9	119.0	119.2	119.7	120.2	120.8	121.8	122.5	122.8	123.2	123.2	123.6
Commodities .....	107.3	111.0	112.5	113.0	113.1	113.0	113.5	113.9	114.7	116.4	117.1	116.9	116.8	116.4	116.9
Food and beverages .....	113.3	117.9	119.8	120.0	119.9	120.3	121.7	122.4	123.1	123.7	124.4	124.6	125.1	125.3	125.6
Commodities less food and beverages .....	103.6	106.8	108.1	108.7	108.9	108.6	108.4	108.7	109.5	111.8	112.6	112.2	111.6	110.9	111.6
Nondurables less food and beverages .....	100.8	104.6	106.6	107.2	107.1	106.3	105.9	106.3	108.1	112.1	113.4	112.6	111.7	110.8	112.0
Apparel commodities .....	108.8	113.4	115.8	118.9	118.1	116.0	113.0	112.8	116.7	118.4	117.7	115.0	112.3	112.4	117.6
Nondurables less food, beverages, and apparel .....	99.2	102.9	104.7	104.1	104.3	104.1	104.9	105.6	106.5	111.6	113.9	114.0	113.9	112.6	112.0
Durables .....	106.6	108.9	109.1	109.7	110.4	110.7	111.0	111.0	110.6	110.5	110.6	110.7	110.6	110.1	110.0
Services .....	119.4	124.7	126.3	126.7	126.9	127.2	127.9	128.4	128.9	129.1	129.7	130.6	131.5	132.0	132.3
Rent of shelter (12/84=100) .....	114.0	119.4	120.7	121.1	121.4	121.5	121.9	122.4	123.1	123.2	123.7	124.2	125.4	125.9	126.0
Household services less rent of shelter (12/84=100) .....	104.0	105.9	108.0	107.2	106.2	106.8	107.5	107.4	107.4	107.6	108.3	110.5	110.9	111.0	111.0
Transportation services .....	120.8	127.1	128.4	129.9	130.9	131.2	132.2	133.1	133.5	133.7	134.4	134.8	134.8	134.9	135.0
Medical care services .....	130.3	139.0	140.8	141.6	142.2	142.7	144.2	145.8	146.7	147.2	147.6	148.6	150.0	151.1	152.1
Other services .....	124.7	131.4	133.6	134.2	134.5	135.0	136.1	136.5	137.0	137.6	137.9	138.6	139.1	140.1	142.3
Special indexes:															
All items less food .....	112.2	116.7	118.1	118.6	118.8	118.8	119.2	119.6	120.2	121.3	122.0	122.3	122.6	122.6	123.1
All items less shelter .....	111.0	115.2	116.8	117.2	117.3	117.4	118.0	118.5	119.1	120.4	121.1	121.3	121.4	121.3	121.8
All items less homeowners' costs (12/84=100) .....	106.4	110.4	111.9	112.2	112.3	112.4	113.0	113.4	114.1	115.2	115.8	116.1	116.3	116.3	116.6
All items less medical care .....	111.5	115.8	117.3	117.7	117.8	117.9	118.5	118.9	119.5	120.5	121.2	121.5	121.8	121.8	122.2
Commodities less food .....	103.9	107.2	108.4	109.0	109.2	108.9	108.8	109.0	109.9	112.1	112.9	112.5	112.0	111.4	112.0
Nondurables less food .....	101.4	105.3	107.2	107.8	107.6	106.9	106.5	107.0	108.7	112.4	113.6	113.0	112.1	111.4	112.5
Nondurables less food and apparel .....	100.0	103.7	105.3	104.9	105.1	104.9	105.6	106.4	107.2	111.7	113.8	114.0	113.9	112.8	112.3
Nondurables .....	107.2	111.5	113.4	113.8	113.7	113.5	114.0	114.6	115.8	118.1	119.1	118.8	118.6	118.3	119.1
Services less rent of shelter (12/84=100) .....	110.8	115.6	117.3	117.6	117.6	118.1	119.0	119.5	119.8	120.1	120.7	121.9	122.3	122.7	123.3
Services less medical care .....	118.2	123.3	124.9	125.2	125.3	125.6	126.3	126.7	127.2	127.4	128.0	128.9	129.7	130.1	130.4
Energy .....	88.0	88.6	91.3	89.3	88.4	88.1	88.3	88.6	89.2	94.8	97.4	98.9	98.3	96.6	95.5
All items less energy .....	116.0	121.0	122.4	123.1	123.4	123.6	124.2	124.7	125.3	125.8	126.2	126.4	126.8	127.1	127.7
All items less food and energy .....	116.8	121.9	123.1	124.0	124.3	124.4	124.8	125.3	125.9	126.3	126.6	126.8	127.3	127.6	128.3
Commodities less food and energy .....	110.8	114.7	115.8	116.9	117.1	117.0	116.9	117.1	117.9	118.4	118.5	118.2	117.9	117.9	119.0
Energy commodities .....	80.3	80.9	82.7	81.2	81.2	80.3	79.9	80.6	81.7	91.6	96.6	94.9	93.5	90.2	88.4
Services less energy .....	121.2	127.0	128.4	129.1	129.5	129.8	130.5	131.1	131.6	131.9	132.4	132.9	133.8	134.4	134.8
Purchasing power of the consumer dollar:															

**32. Consumer Price Index: U.S. city average and available local area data: all items**

(1982-84=100, unless otherwise indicated)

Area <sup>1</sup>	Pricing schedule <sup>2</sup>	All Urban Consumers							Urban Wage Earners						
		1988		1989					1988		1989				
		Sept.	Oct.	May	June	July	Aug.	Sept.	Sept.	Oct.	May	June	July	Aug.	Sept.
U.S. city average .....	M	119.8	120.2	123.8	124.1	124.4	124.6	125.0	118.5	118.9	122.5	122.8	123.2	123.2	123.6
<b>Region and area size<sup>3</sup></b>															
Northeast urban .....	M	123.9	124.1	128.3	128.5	129.0	129.1	130.0	122.7	122.9	127.1	127.4	127.9	128.0	128.8
Size A - More than 1,200,000 .....	M	124.8	124.9	128.7	129.1	129.3	129.5	130.6	122.8	122.9	126.7	127.1	127.3	127.5	128.7
Size B - 500,000 to 1,200,000 .....	M	122.2	122.5	127.2	127.0	128.8	129.1	128.9	120.8	121.2	126.0	125.9	127.8	127.9	127.6
Size C - 50,000 to 500,000 .....	M	121.3	121.7	127.6	127.6	127.9	127.8	128.1	123.7	124.2	130.0	130.3	130.3	130.2	130.8
North Central urban .....	M	117.7	118.1	121.3	121.8	122.0	122.0	122.5	115.8	116.1	119.4	119.9	120.1	120.0	120.4
Size A - More than 1,200,000 .....	M	119.0	119.1	122.2	123.0	123.5	123.5	124.1	116.3	116.4	119.5	120.3	120.7	120.7	121.2
Size B - 360,000 to 1,200,000 .....	M	117.0	118.2	120.8	120.9	120.7	120.9	121.0	114.6	115.7	118.5	118.5	118.5	118.6	118.6
Size C - 50,000 to 360,000 .....	M	117.4	117.7	122.2	122.1	122.0	122.1	122.2	116.3	116.5	121.1	121.0	120.8	120.8	120.9
Size D - Nonmetropolitan (less than 50,000) .....	M	114.2	114.2	116.8	117.4	117.5	117.1	117.8	113.9	113.9	116.8	117.2	117.4	116.9	117.7
South urban .....	M	117.7	118.2	121.3	121.7	122.0	122.1	122.5	117.2	117.7	120.9	121.3	121.5	121.6	121.9
Size A - More than 1,200,000 .....	M	118.7	118.9	122.0	122.4	122.6	122.8	123.5	117.9	118.1	121.3	121.7	121.9	122.0	122.5
Size B - 450,000 to 1,200,000 .....	M	118.6	119.5	122.4	123.0	123.5	123.4	123.9	116.6	117.5	120.5	121.0	121.4	121.2	121.7
Size C - 50,000 to 450,000 .....	M	116.4	117.1	120.0	120.4	120.5	121.0	120.9	117.0	117.7	120.6	121.1	121.2	121.6	121.5
Size D - Nonmetropolitan (less than 50,000) .....	M	116.0	116.0	120.4	120.4	120.1	120.0	120.2	116.8	116.8	121.3	121.3	120.9	121.1	121.0
West urban .....	M	120.2	120.7	124.5	124.6	125.1	125.3	125.6	118.9	119.4	123.3	123.3	123.8	123.9	124.2
Size A - More than 1,250,000 .....	M	121.7	122.2	126.2	126.3	126.9	127.1	127.5	119.0	119.6	123.5	123.6	124.2	124.3	124.6
Size C - 50,000 to 330,000 .....	M	118.5	119.4	122.5	122.4	122.7	122.6	122.8	117.8	118.7	121.9	121.7	122.0	121.9	122.1
<b>Size classes:</b>															
A (12/86=100) .....	M	109.0	109.2	112.4	112.7	113.1	113.2	113.8	108.9	109.1	112.3	112.7	113.0	113.1	113.7
B .....	M	118.9	119.7	123.1	123.3	123.9	124.0	124.2	117.6	118.3	121.8	122.0	122.6	122.6	122.8
C .....	M	117.9	118.5	122.4	122.5	122.7	122.9	122.9	118.3	118.9	122.8	123.0	123.0	123.1	123.3
D .....	M	116.6	116.8	120.3	120.5	120.5	120.5	120.8	116.9	117.1	120.7	120.8	120.9	120.9	121.2
<b>Selected local areas</b>															
<b>Chicago, IL-</b>															
Northwestern IN .....	M	122.0	121.6	123.9	125.7	126.4	126.4	127.1	118.2	117.8	120.1	121.8	122.6	122.5	123.1
Los Angeles-Long Beach, Anaheim, CA .....	M	123.4	124.0	128.3	128.7	129.0	128.9	130.1	120.3	121.0	125.0	125.3	125.7	125.5	126.5
New York, NY- Northeastern NJ .....	M	126.0	126.2	130.2	130.5	130.6	130.9	132.2	124.1	124.3	128.2	128.7	128.7	128.9	130.3
Philadelphia, PA-NJ .....	M	125.2	124.6	127.9	128.8	129.3	129.1	130.2	124.9	124.4	127.9	128.9	129.3	129.3	130.4
San Francisco-Oakland, CA .....	M	122.1	122.3	126.3	126.2	127.4	128.1	126.8	121.1	121.3	125.7	125.6	126.4	127.0	126.1
Baltimore, MD .....	M	121.3	-	124.1	-	124.9	-	125.9	121.0	-	123.7	-	124.6	-	125.4
Boston, MA .....	1	126.2	-	130.5	-	130.3	-	132.2	126.1	-	130.6	-	130.8	-	132.6
Cleveland, OH .....	1	117.6	-	122.8	-	124.4	-	123.7	112.7	-	117.7	-	118.8	-	118.2
Miami, FL .....	1	118.8	-	120.9	-	121.6	-	122.9	117.8	-	120.0	-	120.6	-	121.4
St. Louis, MO-IL .....	1	117.3	-	121.5	-	123.1	-	123.9	117.1	-	121.2	-	122.8	-	123.5
Washington, DC-MD-VA .....	1	122.8	-	127.1	-	127.8	-	130.1	122.3	-	126.6	-	127.3	-	129.5
Dallas-Ft. Worth, TX .....	1	-	117.9	-	120.0	-	120.0	-	-	117.7	-	120.0	-	119.8	-
Detroit, MI .....	2	-	118.6	-	122.1	-	122.2	-	-	115.6	-	119.3	-	119.2	-
Houston, TX .....	2	-	111.1	-	114.1	-	114.4	-	-	111.4	-	114.5	-	114.9	-
Pittsburgh, PA .....	2	-	116.3	-	120.4	-	120.8	-	-	111.7	-	115.9	-	116.0	-

<sup>1</sup> Area is the Consolidated Metropolitan Statistical Area (CMSA), exclusive of farms and military. Area definitions are those established by the Office of Management and Budget in 1983, except for Boston-Lawrence-Salem, MA-NH Area (excludes Monroe County); and Milwaukee, WI Area (includes only the Milwaukee MSA). Definitions do not include revisions made since 1983.

<sup>2</sup> Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated.  
M - Every month.

1 - January, March, May, July, September, and November.  
2 - February, April, June, August, October, and December.

<sup>3</sup> Regions are defined as the four Census regions.

- Data not available.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Because each local index is a small subset of the national index, it has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error than the national index. As a result, local area indexes show greater volatility than the national index, although their long-term trends are quite similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in escalator clauses.

### 33. Annual data: Consumer Price Index, U.S. city average, all items and major groups

(1982-84=100)

Series	1980	1981	1982	1983	1984	1985	1986	1987	1988
<b>Consumer Price Index for All Urban Consumers:</b>									
All items:									
Index .....	82.4	90.9	96.5	99.6	103.9	107.6	109.6	113.6	118.3
Percent change .....	13.5	10.3	6.2	3.2	4.3	3.6	1.9	3.6	4.1
Food and beverages:									
Index .....	86.7	93.5	97.3	99.5	103.2	105.6	109.1	113.5	118.2
Percent change .....	8.5	7.8	4.1	2.3	3.7	2.3	3.3	4.0	4.1
Housing:									
Index .....	81.1	90.4	96.9	99.5	103.6	107.7	110.9	114.2	118.5
Percent change .....	15.7	11.5	7.2	2.7	4.1	4.0	3.0	3.0	3.8
Apparel and upkeep:									
Index .....	90.9	95.3	97.8	100.2	102.1	105.0	105.9	110.6	115.4
Percent change .....	7.1	4.8	2.6	2.5	1.9	2.8	.9	4.4	4.3
Transportation:									
Index .....	83.1	93.2	97.0	99.3	103.7	106.4	102.3	105.4	108.7
Percent change .....	17.9	12.2	4.1	2.4	4.4	2.6	-3.9	3.0	3.1
Medical care:									
Index .....	74.9	82.9	92.5	100.6	106.8	113.5	122.0	130.1	138.6
Percent change .....	11.0	10.7	11.6	8.8	6.2	6.3	7.5	6.6	6.5
Entertainment:									
Index .....	83.6	90.1	96.0	100.1	103.8	107.9	111.6	115.3	120.3
Percent change .....	9.0	7.8	6.5	4.3	3.7	3.9	3.4	3.3	4.3
Other goods and services:									
Index .....	75.2	82.6	91.1	101.1	107.9	114.5	121.4	128.5	137.0
Percent change .....	9.1	9.8	10.3	11.0	6.7	6.1	6.0	5.8	6.6
<b>Consumer Price Index for Urban Wage Earners and Clerical Workers:</b>									
All items:									
Index .....	82.9	91.4	96.9	99.8	103.3	106.9	108.6	112.5	117.0
Percent change .....	13.4	10.3	6.0	3.0	3.5	3.5	1.6	3.6	4.0

### 34. Producer Price Indexes, by stage of processing

(1982=100)

Grouping	Annual average		1988			1989								
	1987	1988	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>Finished goods</b>	105.4	108.0	109.4	109.8	110.0	111.1	111.7	112.1	113.0	114.2	114.1	114.0	113.3	113.5
Finished consumer goods	103.6	106.2	107.6	108.0	108.2	109.4	110.1	110.6	111.8	113.2	113.0	112.8	111.8	112.1
Finished consumer foods	109.5	112.6	114.6	114.9	115.1	116.7	117.2	118.3	117.7	119.1	118.4	119.0	118.7	118.5
Finished consumer goods excluding foods	100.7	103.1	104.1	104.6	104.8	105.8	106.6	106.8	108.8	110.3	110.3	109.7	108.4	109.0
Nondurable goods less food	94.9	97.3	97.7	98.4	98.7	100.0	100.9	101.3	104.2	106.0	105.9	105.3	103.5	104.4
Durable goods	111.5	113.8	116.4	116.1	116.1	116.6	117.0	116.6	116.4	117.1	117.2	116.7	116.8	116.7
Capital equipment	111.7	114.3	116.0	116.1	116.4	117.1	117.5	117.5	117.6	118.3	118.6	118.6	118.8	118.8
<b>Intermediate materials, supplies, and components</b>	101.5	107.1	108.6	108.9	109.4	110.6	111.0	111.5	112.4	112.7	112.6	112.6	112.1	112.4
Materials and components for manufacturing	105.3	113.2	115.5	116.2	116.8	118.0	118.3	118.7	118.9	118.9	118.4	118.2	117.9	117.8
Materials for food manufacturing	100.8	106.0	108.3	107.7	108.6	110.4	110.1	111.4	111.1	112.5	112.1	112.9	113.2	114.0
Materials for nondurable manufacturing	102.2	112.9	116.0	116.8	117.5	119.2	119.7	119.8	120.3	120.3	119.6	118.9	118.1	117.4
Materials for durable manufacturing	106.2	118.7	121.8	123.2	124.3	125.5	125.3	125.7	125.9	125.0	123.6	123.0	122.2	122.7
Components for manufacturing	108.8	112.3	113.5	113.8	114.1	114.9	115.3	115.7	115.8	116.1	116.3	116.5	116.7	116.9
Materials and components for construction	109.8	116.1	117.5	118.1	118.7	119.4	119.9	120.5	121.1	121.5	121.4	121.5	121.4	121.8
Processed fuels and lubricants	73.3	71.2	69.7	69.0	69.8	71.6	72.1	73.2	76.7	78.1	79.3	78.7	77.3	78.6
Containers	114.5	120.1	122.4	122.6	122.7	123.1	123.9	124.4	125.1	125.3	125.8	126.0	126.0	126.5
Supplies	107.7	113.7	116.0	116.2	116.2	117.2	117.4	118.0	118.0	118.2	118.0	118.4	118.2	118.4
<b>Crude materials for further processing</b>	93.7	96.0	95.9	94.5	97.3	101.4	101.2	103.2	104.4	106.1	103.9	103.7	101.0	102.0
Foodstuffs and feedstuffs	96.2	106.1	111.9	108.0	109.5	112.5	111.0	113.7	111.6	114.9	111.4	109.7	109.5	108.3
Crude nonfood materials	87.9	85.5	81.9	82.0	85.4	90.0	90.7	92.2	95.3	96.0	94.6	95.3	91.2	93.5
<b>Special groupings:</b>														
Finished goods, excluding foods	104.0	106.5	107.7	108.1	108.3	109.2	109.9	110.0	111.4	112.6	112.7	112.3	111.5	111.9
Finished energy goods	61.8	59.8	58.7	60.0	59.2	60.8	61.8	62.3	68.4	71.8	70.1	68.4	63.6	65.7
Finished goods less energy	112.3	115.8	117.7	117.8	118.2	119.2	119.8	120.1	120.0	120.8	121.1	121.2	121.3	121.2
Finished consumer goods less energy	112.5	116.3	118.3	118.5	118.9	120.0	120.6	121.1	120.9	121.8	121.9	122.1	122.3	122.1
Finished goods less food and energy	113.3	117.0	118.8	118.9	119.4	120.1	120.7	120.7	120.8	121.4	122.0	121.9	122.3	122.2
Finished consumer goods less food and energy	114.2	118.5	120.5	120.6	121.2	121.9	122.6	122.6	122.7	123.3	124.0	123.9	124.4	124.2
Consumer nondurable goods less food and energy	116.3	122.0	123.6	123.9	125.0	125.9	126.8	127.1	127.4	127.9	129.0	129.2	129.9	129.7
Intermediate materials less foods and feeds	101.7	106.9	108.3	108.7	109.2	110.4	110.8	111.4	112.3	112.6	112.6	112.5	112.0	112.3
Intermediate foods and feeds	99.2	109.5	114.7	113.4	113.0	115.6	114.0	115.2	113.7	114.2	112.7	114.3	113.1	114.0
Intermediate energy goods	73.0	70.9	69.4	68.7	69.5	71.2	71.8	72.9	76.4	77.7	78.9	78.3	76.9	78.2
Intermediate goods less energy	107.3	114.6	116.8	117.3	117.8	118.9	119.1	119.6	119.9	120.0	119.7	119.7	119.4	119.5
Intermediate materials less foods and energy	107.8	115.2	117.3	118.0	118.6	119.6	119.9	120.3	120.7	120.8	120.5	120.3	120.0	120.1
Crude energy materials	75.0	67.7	63.3	62.9	66.6	71.2	72.0	73.5	77.3	78.3	77.3	78.9	73.6	76.2
Crude materials less energy	100.9	112.6	117.0	114.7	116.1	119.3	118.1	120.4	118.8	121.0	117.8	115.8	116.0	115.4
Crude nonfood materials less energy	115.7	133.0	133.4	135.6	136.9	140.3	140.3	141.3	141.2	140.3	137.7	134.9	136.5	137.2

### 35. Producer Price indexes, by durability of product

(1982=100)

Grouping	Annual average		1988			1989								
	1987	1988	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Total durable goods	109.9	114.7	116.4	116.8	117.2	118.1	118.3	118.5	118.7	118.9	118.8	118.7	118.8	119.1
Total nondurable goods	97.5	101.1	102.2	102.0	102.8	104.8	105.2	106.1	107.4	108.6	108.1	108.0	106.7	107.2
Total manufactures	104.4	109.1	110.5	111.0	111.4	112.5	112.9	113.4	114.4	115.0	114.8	114.6	114.2	114.5
Durable	109.6	114.1	115.6	116.0	116.4	117.1	117.4	117.6	117.8	118.1	118.1	118.1	118.3	118.5
Nondurable	99.2	104.1	105.4	106.1	106.4	107.8	108.3	109.2	110.8	111.6	111.2	110.9	110.1	110.4
Total raw or slightly processed goods	94.2	95.9	96.5	94.8	96.7	99.9	100.1	101.1	101.5	103.3	102.4	102.5	100.3	101.0
Durable	122.6	148.0	150.1	154.8	157.5	162.6	161.9	161.0	159.0	157.5	151.3	145.0	146.5	146.9
Nondurable	92.9	93.4	93.9	92.0	93.9	97.0	97.2	98.2	98.8	100.8	100.1	100.5	98.2	98.9

### 36. Producer price indexes for the net output of major industry groups

(December 1984=100, unless otherwise indicated)

Industry	SIC	Annual average		1988			1989								
		1987	1988	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
<b>Total mining industries</b> .....		75.0	70.6	68.7	68.3	70.8	74.6	75.5	74.9	77.2	78.2	77.2	78.1	74.1	76.4
Metal mining .....	10	100.1	100.7	101.4	108.3	111.1	112.7	105.9	104.8	103.9	100.6	96.1	92.1	96.4	98.2
Anthracite mining (12/85=100) .....	11	98.9	100.2	99.9	101.5	102.7	102.8	102.7	103.0	102.5	102.4	102.4	102.4	102.6	102.6
Bituminous coal and lignite mining (12/85=100) .....	12	96.0	94.6	94.4	93.9	93.9	93.8	93.0	92.9	93.4	93.9	94.0	94.9	94.8	94.7
Oil and gas extraction (12/85=100) .....	13	74.3	68.5	65.9	65.2	68.3	73.0	74.5	73.8	76.7	78.1	77.0	78.2	72.9	75.7
Mining and quarrying of nonmetallic minerals, except fuels .....	14	105.1	108.0	108.8	109.1	109.1	109.9	110.8	110.9	111.3	111.6	111.9	111.6	111.5	111.0
<b>Total manufacturing industries</b> .....		100.9	104.4	105.6	106.1	106.4	107.5	107.9	108.5	109.4	110.1	110.0	109.9	109.5	109.8
Food and kindred products .....	20	102.6	107.1	109.6	109.6	109.5	110.8	110.9	111.9	111.6	112.2	111.9	112.5	112.4	112.4
Tobacco manufactures .....	21	126.5	141.8	145.1	145.1	153.1	154.9	155.0	155.0	155.1	155.1	163.5	163.6	164.9	164.9
Textile mill products .....	22	102.6	106.8	107.3	107.6	107.8	108.3	108.3	108.6	108.8	108.8	108.9	109.1	109.7	109.9
Apparel and other finished products made from fabrics and similar materials .....	23	103.9	107.2	108.0	108.2	108.5	108.9	109.3	109.3	109.5	109.6	109.6	110.1	110.5	110.9
Lumber and wood products, except furniture .....	24	105.3	109.2	109.4	109.7	109.6	110.7	112.3	113.1	114.4	115.4	115.9	117.1	116.6	116.6
Furniture and fixtures .....	25	106.4	111.4	112.7	112.9	113.3	113.6	114.0	114.4	114.7	115.2	115.7	115.8	116.1	116.3
Paper and allied products .....	26	104.9	113.7	116.8	117.0	117.5	118.2	119.7	120.4	120.6	121.1	121.5	121.2	121.2	121.2
Printing, publishing, and allied industries .....	27	112.2	118.2	119.8	120.1	120.5	122.6	123.2	123.6	124.0	124.2	124.4	124.8	125.2	125.6
Chemicals and allied products .....	28	103.6	113.0	116.0	117.2	117.8	119.6	119.9	120.6	121.0	120.9	120.6	120.4	119.5	119.1
Petroleum refining and related products .....	29	70.5	67.7	64.5	67.2	66.8	68.5	69.3	71.5	79.9	82.9	80.4	77.6	73.0	75.6
Rubber and miscellaneous plastic products .....	30	100.9	106.7	108.4	108.5	108.7	109.3	109.6	110.2	110.5	110.5	110.4	110.2	110.2	110.2
Leather and leather products .....	31	106.6	113.4	114.8	114.9	115.1	115.8	116.6	117.0	117.2	117.4	117.2	117.8	118.7	119.5
Stone, clay, glass, and concrete products .....	32	104.5	105.8	106.0	106.2	106.3	106.5	106.7	107.2	107.9	107.9	108.2	108.4	108.3	108.3
Primary metal industries .....	33	101.0	113.0	115.8	117.5	118.5	119.7	119.4	120.1	120.1	119.8	118.4	118.4	117.9	118.5
Fabricated metal products, except machinery and transportation equipment....	34	102.1	107.4	109.3	109.6	110.0	110.6	111.1	111.5	112.0	112.5	112.5	112.6	112.7	113.2
Machinery, except electrical .....	35	103.2	106.4	107.4	107.8	108.1	108.9	109.3	109.7	109.8	110.2	110.6	111.0	111.2	111.5
Electrical and electronic machinery, equipment, and supplies .....	36	103.3	104.6	105.1	105.2	105.3	106.0	106.4	106.4	106.6	106.8	107.1	107.5	107.6	107.6
Transportation equipment .....	37	105.9	107.8	110.7	110.3	110.9	111.4	111.7	111.2	110.9	111.6	111.8	111.0	111.1	110.7
Measuring and controlling instruments; photographic, medical, optical goods; watches, clocks .....	38	105.1	107.0	107.2	107.5	107.5	108.8	109.1	109.7	110.1	110.6	110.7	110.9	111.1	111.2
Miscellaneous manufacturing industries (12/85=100) .....	39	103.8	107.5	108.3	108.6	108.9	110.1	110.6	110.9	111.2	111.5	111.8	112.1	112.4	112.6
<b>Service industries:</b>															
Pipelines, except natural gas (12/86=100)	46	97.9	94.8	94.8	94.7	94.7	94.5	94.5	94.5	94.4	94.4	94.4	94.4	94.4	94.4

### 37. Annual data: Producer Price Indexes, by stage of processing

(1982=100)

Index	1980	1981	1982	1983	1984	1985	1986	1987	1988
<b>Finished goods:</b>									
Total .....	88.0	96.1	100.0	101.6	103.7	104.7	103.2	105.4	108.0
Consumer goods .....	88.6	96.6	100.0	101.3	103.3	103.8	101.4	103.6	106.2
Capital equipment .....	85.8	94.6	100.0	102.8	105.2	107.5	109.7	111.7	114.3
<b>Intermediate materials, supplies, and components:</b>									
Total .....	90.3	98.6	100.0	100.6	103.1	102.7	99.1	101.5	107.1
Materials and components for manufacturing .....	91.7	98.7	100.0	101.2	104.1	103.3	102.2	105.3	113.2
Materials and components for construction .....	91.3	97.9	100.0	102.8	105.6	107.3	108.1	109.8	116.1
Processed fuels and lubricants .....	85.0	100.6	100.0	95.4	95.7	92.8	72.7	73.3	71.2
Containers .....	89.1	96.7	100.0	100.4	105.9	109.0	110.3	114.5	120.1
Supplies .....	89.9	96.9	100.0	101.8	104.1	104.4	105.6	107.7	113.7
<b>Crude materials for further processing:</b>									
Total .....	95.3	103.0	100.0	101.3	103.5	95.8	87.7	93.7	96.0
Foodstuffs and feedstuffs .....	104.6	103.9	100.0	101.8	104.7	94.8	93.2	96.2	106.1
Nonfood materials except fuel .....	84.6	101.8	100.0	100.7	102.2	96.9	81.6	87.9	85.5
Fuel .....	69.4	84.8	100.0	105.1	105.1	102.7	92.2	84.1	82.1

Current Labor Statistics: Price Data

**38. U.S. export price indexes by Standard International Trade Classification**

(1985=100, unless otherwise indicated)

Category	1974 SITC	1986	1987				1988				1989	
		Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
<b>ALL COMMODITIES</b> .....		99.0	99.9	102.2	102.8	104.9	106.5	109.5	111.9	111.6	113.3	113.2
<b>Food</b> .....	0	90.1	87.3	89.9	86.7	94.6	95.2	103.4	118.7	114.2	117.6	115.5
Meat and meat preparations .....	01	114.5	115.0	121.2	118.8	116.8	122.8	131.0	137.0	130.3	132.9	127.9
Fish and crustaceans .....	03	115.9	117.1	125.8	131.1	138.5	140.9	145.0	175.9	174.0	169.1	159.8
Grain and grain preparations .....	04	72.5	68.3	71.0	67.8	77.4	79.8	87.2	108.5	102.0	108.4	106.4
Vegetables and fruit .....	05	117.5	115.3	112.4	101.1	100.5	97.5	104.3	109.9	110.3	108.8	113.5
Animal feeds, excluding unmilled cereals .....	08	119.7	117.0	123.8	123.1	145.2	134.6	158.1	161.0	157.0	154.1	144.1
Miscellaneous food products .....	09	99.9	100.1	100.6	100.3	100.3	102.3	102.8	105.2	104.9	107.0	108.2
<b>Beverages and tobacco</b> .....	1	102.6	102.6	105.0	105.5	107.0	109.6	110.6	112.0	111.7	117.2	117.6
Tobacco and tobacco products .....	12	102.6	102.6	105.0	105.5	107.0	109.8	110.7	112.1	111.8	117.6	117.9
<b>Crude materials</b> .....	2	102.4	105.7	114.5	118.7	125.2	130.0	139.9	140.8	135.8	142.6	142.9
Raw hides and skins .....	21	115.9	131.9	149.6	147.7	157.1	171.4	166.8	156.7	136.8	146.7	150.0
Oilseeds .....	22	95.2	90.4	101.6	95.1	109.6	115.6	143.0	154.7	135.7	139.3	129.8
Crude rubber .....	23	98.9	99.9	101.0	102.8	105.3	104.5	106.1	109.1	109.9	111.1	112.2
Wood .....	24	107.9	111.2	116.2	141.7	146.0	150.2	149.6	150.0	148.6	157.3	171.2
Pulp and waste paper .....	25	129.4	144.2	149.9	153.0	160.4	171.2	179.5	181.7	182.1	192.9	193.6
Textile fibers .....	26	90.9	97.8	112.4	116.5	111.6	107.5	109.9	100.8	103.6	106.7	115.8
Crude minerals .....	27	96.8	94.4	94.0	91.6	91.6	92.8	94.2	94.8	94.8	98.8	99.3
Metal ores and metal scrap .....	28	96.8	98.8	107.0	117.4	125.9	131.8	146.0	145.0	150.4	163.5	156.9
<b>Fuels and related products</b> .....	3	77.8	81.3	82.8	84.6	82.5	79.3	82.1	79.5	79.4	81.7	86.0
Coal and coke .....	32	92.0	92.6	88.2	91.0	89.8	90.6	92.0	92.9	93.4	93.7	94.4
Crude petroleum and petroleum products .....	33	-	-	-	-	100.0	90.8	97.2	89.2	88.4	94.5	105.3
<b>Fats and oils</b> .....	4	71.8	73.9	78.8	78.5	81.6	92.7	97.3	101.5	91.5	90.3	87.1
Animal oils and fats .....	41	79.9	81.1	86.7	86.7	88.7	101.3	101.6	104.3	95.7	91.8	89.6
Fixed vegetable oils and fats .....	42	64.6	67.3	71.9	71.2	75.4	85.7	93.7	99.1	87.1	88.2	84.1
<b>Chemicals and related products</b> .....	5	95.2	99.6	106.7	107.7	112.9	117.9	121.6	124.9	125.5	125.5	121.7
Organic chemicals .....	51	92.4	101.9	118.4	116.1	123.5	135.1	144.6	153.3	150.8	149.6	144.2
Dyeing, tanning, and coloring materials .....	53	101.4	103.6	104.2	105.5	108.5	109.1	110.1	111.5	113.0	115.5	116.2
Medicinal and pharmaceutical products (12/85=100) .....	54	100.8	101.0	101.4	102.2	105.4	109.3	106.3	105.9	107.5	109.0	108.8
Essential oils, polish, and cleaning preparations .....	55	104.2	105.5	105.7	107.3	108.4	111.2	113.6	120.2	122.4	125.3	124.6
Fertilizers, manufactured .....	56	77.4	85.6	91.6	100.9	106.5	110.6	109.8	116.4	119.9	119.4	108.7
Artificial resins, plastics and cellulose .....	57	99.5	104.8	111.9	116.4	124.8	129.4	137.5	138.2	132.5	125.8	118.0
Chemical materials and products, n.e.s. .....	58	97.3	97.5	97.7	97.1	98.2	100.3	101.7	104.1	105.4	108.4	109.4
<b>Intermediate manufactured products</b> .....	6	104.2	106.4	107.9	110.3	111.2	114.4	117.7	119.6	120.6	122.6	123.1
Leather and furskins .....	61	107.8	123.6	126.9	128.7	118.0	125.7	125.1	128.6	125.0	118.3	120.7
Rubber manufactures .....	62	100.9	102.0	102.5	103.9	104.1	105.2	108.8	109.4	110.4	113.0	113.1
Paper and paperboard products .....	64	110.8	114.7	117.0	120.1	122.4	126.2	129.0	130.2	131.1	132.5	133.7
Textiles .....	65	101.8	103.3	103.7	104.1	105.2	106.5	107.9	108.6	111.6	113.9	115.2
Non-metallic mineral manufactures (9/85=100) .....	66	108.0	106.8	108.7	110.4	111.3	113.4	114.1	115.6	116.8	120.4	122.6
Iron and steel .....	67	101.9	102.9	102.9	100.7	102.9	106.1	110.8	111.4	112.1	116.0	116.7
Nonferrous metals .....	68	102.6	106.6	113.0	123.0	124.4	134.0	143.5	149.1	150.0	151.7	146.0
Metal manufactures, n.e.s. .....	69	100.8	101.5	101.3	102.3	103.4	104.5	107.6	109.9	110.9	112.6	114.0
<b>Machinery and transport equipment, excluding military and commercial aircraft</b> .....	7	101.6	101.7	101.8	102.1	102.4	103.2	104.0	104.8	105.8	106.7	107.2
Power generating machinery and equipment .....	71	103.7	104.6	103.7	104.8	105.2	107.0	108.4	108.5	109.3	111.8	112.3
Machinery specialized for particular industries .....	72	100.6	100.0	100.1	100.5	100.9	102.1	103.6	104.7	106.0	107.3	108.7
Metalworking machinery .....	73	104.2	105.8	106.7	107.8	108.2	109.3	110.8	111.0	114.4	115.7	117.4
General industrial machines and parts, n.e.s. .....	74	103.3	104.2	104.5	104.6	105.4	106.7	108.1	109.3	110.3	112.7	113.3
Office machines and automatic data processing equipment .....	75	98.2	96.0	96.1	95.7	95.5	95.8	95.7	96.8	96.4	95.8	94.9
Telecommunications, sound recording and reproducing equipment .....	76	101.3	101.9	101.4	101.4	101.9	102.8	104.6	104.1	105.1	106.7	107.9
Electrical machinery and equipment .....	77	100.3	101.7	102.1	102.5	101.8	103.1	103.4	105.3	105.7	106.1	106.4
Road vehicles and parts .....	78	103.3	103.1	103.5	103.8	104.6	104.5	104.9	105.4	106.8	107.2	107.8
Other transport equipment, excluding military and commercial aviation .....	79	103.5	104.5	105.5	105.8	106.6	107.4	109.6	109.7	111.9	113.5	114.9
<b>Miscellaneous manufactured articles</b> .....	8	103.8	104.6	105.2	105.4	105.6	106.9	108.1	108.9	110.5	111.4	112.9
Furniture and parts .....	82	103.5	106.7	107.6	107.6	110.0	111.2	111.4	111.7	114.2	114.3	118.1
Professional, scientific, and controlling instruments and apparatus .....	87	103.5	104.4	105.5	106.3	107.1	110.0	111.1	112.5	113.9	115.5	118.3
Photographic apparatus and supplies, optical goods, watches, and clocks .....	88	102.1	102.7	102.5	99.0	97.9	97.6	100.1	99.4	99.9	98.5	99.3
Miscellaneous manufactured articles, n.e.s. ....	89	104.9	105.2	104.8	105.9	105.8	105.4	106.5	106.5	108.7	110.2	110.0

- Data not available.



### 39. U.S. import price indexes by Standard International Trade Classification

(1985 = 100, unless otherwise indicated)

Category	1974 SITC	1987			1988				1989	
		June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
<b>ALL COMMODITIES</b> .....		110.0	110.9	112.5	113.8	116.8	115.3	117.6	119.7	120.7
<b>ALL COMMODITIES, EXCLUDING FUELS</b> .....		116.5	117.5	120.8	123.7	126.7	126.1	129.1	129.6	128.6
<b>Food and live animals</b> .....	0	108.3	109.1	112.5	114.1	114.0	112.7	114.3	114.1	111.4
Meat and meat preparations .....	01	108.0	114.4	113.4	111.5	107.0	111.2	108.7	111.2	109.3
Dairy products and eggs .....	02	122.3	121.7	125.1	125.6	125.0	122.2	125.8	124.0	120.1
Fish and crustaceans .....	03	126.0	130.4	131.0	132.5	129.3	125.9	126.7	127.0	123.0
Bakery goods, pasta products, grain, and grain preparations .....	04	126.2	124.8	130.7	135.8	139.8	136.9	142.2	140.4	140.1
Fruits and vegetables .....	05	110.1	110.0	116.2	115.4	120.3	123.7	127.7	123.4	123.3
Sugar, sugar preparations, and honey .....	06	109.6	109.0	107.0	109.6	110.0	112.1	110.8	109.8	111.8
Coffee, tea, cocoa .....	07	87.0	85.1	90.6	94.3	93.3	87.4	90.6	91.2	85.3
<b>Beverages and tobacco</b> .....	1	112.8	112.2	113.5	116.0	116.2	115.3	116.2	117.0	117.2
Beverages .....	11	114.2	114.8	116.2	118.7	120.0	118.9	119.9	120.7	120.7
<b>Crude materials</b> .....	2	116.2	120.3	122.1	129.2	137.8	135.4	143.2	146.2	144.2
Crude rubber (including synthetic and reclaimed) .....	23	103.7	110.7	120.1	121.7	151.1	133.3	121.5	123.0	103.4
Cork and wood .....	24	110.2	117.4	108.8	112.4	111.4	109.7	107.8	112.1	112.4
Pulp and waste paper .....	25	132.0	133.4	141.0	151.0	160.5	169.6	174.7	184.7	190.2
Textile fibers .....	26	118.4	128.1	135.2	137.8	145.5	141.9	145.6	151.5	145.3
Crude fertilizers and crude minerals .....	27	99.6	99.2	99.9	100.4	101.0	97.2	100.2	103.3	104.3
Metalliferous ores and metal scrap .....	28	124.5	128.7	137.9	151.2	167.6	172.2	205.4	204.3	212.3
Crude animal and vegetable materials, n.e.s. ....	29	109.0	107.6	118.3	135.8	148.2	122.0	139.5	138.5	110.1
<b>Fuels and related products</b> .....	3	74.1	74.3	67.2	60.6	63.4	57.7	56.4	66.8	78.8
Crude petroleum and petroleum products .....	33	74.4	75.2	67.8	60.4	63.6	57.7	56.1	67.3	80.3
<b>Fats and oils</b> .....	4	87.9	96.4	102.1	106.4	111.2	114.0	112.3	112.5	117.4
Fixed vegetable oils and fats (9/87 = 100) .....	42	-	100.0	105.7	111.1	116.1	119.2	117.4	117.3	122.6
<b>Chemicals and related products</b> .....	5	104.8	105.6	110.1	114.2	116.4	119.2	122.2	123.6	120.3
Organic chemicals .....	51	99.8	98.2	103.0	105.8	107.3	111.3	115.1	117.6	114.0
Inorganic chemicals .....	52	89.8	89.8	90.1	92.0	92.3	93.0	96.1	93.1	86.6
Medicinal and pharmaceutical products .....	54	123.4	124.3	126.3	135.3	140.3	145.4	146.4	154.9	153.5
Essential oils and perfumes .....	55	117.8	119.2	123.0	125.7	126.2	127.5	130.5	130.3	130.4
Manufactured fertilizers .....	56	94.6	109.3	133.6	133.7	136.3	136.5	139.9	143.5	142.1
Artificial resins and plastics and cellulose .....	58	114.7	114.4	117.6	121.6	124.3	127.6	129.5	129.5	129.8
Chemical materials and products, n.e.s. ....	59	117.7	120.6	124.8	138.7	148.5	153.4	156.5	154.8	149.8
<b>Intermediate manufactured products</b> .....	6	112.5	116.3	119.8	124.4	132.2	132.3	135.0	137.3	136.3
Leather and furskins .....	61	116.6	117.8	124.4	131.8	137.0	136.6	134.9	134.6	134.6
Rubber manufactures, n.e.s. ....	62	104.6	103.2	104.6	106.0	107.7	109.1	111.1	111.7	112.2
Cork and wood manufactures .....	63	124.3	128.3	128.2	133.8	138.2	136.1	134.1	136.9	139.8
Paper and paperboard products .....	64	104.9	110.3	112.3	117.2	118.3	119.5	119.9	120.6	120.9
Textiles .....	65	111.8	114.6	118.6	120.0	120.6	119.1	120.5	120.5	122.3
Nonmetallic mineral manufactures, n.e.s. ....	66	126.7	130.4	133.4	137.4	142.5	139.7	141.9	147.5	149.6
Iron and steel .....	67	106.6	109.4	114.0	120.0	127.2	129.9	130.7	132.6	133.9
Nonferrous metals .....	68	112.4	120.9	125.8	132.7	159.7	158.9	169.1	172.8	159.1
Metal manufactures .....	69	112.7	114.6	117.8	121.1	126.9	127.5	130.7	132.4	132.5
<b>Machinery and transport equipment</b> .....	7	119.9	119.9	123.1	125.4	127.3	126.7	129.9	130.1	129.3
Machinery (including SITC 71-77) .....	7hyb	119.1	118.7	122.6	124.6	126.4	125.9	128.7	129.2	128.4
Machinery specialized for particular industries .....	72	136.1	134.3	142.1	146.8	149.8	143.7	150.8	149.1	145.7
Metalworking machinery .....	73	128.1	130.2	135.5	139.9	142.4	139.7	144.1	142.9	139.7
General industrial machinery and parts, n.e.s. ....	74	130.8	130.1	137.0	140.4	143.7	139.6	144.2	144.7	143.0
Office machines and automatic data processing equipment .....	75	114.0	114.8	118.3	118.1	119.5	118.7	118.7	119.6	119.1
Telecommunications, sound recording and reproducing apparatus .....	76	110.3	110.2	112.1	112.8	113.8	113.9	115.5	115.7	115.5
Electrical machinery and equipment .....	77	115.8	115.1	118.2	122.2	124.2	125.9	129.3	130.5	129.8
Road vehicles and parts .....	78	120.5	120.6	122.6	125.5	127.6	127.1	130.8	130.5	129.7
<b>Miscellaneous manufactured articles</b> .....	8	117.8	118.5	121.8	124.2	125.7	124.2	126.6	126.6	126.7
Plumbing, heating, and lighting fixtures .....	81	117.0	116.2	121.0	123.4	126.9	124.5	127.2	130.0	131.5
Furniture and parts .....	82	119.8	119.0	124.3	125.4	129.6	128.0	129.1	127.2	128.0
Travel goods, handbags, and similar goods (6/85 = 100) .....	83	99.8	98.2	103.0	105.8	107.3	111.3	115.1	117.6	114.0
Clothing .....	84	109.2	111.9	112.3	115.6	114.9	116.7	117.2	118.5	120.5
Footwear .....	85	119.8	119.0	124.3	125.4	129.6	128.0	129.1	127.2	128.0
Professional, scientific, and controlling instruments and apparatus .....	87	135.9	132.7	138.7	140.0	142.5	135.8	141.9	141.1	136.9
Photographic apparatus and supplies, optical goods, watches, and clocks .....	88	126.0	122.1	127.3	129.2	129.3	125.4	130.6	130.2	127.9
Miscellaneous manufactured articles, n.e.s. ....	89	121.1	122.3	127.3	129.2	132.1	128.2	131.4	131.7	131.4

- Data not available.

**40. U.S. export price indexes by end-use category**

(1985 = 100 unless otherwise indicated)

Category	1987			1988				1989	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
Foods, feeds, and beverages .....	91.5	88.0	96.6	98.5	110.1	124.5	117.4	120.8	117.2
Industrial supplies and materials .....	106.1	109.1	111.8	114.2	118.3	118.7	118.6	120.7	120.7
Capital goods .....	101.6	101.8	102.1	103.4	104.3	104.9	105.7	106.7	107.4
Automotive .....	103.6	104.0	104.5	104.3	104.8	106.5	107.7	108.1	108.6
Consumer goods .....	106.3	106.9	108.0	110.1	110.6	111.3	112.9	115.3	115.6
Consumer nondurables, manufactured, except rugs .....	104.3	104.6	106.3	107.4	108.7	109.3	110.0	111.4	111.6
Consumer durables, manufactured .....	106.6	107.3	107.9	110.4	110.4	110.7	112.6	115.4	115.3
Agricultural (9/88=100) .....	95.0	92.1	99.3	101.1	110.9	120.6	114.0	117.7	116.0
All exports, excluding agricultural (9/88=100) .....	103.6	104.9	106.2	107.7	109.7	110.8	111.6	112.9	113.1

**41. U.S. import price indexes by end-use category**

(1985=100)

Category	1987			1988				1989	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
All imports, excluding petroleum (6/88=100) .....	116.1	117.0	120.3	123.2	126.2	125.4	128.3	129.0	128.0
Foods, feeds, and beverages .....	107.8	109.0	112.1	113.7	113.7	112.7	114.2	113.8	111.7
Industrial supplies and materials .....	93.5	95.3	93.7	92.7	97.8	95.2	96.4	102.1	106.8
Petroleum and petroleum products, excluding natural gas .....	74.1	74.7	67.6	60.3	63.5	57.5	56.2	67.2	79.7
Industrial supplies and materials, excluding petroleum .....	109.7	112.6	115.6	119.6	126.4	126.4	129.6	131.2	129.4
Capital goods, except automotive .....	122.2	121.9	126.6	128.6	131.0	129.0	132.3	132.4	131.0
Automotive vehicles, parts and engines .....	118.4	118.4	120.6	123.7	125.8	126.0	129.2	129.1	128.3
Consumer goods except automotive .....	116.9	118.2	121.4	124.2	126.3	125.0	127.4	128.7	129.3
Nondurables, manufactured .....	115.0	116.8	120.2	123.3	124.2	123.8	125.4	126.5	127.9
Durables, manufactured .....	117.7	117.9	121.0	123.5	125.5	124.5	127.4	127.9	127.9

## 42. U.S. export price indexes by Standard Industrial Classification <sup>1</sup>

(1985 = 100)

Industry group	1987			1988				1989	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
Manufacturing:									
Food and kindred products .....	107.4	107.1	116.3	120.8	125.1	128.9	123.5	124.5	122.8
Lumber and wood products, except furniture .....	116.2	138.9	142.5	146.1	145.4	146.1	144.0	151.7	164.8
Furniture and fixtures .....	108.6	108.7	111.2	112.5	112.9	112.9	115.3	115.2	116.0
Paper and allied products .....	112.3	115.5	119.3	124.6	129.8	133.1	135.6	139.9	141.4
Chemicals and allied products .....	107.6	108.7	113.8	118.4	122.3	125.4	125.5	125.9	122.3
Petroleum and coal products .....	80.5	81.4	78.8	73.0	77.8	73.7	75.4	79.8	86.5
Primary metal products .....	117.2	122.3	126.6	126.9	133.8	133.5	133.6	130.8	125.7
Machinery, except electrical .....	99.4	99.4	99.7	100.6	101.3	102.2	102.8	103.4	103.6
Electrical machinery .....	102.1	102.5	102.2	102.9	103.7	104.9	105.4	106.3	106.8
Transportation equipment .....	106.7	106.9	107.8	108.1	109.1	109.4	110.9	111.8	112.7
Scientific instruments; optical goods; clocks .....	106.8	106.6	107.1	109.2	110.8	112.0	113.4	114.5	116.7

<sup>1</sup> SIC-based classification.

## 43. U.S. import price indexes by Standard Industrial Classification <sup>1</sup>

(1985 = 100)

Industry group	1987			1988				1989	
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June
Manufacturing:									
Food and kindred products .....	106.3	108.4	110.6	114.0	114.4	115.0	115.4	114.9	113.9
Textile mill products .....	116.1	119.4	124.3	127.4	128.9	127.0	127.8	139.0	139.3
Apparel and related products .....	109.4	112.3	113.4	116.6	115.8	117.0	117.5	118.9	121.0
Lumber and wood products, except furniture .....	115.0	120.3	115.4	119.5	120.3	118.6	117.0	120.5	122.2
Furniture and fixtures .....	117.0	118.3	118.9	122.2	124.0	124.8	128.0	126.3	126.0
Paper and allied products .....	105.9	110.9	113.6	119.1	121.3	123.8	125.2	127.4	128.3
Chemicals and allied products .....	106.2	107.2	112.2	116.8	121.3	123.5	130.6	130.7	130.0
Petroleum refining and allied products .....	136.4	138.4	127.4	114.5	119.2	110.8	111.6	121.3	139.8
Rubber and miscellaneous plastics products .....	113.6	112.3	115.7	117.2	119.0	117.7	122.6	122.3	122.6
Leather and leather products .....	113.3	113.3	118.4	120.8	124.6	123.7	124.0	122.8	123.6
Stone, clay, glass, and concrete products .....	130.0	129.6	133.9	138.2	141.5	140.5	144.3	145.1	144.8
Primary metal products .....	110.4	115.2	120.0	122.6	137.0	136.2	140.2	140.6	135.6
Fabricated metal products .....	117.5	119.8	123.2	127.3	133.3	133.0	136.3	138.9	140.1
Machinery, except electrical .....	127.4	127.8	133.9	135.9	138.2	135.0	138.4	138.6	136.5
Electrical machinery and supplies .....	110.7	110.2	112.5	114.7	116.1	116.7	119.0	119.7	119.4
Transportation equipment .....	122.1	122.5	124.6	127.3	129.5	129.3	132.8	132.6	132.0
Scientific instruments; optical goods; clocks .....	132.5	128.8	134.0	135.8	137.0	132.2	137.7	136.7	133.9
Miscellaneous manufactured commodities .....	118.1	121.4	123.8	127.7	133.1	130.6	132.2	136.6	137.9

<sup>1</sup> SIC - based classification.

44. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

(1977=100)

Item	Quarterly Indexes										
	1986	1987				1988				1989	
	IV	I	II	III	IV	I	II	III	IV	I	II
<b>Business:</b>											
Output per hour of all persons .....	109.8	109.9	110.7	111.7	112.5	113.3	112.7	113.6	113.6	113.9	114.3
Compensation per hour .....	187.4	188.2	189.5	191.8	195.2	196.5	199.3	202.2	204.8	207.2	210.6
Real compensation per hour .....	102.8	101.9	101.4	101.7	102.6	102.3	102.7	102.9	103.1	103.0	103.1
Unit labor costs .....	170.6	171.2	171.3	171.6	173.5	173.5	176.9	178.1	180.2	181.9	184.3
Unit nonlabor payments .....	160.7	162.6	166.5	168.9	167.2	168.9	168.8	171.7	173.6	174.7	175.9
Implicit price deflator .....	167.1	168.2	169.6	170.7	171.3	171.9	174.1	175.8	177.9	179.4	181.4
<b>Nonfarm business:</b>											
Output per hour of all persons .....	107.6	107.7	108.6	109.5	110.3	111.1	110.7	111.6	112.1	111.8	112.0
Compensation per hour .....	186.4	187.0	188.3	190.5	193.9	195.1	197.8	200.5	203.3	205.7	208.6
Real compensation per hour .....	102.2	101.3	100.7	101.0	101.9	101.6	101.9	102.1	102.4	102.3	102.1
Unit labor costs .....	173.2	173.6	173.4	173.9	175.8	175.7	178.7	179.6	181.3	184.1	186.3
Unit nonlabor payments .....	161.6	164.1	167.6	170.3	168.7	170.2	169.8	172.0	176.2	174.6	176.2
Implicit price deflator .....	169.2	170.3	171.4	172.6	173.4	173.8	175.6	177.0	179.6	180.8	182.8
<b>Nonfinancial corporations:</b>											
Output per hour of all employees .....	110.6	110.4	111.6	113.0	113.6	114.8	115.0	115.4	115.3	114.7	114.7
Compensation per hour .....	183.0	183.6	184.7	186.9	189.7	191.2	193.6	196.0	198.3	200.7	203.3
Real compensation per hour .....	100.4	99.4	98.8	99.1	99.6	99.6	99.7	99.8	99.9	99.7	99.5
Total unit costs .....	170.1	171.0	170.8	170.8	172.1	171.9	173.6	175.2	177.5	180.4	183.5
Unit labor costs .....	165.4	166.3	165.5	165.3	167.0	166.6	168.4	169.9	172.1	174.9	177.3
Unit nonlabor costs .....	183.7	185.0	186.3	186.9	187.2	187.8	188.9	191.0	193.3	196.9	202.1
Unit profits .....	120.4	118.1	122.5	129.3	122.0	127.0	129.1	127.5	131.6	119.6	112.0
Unit nonlabor payments .....	161.5	161.6	163.9	166.7	164.4	166.5	168.0	168.8	171.7	169.8	170.5
Implicit price deflator .....	164.1	164.7	165.0	165.8	166.1	166.5	168.2	169.5	172.0	173.1	175.0
<b>Manufacturing:</b>											
Output per hour of all persons .....	130.1	131.3	133.1	134.3	135.1	136.3	137.5	139.2	140.0	140.7	141.7
Compensation per hour .....	187.8	188.5	188.7	190.4	192.2	195.5	197.1	199.5	202.3	203.9	205.1
Real compensation per hour .....	103.0	102.0	101.0	100.9	101.0	101.8	101.5	101.5	101.9	101.3	100.4
Unit labor costs .....	144.3	143.5	141.8	141.8	142.3	143.5	143.3	143.2	144.5	144.8	144.7

#### 45. Annual indexes of multifactor productivity and related measures, selected years

(1977 = 100)

Item	1960	1970	1973	1977	1979	1981	1982	1983	1984	1985	1986	1987
<b>Private business</b>												
Productivity:												
Output per hour of all persons .....	67.3	88.4	95.9	100.0	99.5	100.6	100.3	103.0	105.6	107.9	110.3	111.2
Output per unit of capital services .....	103.7	102.7	105.6	100.0	99.7	92.3	86.6	88.3	92.7	92.9	93.0	93.7
Multifactor productivity .....	78.5	93.1	99.2	100.0	99.6	97.6	95.2	97.6	100.9	102.4	103.9	104.7
Output .....	55.3	80.2	93.0	100.0	107.9	108.9	105.4	109.9	119.2	124.3	128.7	133.4
Inputs:												
Hours of all persons .....	82.2	90.8	96.9	100.0	108.4	108.2	105.2	106.7	112.9	115.2	116.7	120.0
Capital services .....	53.3	78.1	88.0	100.0	108.2	117.9	121.8	124.4	128.6	133.8	138.5	142.4
Combined units of labor and capital input .....	70.5	86.1	93.7	100.0	108.3	111.5	110.7	112.6	118.1	121.4	123.9	127.4
Capital per hour of all persons .....	64.9	86.1	90.8	100.0	99.8	108.9	115.8	116.6	113.9	116.1	118.7	118.6
<b>Private nonfarm business</b>												
Productivity:												
Output per hour of all persons .....	70.7	89.2	96.4	100.0	99.2	99.6	99.1	102.5	104.7	106.2	108.3	109.1
Output per unit of capital services .....	104.9	103.5	106.3	100.0	98.9	91.0	85.1	87.3	91.3	91.0	90.8	91.5
Multifactor productivity .....	81.2	93.8	99.7	100.0	99.1	96.7	94.1	97.0	99.9	100.7	102.0	102.7
Output .....	54.4	79.9	92.9	100.0	107.9	108.4	104.8	110.1	119.3	124.0	128.3	133.2
Inputs:												
Hours of all persons .....	77.0	89.6	96.3	100.0	108.8	108.8	105.7	107.4	114.0	116.8	118.5	122.0
Capital services .....	51.9	77.2	87.3	100.0	109.1	119.1	123.3	126.1	130.6	136.3	141.3	145.5
Combined units of labor and capital input .....	67.1	85.2	93.2	100.0	108.9	112.2	111.4	113.5	119.4	123.1	125.8	129.6
Capital per hour of all persons .....	67.4	86.2	90.7	100.0	100.3	109.4	116.6	117.4	114.6	116.7	119.3	119.2
<b>Manufacturing</b>												
Productivity:												
Output per hour of all persons .....	62.2	80.8	93.4	100.0	101.4	103.6	105.9	112.0	118.1	123.6	127.7	131.9
Output per unit of capital services .....	103.0	99.1	112.0	100.0	99.5	89.0	81.6	86.7	95.5	97.3	98.4	102.0
Multifactor productivity .....	72.0	85.3	98.0	100.0	100.9	99.7	99.2	105.0	112.1	116.4	119.5	123.6
Output .....	52.5	78.6	96.3	100.0	108.1	104.8	98.4	104.7	117.5	122.0	124.7	130.1
Inputs:												
Hours of all persons .....	84.4	97.3	103.1	100.0	106.5	101.1	92.9	93.5	99.5	98.7	97.7	98.6
Capital services .....	51.0	79.3	86.0	100.0	108.6	117.8	120.5	120.8	123.0	125.4	126.8	127.6
Combined units of labor and capital inputs .....	72.9	92.1	98.3	100.0	107.1	105.1	99.2	99.7	104.8	104.8	104.4	105.3
Capital per hour of all persons .....	60.4	81.5	83.4	100.0	101.9	116.5	129.8	129.3	123.7	127.1	129.8	129.4

46. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

(1977=100)

Item	1960	1970	1973	1977	1979	1981	1982	1983	1984	1985	1986	1987	1988
<b>Business:</b>													
Output per hour of all persons .....	66.1	87.6	95.2	100.0	99.7	101.0	100.2	102.6	105.2	107.3	109.8	111.1	113.1
Compensation per hour .....	32.9	57.2	70.3	100.0	119.3	144.1	154.9	160.8	167.4	174.8	183.8	191.0	200.4
Real compensation per hour .....	67.3	89.4	96.0	100.0	99.5	96.1	97.3	97.8	97.6	98.4	101.7	101.9	102.7
Unit labor costs .....	49.7	65.3	73.8	100.0	119.6	142.7	154.5	156.7	159.1	162.8	167.5	171.9	177.2
Unit nonlabor payments .....	46.4	59.4	72.6	100.0	112.3	134.4	136.3	146.2	156.4	160.9	162.1	166.3	170.8
Implicit price deflator .....	48.5	63.2	73.4	100.0	117.0	139.8	148.1	153.0	158.2	162.2	165.6	170.0	174.9
<b>Nonfarm business:</b>													
Output per hour of all persons .....	69.5	88.4	95.8	100.0	99.4	100.0	99.1	102.0	104.2	105.6	107.7	108.9	111.2
Compensation per hour .....	34.5	57.6	70.7	100.0	119.0	144.0	154.7	160.8	167.2	174.0	182.9	189.8	198.9
Real compensation per hour .....	70.7	90.0	96.4	100.0	99.3	96.0	97.1	97.8	97.5	98.0	101.1	101.2	101.9
Unit labor costs .....	49.7	65.2	73.8	100.0	119.8	144.0	156.1	157.6	160.4	164.9	169.8	174.2	178.8
Unit nonlabor payments .....	46.3	60.0	69.4	100.0	110.3	133.2	136.1	148.1	156.3	161.9	163.3	167.7	172.2
Implicit price deflator .....	48.5	63.4	72.3	100.0	116.5	140.3	149.2	154.3	159.0	163.8	167.6	172.0	176.5
<b>Nonfinancial corporations:</b>													
Output per hour of all employees .....	71.9	90.2	96.8	100.0	99.9	99.9	100.2	103.0	105.5	107.2	109.6	112.1	114.9
Compensation per hour .....	36.1	58.6	71.0	100.0	118.9	143.7	154.1	159.1	165.0	171.6	179.9	186.1	194.5
Real compensation per hour .....	74.0	91.6	96.9	100.0	99.3	95.8	96.8	96.8	96.3	96.7	99.5	99.3	99.7
Total unit costs .....	49.4	64.8	72.7	100.0	118.2	147.7	159.5	159.5	160.8	164.1	168.5	171.2	174.6
Unit labor costs .....	50.2	65.0	73.4	100.0	119.0	143.8	153.8	154.5	156.5	160.2	164.1	166.1	169.3
Unit nonlabor costs .....	47.0	64.2	70.7	100.0	115.8	159.1	176.4	174.3	173.6	175.8	181.7	186.4	190.3
Unit profits .....	59.8	52.3	65.6	100.0	94.5	98.1	78.5	110.9	136.5	133.0	123.1	123.0	128.8
Unit nonlabor payments .....	51.5	60.1	68.9	100.0	108.4	137.8	142.1	152.1	160.6	160.8	161.2	164.2	168.8
Implicit price deflator .....	50.7	63.3	71.9	100.0	115.4	141.7	149.8	153.7	157.9	160.4	163.1	165.4	169.1
<b>Manufacturing:</b>													
Output per hour of all persons .....	60.7	80.2	92.6	100.0	101.6	104.0	106.6	112.2	118.2	123.5	128.2	132.9	137.7
Compensation per hour .....	35.6	57.0	68.2	100.0	118.9	145.7	158.7	162.7	168.1	176.3	184.3	189.2	197.8
Real compensation per hour .....	73.0	89.0	93.1	100.0	99.2	97.1	99.6	99.0	98.1	99.3	101.9	100.9	101.3
Unit labor costs .....	58.7	71.0	73.7	100.0	117.0	140.1	148.8	145.1	142.3	142.7	143.8	142.3	143.6
Unit nonlabor payments .....	60.0	64.1	70.8	100.0	98.9	111.7	113.7	128.3	138.5	130.3	135.2	137.6	-
Implicit price deflator .....	59.1	69.0	72.8	100.0	111.7	131.8	138.6	140.2	141.2	139.1	141.3	141.0	-

- Data not available.

#### 47. Annual productivity indexes for selected industries

(1977 = 100)

Industry	SIC	1970	1973	1975	1979	1980	1981	1982	1983	1984	1985	1986	1987
Iron mining, crude ore .....	1011	99.9	113.2	112.7	122.7	124.7	132.8	100.9	139.0	173.3	187.9	200.3	267.5
Iron mining, usable ore .....	1011	111.1	122.6	117.8	122.8	123.2	130.6	98.2	138.6	171.7	187.9	197.8	262.0
Copper mining, crude ore .....	1021	84.8	92.0	87.2	109.1	99.5	102.0	106.4	129.9	140.3	164.2	195.4	193.1
Copper mining, recoverable metal .....	1021	85.5	85.8	77.2	98.2	91.6	97.7	116.2	130.9	155.4	193.1	228.9	208.8
Coal mining .....	111,121	141.1	125.5	105.3	99.4	112.5	122.2	119.2	136.1	151.3	154.0	167.3	179.7
Bituminous coal and lignite mining .....	121	142.3	126.3	105.2	99.6	112.6	122.7	120.0	136.9	152.3	154.6	168.2	180.6
Nonmetallic minerals, except fuels .....	14	89.7	97.2	90.6	102.7	96.5	94.7	89.3	98.2	105.5	107.5	108.2	107.9
Crushed and broken stone .....	142	83.1	94.0	91.4	106.9	101.3	96.7	94.1	103.9	105.8	104.5	104.9	102.7
Meatpacking plants .....	2011	78.7	88.7	88.6	104.6	108.9	113.9	119.5	123.4	125.6	130.1	126.2	124.1
Flour and other grain mill products .....	2041	76.6	80.4	85.8	97.3	94.8	96.7	104.1	110.4	114.9	122.9	130.6	129.0
Rice milling .....	2044	82.0	81.5	90.4	96.3	111.8	117.9	104.5	103.3	93.2	103.2	112.6	118.4
Raw and refined cane sugar .....	2061,62	86.1	93.4	90.8	101.5	99.3	98.8	87.6	100.0	94.7	108.7	109.6	118.5
Beet sugar .....	2063	92.9	100.0	98.1	104.6	102.1	98.7	94.8	94.5	108.8	100.7	111.8	142.6
Malt beverages .....	2082	56.7	73.7	86.1	109.9	116.0	118.3	122.6	131.3	137.9	130.3	152.3	154.8
Bottled and canned soft drinks .....	2086	70.0	79.0	89.5	103.4	106.9	110.6	114.1	121.5	131.0	136.7	146.6	157.3
Cigarettes, chewing and smoking tobacco .....	2111,31	85.3	88.7	93.3	102.4	101.8	99.6	99.5	104.1	107.2	111.7	115.5	121.2
Cigars .....	2121	88.4	89.5	93.7	101.4	106.4	107.3	111.4	112.3	141.4	129.3	133.1	111.1
Hosiery .....	2251,52	65.5	74.6	94.3	107.9	107.4	122.0	114.2	118.0	119.9	118.5	121.0	121.1
Nonwool yarn mills .....	2281	84.3	85.0	101.2	103.8	99.7	103.1	118.2	128.5	129.6	134.5	141.1	142.8
Sawmills and planing mills, general .....	2421	90.0	100.2	98.8	106.3	104.2	107.9	115.1	126.8	132.3	139.2	155.1	151.6
Household furniture .....	251	82.2	97.3	97.5	101.5	99.9	103.0	104.7	110.1	112.2	112.5	118.5	115.9
Paper, paperboard, and pulp mills .....	2611,21,31,61	77.5	91.5	86.7	105.4	105.2	104.4	111.3	119.5	121.0	123.1	133.5	141.8
Folding paperboard boxes .....	2651	77.4	92.8	98.5	104.6	101.6	104.5	104.2	104.5	102.4	99.6	101.4	98.1
Corrugated and solid fiber boxes .....	2653	73.1	86.1	96.2	106.9	111.0	109.8	111.9	114.0	118.9	122.5	126.7	128.9
Synthetic fibers .....	2823,24	53.8	79.5	84.5	115.0	115.7	120.9	103.6	126.2	125.3	135.8	146.2	155.7
Pharmaceutical preparations .....	2834	74.8	84.8	92.5	105.3	106.0	104.2	107.0	114.3	116.4	118.1	121.8	124.0
Paints and allied products .....	2851	74.9	82.2	94.2	104.8	100.8	99.8	106.5	113.8	121.5	125.6	125.2	128.5
Petroleum refining .....	2911	73.8	93.6	88.7	94.9	94.2	83.7	79.4	81.8	92.5	102.6	113.8	118.8
Tires and inner tubes .....	3011	87.6	95.1	91.8	107.3	102.4	118.1	128.2	136.1	146.8	146.7	151.4	167.8
Footwear .....	314	100.3	98.5	101.3	100.2	99.1	95.6	106.4	103.9	105.7	107.3	109.5	104.5
Glass containers .....	3221	87.2	92.6	98.5	102.4	105.2	110.1	105.8	108.5	128.0	127.0	138.9	143.0
Hydraulic cement .....	3241	84.8	99.7	84.7	96.0	87.0	91.1	94.0	108.4	125.3	128.3	135.5	142.2
Structural clay products .....	325	78.2	91.1	91.0	95.9	97.6	100.7	102.6	105.4	111.3	112.8	115.6	118.7
Clay construction products .....	3251,53,59	77.4	90.6	89.1	91.6	94.0	97.3	103.3	101.1	110.4	112.6	114.5	116.2
Brick and structural clay tile .....	3251	81.1	90.1	93.1	85.4	84.9	84.3	88.6	85.7	93.4	100.4	98.9	102.9
Clay refractories .....	3255	82.1	93.6	95.5	110.2	109.6	111.1	100.0	121.6	115.1	114.1	122.9	131.4
Steel .....	331	87.6	106.6	93.3	106.9	102.9	112.0	90.9	116.8	131.3	139.5	141.8	151.7
Gray iron foundries .....	3321	79.8	94.5	97.0	96.8	90.8	92.7	93.7	98.3	106.8	104.2	107.4	104.8
Steel foundries .....	3324,25	90.6	101.9	107.5	100.6	99.8	91.6	89.0	89.9	98.8	95.6	100.3	94.3
Primary copper, lead, and zinc .....	3331,32,33	78.1	94.8	85.3	106.5	103.7	118.6	128.0	141.2	148.0	181.5	210.8	221.1
Primary copper .....	3331	79.8	90.6	83.0	113.3	105.3	124.4	128.5	138.3	151.9	189.8	229.2	228.2
Primary aluminum .....	3334	92.5	99.4	96.2	99.7	100.0	103.8	103.0	111.5	125.4	125.4	134.0	143.5
Copper rolling and drawing .....	3351	76.8	93.2	76.8	98.1	94.1	97.9	106.0	121.1	128.1	122.0	127.2	139.8
Aluminum rolling and drawing .....	3353,54,55	66.0	94.0	87.5	100.3	100.0	96.8	99.2	110.4	116.2	115.9	125.0	141.6
Metal cans .....	3411	78.8	81.6	87.0	103.6	102.6	108.1	118.5	120.5	123.0	125.6	126.0	134.3
Farm machinery and equipment .....	3523	-	95.6	98.8	98.3	91.3	94.1	92.6	92.0	104.6	98.6	95.5	-
Lawn and garden equipment .....	3524	-	89.8	89.6	113.5	106.5	101.0	106.9	111.8	111.3	115.7	132.1	-
Construction machinery and equipment .....	3531	83.4	94.0	93.9	100.3	97.4	96.1	88.9	88.2	102.6	104.1	107.1	99.3
Metal cutting machine tools .....	3541	89.5	105.5	102.9	103.0	100.6	98.9	89.2	81.1	93.3	96.4	105.1	100.2
Metal forming machine tools .....	3542	98.5	114.1	104.0	99.2	93.5	89.4	85.0	87.6	93.7	96.6	97.1	104.6
Ball and roller bearings .....	3562	85.5	103.1	97.5	105.8	95.4	94.3	83.3	86.3	94.4	92.1	95.6	101.2
Transformers .....	3612	89.1	96.9	89.3	108.4	110.6	106.9	99.6	99.1	97.6	99.3	99.4	94.6
Switchgear and switchboard apparatus .....	3613	83.3	101.5	93.4	102.8	103.2	99.5	101.3	106.1	107.4	110.6	110.7	109.3
Motors and generators .....	3621	87.8	100.7	93.0	99.3	96.7	100.4	102.4	104.3	107.9	110.5	112.3	115.9
Household cooking equipment .....	3631	68.7	84.9	97.8	108.9	103.9	105.7	112.6	120.8	131.9	135.6	158.4	168.1
Household refrigerators and freezers .....	3632	71.7	95.6	94.5	112.3	114.4	117.4	116.1	127.1	127.5	136.8	133.5	131.6
Household laundry equipment .....	3633	70.7	88.5	93.6	108.1	102.1	103.9	105.4	112.2	117.5	118.2	123.1	133.0
Household appliances, not elsewhere classified .....	3639	70.4	85.2	88.8	102.6	99.1	100.4	94.7	103.7	109.8	110.0	113.1	117.3
Electric lamps .....	3641	88.3	90.1	96.4	105.2	103.2	106.9	108.4	124.8	131.9	126.9	131.1	146.9
Lighting fixtures .....	3645,46,47,48	78.1	93.8	89.2	94.6	93.3	88.7	91.0	96.3	102.2	107.0	113.8	116.5
Motor vehicles and parts .....	371	70.5	85.7	87.7	97.8	90.8	93.1	96.9	109.6	115.7	121.2	121.7	125.2
Railroad transportation, revenue traffic .....	401	77.7	96.4	89.5	104.7	107.3	111.5	115.8	141.9	152.6	162.1	178.6	208.3
Railroad transportation, car miles .....	401	89.1	101.4	98.3	102.9	107.9	107.6	110.1	128.9	137.7	138.9	148.2	166.8
Petroleum pipelines .....	4612,13	79.5	97.8	95.7	101.7	93.0	86.0	89.2	94.3	104.5	104.9	107.0	106.6
Telephone communications .....	4811	62.1	74.6	85.9	110.8	118.1	124.4	129.1	145.1	143.0	149.8	161.3	166.1
Electric utilities .....	491,93 pt.	77.1	88.4	92.9	95.4	94.0	93.0	89.5	90.9	94.4	93.5	96.2	101.0
Gas utilities .....	492,93 pt.	102.1	104.5	101.4	103.4	102.1	98.1	89.0	81.1	83.6	82.1	73.0	74.8
Retail food stores .....	54	107.0	102.3	98.8	98.3	100.3	97.1	95.5	95.5	96.1	96.6	94.6	92.8
Franchised new car dealers .....	5511	86.1	96.3	95.0	97.7	96.6	98.1	100.4	109.4	110.4	109.7	110.7	105.3
Gasoline service stations .....	5541	74.6	86.2	85.3	107.4	105.1	106.7	111.8	122.5	129.1	134.3	143.9	145.7
Apparel and accessory stores .....	56	81.3	99.5	105.0	112.9	117.9	123.9	126.4	132.9	141.0	146.5	153.7	146.4
Men's and boys' clothing stores .....	5611	82.7	103.4	102.3	108.6	107.1	116.4	116.6	120.6	127.4	135.0	139.5	135.0
Women's ready-to-wear stores .....	5621	76.5	94.2	106.5	116.0	117.9	127.8	142.0	151.3	158.3	162.8	176.4	171.9

See footnotes at end of table.

47. Continued—Annual productivity indexes for selected industries

(1977=100)

Industry	SIC	1970	1973	1975	1979	1980	1981	1982	1983	1984	1985	1986	1987
Family clothing stores .....	5651	75.2	109.1	109.5	108.2	123.7	132.4	140.7	149.2	145.8	138.5	136.0	130.9
Shoe stores .....	5661	95.3	100.5	95.1	112.8	110.3	114.2	110.2	107.6	110.1	117.4	125.8	124.0
Furniture, home furnishings, and equipment stores .....	57	80.1	95.3	91.9	107.6	107.4	112.6	109.2	118.4	129.4	133.5	144.6	145.2
Furniture and home furnishings stores .....	571	79.3	96.3	90.1	104.8	98.0	101.2	97.6	104.1	113.1	108.7	115.5	116.0
Appliance, radio, television, and music stores .....	572,73	81.2	94.1	94.8	112.4	124.0	132.4	128.7	143.4	155.1	180.0	199.5	199.8
Eating and drinking places .....	58	100.6	103.4	100.8	99.5	99.8	97.3	96.9	95.3	91.1	87.9	89.7	90.4
Drug and proprietary stores .....	5912	83.4	97.1	94.2	103.8	107.0	107.6	107.9	111.4	106.2	106.5	105.6	105.9
Liquor stores .....	592	-	100.9	96.3	96.6	102.2	104.0	108.1	101.6	98.7	107.1	98.0	91.6
Hotels, motels, and tourist courts .....	7011	85.1	92.1	89.7	100.0	95.0	91.6	88.8	95.4	102.1	97.5	92.8	88.0
Laundry and cleaning services .....	721	94.7	98.6	96.6	97.7	91.0	88.4	90.6	90.4	92.3	87.3	85.0	84.0
Beauty and barber shops .....	723,24	-	100.7	98.7	107.4	102.9	109.2	108.3	114.0	103.9	98.6	97.3	99.2

- Data not available.



**48. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted**

Country	Annual average		1987	1988					1989	
	1987	1988	IV	I	II	III	IV	I	II	
<b>Total labor force basis</b>										
United States .....	6.1	5.4	5.8	5.6	5.4	5.4	5.3	5.1	5.2	
Canada .....	8.8	7.7	8.1	7.8	7.6	7.8	7.7	7.5	7.6	
Australia .....	8.0	7.2	7.9	7.5	7.4	6.9	6.8	6.6	6.1	
Japan .....	2.9	2.5	2.7	2.7	2.5	2.6	2.4	2.4	2.3	
France .....	10.5	10.1	10.3	10.2	10.1	10.2	10.0	10.0	9.9	
Germany .....	6.3	6.3	6.3	6.3	6.3	6.3	6.1	5.8	5.7	
Italy <sup>1, 2</sup> .....	7.7	7.8	7.9	7.8	7.8	7.8	7.8	7.6	7.8	
Sweden .....	1.9	1.6	1.7	1.7	1.6	1.6	1.4	1.4	1.3	
United Kingdom .....	10.2	8.2	9.4	9.0	8.6	8.0	7.5	7.0	6.5	
<b>Civilian labor force basis</b>										
United States .....	6.2	5.5	5.9	5.7	5.5	5.5	5.3	5.2	5.3	
Canada .....	8.8	7.8	8.1	7.8	7.7	7.8	7.7	7.6	7.6	
Australia .....	8.1	7.2	8.0	7.6	7.5	7.0	6.8	6.6	6.1	
Japan .....	2.9	2.5	2.7	2.7	2.5	2.6	2.4	2.4	2.3	
France .....	10.8	10.4	10.5	10.4	10.3	10.4	10.2	10.2	10.2	
Germany .....	6.4	6.4	6.4	6.4	6.4	6.4	6.2	5.9	5.8	
Italy <sup>1, 2</sup> .....	7.9	7.9	8.1	7.9	7.9	8.0	7.9	7.7	8.0	
Sweden .....	1.9	1.6	1.7	1.7	1.6	1.6	1.4	1.4	1.3	
United Kingdom .....	10.2	8.3	9.5	9.0	8.6	8.0	7.6	7.0	6.6	

<sup>1</sup> Quarterly rates are for the first month of the quarter.

<sup>2</sup> Many Italians reported as unemployed did not actively seek work in the past 30 days, and they have been excluded for comparability with U.S. concepts. Inclusion of such persons would about double the Italian unemployment rate in 1985 and earlier years and increase it to 11-12 per-

cent for 1986 onward.

NOTE: Quarterly figures for France, Germany, and the United Kingdom are calculated by applying annual adjustment factors to current published data and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures.

49. Annual data: Employment status of the civilian working-age population, approximating U.S. concepts, 10 countries

(Numbers in thousands)

Employment status and country	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
<b>Labor force</b>										
United States .....	104,962	106,940	108,670	110,204	111,550	113,544	115,461	117,834	119,865	121,669
Canada .....	11,231	11,573	11,899	11,926	12,109	12,316	12,532	12,746	13,011	13,275
Australia .....	6,519	6,693	6,810	6,910	6,997	7,135	7,300	7,588	7,758	7,974
Japan .....	55,210	55,740	56,320	56,980	58,110	58,480	58,820	59,410	60,050	60,860
France .....	22,660	22,800	22,950	23,160	23,140	23,300	23,360	23,440	23,540	23,580
Germany .....	26,250	26,520	26,650	26,700	26,650	26,760	26,970	27,090	28,360	28,550
Italy .....	20,850	21,120	21,320	21,410	21,590	21,670	21,800	22,290	22,350	22,660
Netherlands .....	5,630	5,860	6,080	6,140	6,170	6,260	6,280	6,370	6,490	6,560
Sweden .....	4,262	4,312	4,327	4,350	4,369	4,385	4,418	4,443	4,480	4,530
United Kingdom .....	26,350	26,520	26,590	26,720	26,750	27,170	27,370	27,540	27,860	28,110
<b>Participation rate<sup>1</sup></b>										
United States .....	63.7	63.8	63.9	64.0	64.0	64.4	64.8	65.3	65.6	65.9
Canada .....	63.4	64.1	64.8	64.1	64.4	64.8	65.3	65.7	66.2	66.7
Australia .....	61.6	62.1	61.9	61.7	61.4	61.5	61.8	63.0	63.0	63.3
Japan .....	62.7	62.6	62.6	62.7	63.1	62.7	62.3	62.1	61.9	61.9
France .....	57.5	57.2	57.1	57.1	56.6	56.6	56.3	56.1	55.8	55.6
Germany .....	53.3	53.2	52.9	52.6	52.3	52.4	52.6	52.6	55.0	55.2
Italy .....	48.0	48.2	48.3	47.7	47.5	47.3	47.2	47.8	47.9	48.4
Netherlands .....	54.1	55.3	56.6	56.5	56.1	56.2	55.7	55.9	56.3	56.4
Sweden .....	66.6	66.9	66.8	66.8	66.7	66.6	66.9	67.0	67.3	67.8
United Kingdom .....	62.6	62.5	62.2	62.2	61.9	62.5	62.6	62.6	63.0	63.3
<b>Employed</b>										
United States .....	98,824	99,303	100,397	99,526	100,834	105,005	107,150	109,597	112,440	114,968
Canada .....	10,395	10,708	11,001	10,618	10,675	10,932	11,221	11,531	11,861	12,244
Australia .....	6,111	6,284	6,416	6,415	6,300	6,494	6,697	6,974	7,129	7,398
Japan .....	54,040	54,600	55,060	55,620	56,550	56,870	57,260	57,740	58,320	59,310
France .....	21,300	21,330	21,200	21,240	21,170	20,980	20,920	20,950	21,010	21,140
Germany .....	25,470	25,750	25,560	25,140	24,750	24,790	24,960	25,230	26,550	26,730
Italy .....	19,930	20,200	20,280	20,250	20,320	20,390	20,490	20,610	20,590	20,870
Netherlands .....	5,340	5,510	5,540	5,510	5,410	5,490	5,640	5,730	5,840	5,900
Sweden .....	4,174	4,226	4,219	4,213	4,218	4,249	4,293	4,326	4,396	4,458
United Kingdom .....	24,940	24,670	23,800	23,720	23,610	23,990	24,310	24,460	25,010	25,780
<b>Employment-population ratio<sup>2</sup></b>										
United States .....	59.9	59.2	59.0	57.8	57.9	59.5	60.1	60.7	61.5	62.3
Canada .....	58.7	59.3	59.9	57.1	56.8	57.5	58.5	59.4	60.4	61.6
Australia .....	57.8	58.3	58.4	57.3	55.3	56.0	56.6	57.9	57.9	58.7
Japan .....	61.4	61.3	61.2	61.2	61.4	61.0	60.6	60.4	60.1	60.4
France .....	54.0	53.5	52.8	52.3	51.8	51.0	50.4	50.2	49.8	49.9
Germany .....	51.7	51.7	50.8	49.6	48.6	48.5	48.7	49.0	51.5	51.7
Italy .....	45.9	46.1	45.9	45.2	44.7	44.5	44.4	44.2	44.1	44.6
Netherlands .....	51.3	52.0	51.6	50.7	49.2	49.3	50.0	50.2	50.6	50.7
Sweden .....	65.3	65.6	65.1	64.7	64.4	64.5	65.0	65.2	66.0	66.7
United Kingdom .....	59.2	58.1	55.7	55.2	54.7	55.2	55.6	55.6	56.6	58.0
<b>Unemployed</b>										
United States .....	6,137	7,637	8,273	10,678	10,717	8,539	8,312	8,237	7,425	6,701
Canada .....	836	865	898	1,308	1,434	1,384	1,311	1,215	1,150	1,031
Australia .....	408	409	394	495	697	641	603	613	629	576
Japan .....	1,170	1,140	1,260	1,360	1,560	1,610	1,560	1,670	1,730	1,550
France .....	1,360	1,470	1,750	1,920	1,970	2,320	2,440	2,490	2,530	2,440
Germany .....	780	770	1,090	1,560	1,900	1,970	2,010	1,860	1,810	1,820
Italy .....	920	920	1,040	1,160	1,270	1,280	1,310	1,680	1,760	1,790
Netherlands .....	290	350	540	630	760	770	640	640	650	660
Sweden .....	88	86	108	137	151	136	125	117	84	72
United Kingdom .....	1,420	1,850	2,790	3,000	3,140	3,180	3,060	3,080	2,850	2,330
<b>Unemployment rate</b>										
United States .....	5.8	7.1	7.6	9.7	9.6	7.5	7.2	7.0	6.2	5.5
Canada .....	7.4	7.5	7.5	11.0	11.8	11.2	10.5	9.5	8.8	7.8
Australia .....	6.3	6.1	5.8	7.2	10.0	9.0	8.3	8.1	8.1	7.2
Japan .....	2.1	2.0	2.2	2.4	2.7	2.8	2.6	2.8	2.9	2.5
France .....	6.0	6.4	7.6	8.3	8.5	10.0	10.4	10.6	10.8	10.4
Germany .....	3.0	2.9	4.1	5.8	7.1	7.4	7.5	6.9	6.4	6.4
Italy .....	4.4	4.4	4.9	5.4	5.9	5.9	6.0	7.5	7.9	7.9
Netherlands .....	5.2	6.0	8.9	10.3	12.3	12.3	10.2	10.0	10.0	10.1
Sweden .....	2.1	2.0	2.5	3.1	-	3.1	2.8	2.6	1.9	1.6
United Kingdom .....	5.4	7.0	10.5	11.2	11.7	11.7	11.2	11.2	10.2	8.3

<sup>1</sup> Labor force as a percent of the civilian working-age population.  
<sup>2</sup> Employment as a percent of the civilian working-age population.  
 - Data not available.

NOTE: See "Notes on the data" for information on breaks in series for Germany, Italy, the Netherlands, and Sweden.

### 50. Annual indexes of manufacturing productivity and related measures, 12 countries

(1977=100)

Item and country	1960	1970	1973	1976	1977	1978	1980	1981	1982	1983	1984	1985	1986	1987	1988
<b>Output per hour</b>															
United States .....	62.2	80.8	93.4	97.1	100.0	101.5	101.4	103.6	105.9	112.0	118.1	123.6	127.7	132.0	136.2
Canada .....	50.7	75.6	90.3	94.8	100.0	101.1	98.2	102.9	98.3	105.4	114.4	117.3	117.7	120.5	124.3
Japan .....	23.2	64.8	83.1	94.3	100.0	108.0	122.7	127.2	135.0	142.3	152.5	161.1	163.7	176.5	190.0
Belgium .....	33.0	60.4	78.8	95.3	100.0	106.1	119.2	127.6	135.2	148.1	155.0	158.6	164.5	170.5	-
Denmark .....	37.2	65.6	83.3	98.2	100.0	101.5	112.3	114.2	114.6	120.2	119.6	120.3	116.2	117.2	117.2
France .....	37.4	71.4	83.8	94.4	100.0	104.6	110.6	113.9	122.0	125.1	127.5	132.7	135.2	136.8	144.1
Germany .....	40.3	71.2	84.0	96.4	100.0	103.1	108.6	111.0	112.6	119.2	123.7	128.4	128.3	129.9	135.9
Italy .....	37.2	69.8	83.4	97.9	100.0	106.5	122.1	125.4	128.5	135.3	148.8	156.8	158.3	162.3	167.1
Netherlands .....	32.4	64.3	81.5	95.8	100.0	106.4	113.9	116.9	119.4	127.9	139.2	145.1	144.8	145.9	153.2
Norway .....	54.3	81.3	94.4	100.4	100.0	101.2	107.5	108.0	109.2	117.2	124.1	126.8	125.9	132.2	-
Sweden .....	42.3	80.7	94.8	101.7	100.0	102.8	112.7	113.2	116.5	125.5	131.0	136.1	136.0	141.8	145.0
United Kingdom .....	55.9	80.3	95.4	99.1	100.0	101.4	101.9	107.1	113.5	123.1	129.9	134.1	138.6	147.6	154.9
<b>Output</b>															
United States .....	52.5	78.6	96.3	93.1	100.0	106.0	103.2	104.8	98.4	104.7	117.5	122.0	124.7	130.1	138.1
Canada .....	41.3	73.5	93.5	96.5	100.0	104.6	103.6	107.4	93.6	99.6	112.5	118.8	121.9	128.5	136.0
Japan .....	19.2	69.9	91.9	94.8	100.0	106.7	124.1	129.8	137.3	148.2	165.4	177.0	177.8	190.8	212.3
Belgium .....	41.9	78.6	96.4	99.7	100.0	101.4	106.8	105.6	110.1	114.7	118.0	119.6	121.4	123.3	-
Denmark .....	49.2	82.0	95.9	99.6	100.0	99.7	110.1	106.6	108.3	115.6	121.0	124.9	125.9	121.1	118.4
France .....	36.5	75.5	90.5	95.6	100.0	102.3	104.6	102.9	104.0	103.8	102.6	103.0	102.8	101.8	105.7
Germany .....	50.0	86.6	96.1	98.0	100.0	101.8	106.6	104.9	102.4	103.6	106.4	110.0	110.8	111.6	116.3
Italy .....	33.0	69.0	83.5	96.5	100.0	104.9	121.9	119.9	118.7	119.7	125.3	129.0	131.9	137.3	145.3
Netherlands .....	44.8	84.4	95.8	99.0	100.0	102.8	106.6	106.7	105.0	107.0	113.3	116.7	118.1	118.7	123.8
Norway .....	54.8	86.5	99.2	102.1	100.0	97.7	99.5	98.6	96.8	97.2	102.7	106.5	106.9	108.3	-
Sweden .....	52.6	92.5	100.3	106.1	100.0	97.3	104.0	100.6	100.1	105.2	111.5	115.3	114.7	119.2	124.0
United Kingdom .....	71.2	94.9	104.7	98.1	100.0	100.6	91.8	86.3	86.4	88.8	92.5	94.8	95.6	101.0	108.2
<b>Total hours</b>															
United States .....	84.4	97.3	103.1	95.9	100.0	104.4	101.7	101.1	92.9	93.5	99.5	98.7	97.7	98.6	101.4
Canada .....	81.4	97.2	103.6	101.8	100.0	103.4	105.5	104.3	95.2	94.5	98.3	101.2	103.6	106.6	109.4
Japan .....	82.7	107.9	110.7	100.6	100.0	98.8	101.2	102.0	101.7	104.2	108.5	109.8	108.6	108.1	111.7
Belgium .....	127.1	130.2	122.3	104.6	100.0	95.5	89.6	82.8	81.4	77.5	76.1	75.4	73.8	72.3	-
Denmark .....	132.4	125.1	115.2	101.4	100.0	98.3	98.0	93.4	94.5	96.2	101.2	103.8	108.4	103.3	101.0
France .....	97.6	105.7	107.9	101.3	100.0	97.8	94.6	90.3	85.2	83.0	80.4	77.6	76.1	74.4	73.4
Germany .....	123.8	121.7	114.4	101.6	100.0	98.7	98.1	94.6	91.0	86.9	86.1	85.7	86.4	85.9	85.5
Italy .....	88.9	98.9	100.1	98.6	100.0	98.5	99.8	95.6	92.4	88.5	84.2	82.3	83.3	84.6	87.0
Netherlands .....	138.4	131.2	117.6	103.3	100.0	96.6	93.6	91.2	88.0	83.6	81.4	80.5	81.5	81.3	80.8
Norway .....	101.1	106.4	105.1	101.7	100.0	96.5	92.6	91.3	88.6	82.9	82.8	84.0	84.9	81.9	-
Sweden .....	124.4	114.6	105.7	104.3	100.0	94.6	92.3	88.9	85.9	83.9	85.1	84.7	84.3	84.0	85.5
United Kingdom .....	127.3	118.1	109.8	99.0	100.0	99.1	90.1	80.6	76.2	72.2	71.2	70.7	69.0	68.5	69.8
<b>Compensation per hour</b>															
United States .....	36.5	57.4	68.8	92.1	100.0	108.2	132.4	145.2	157.5	162.4	168.0	176.4	183.0	186.9	193.5
Canada .....	27.5	47.9	60.0	90.3	100.0	107.6	131.3	151.1	167.0	177.2	185.6	194.4	203.5	214.0	227.1
Japan .....	8.9	33.9	55.1	90.7	100.0	106.6	120.7	129.8	136.6	140.7	144.9	151.4	158.9	162.5	171.3
Belgium .....	13.8	34.9	53.5	89.5	100.0	107.8	130.2	144.5	150.7	159.8	173.1	183.6	190.8	194.7	-
Denmark .....	12.6	36.3	56.1	90.4	100.0	110.2	135.9	149.7	162.9	174.2	184.1	196.5	203.5	225.9	230.1
France .....	15.0	36.3	51.9	87.8	100.0	113.0	148.5	172.0	204.0	225.2	244.9	265.4	278.7	291.4	301.9
Germany .....	18.8	48.0	67.5	91.2	100.0	107.8	125.6	134.5	141.0	148.3	155.5	164.6	171.5	178.1	185.5
Italy .....	9.2	27.1	41.2	84.5	100.0	115.2	163.7	197.9	233.3	273.1	313.3	352.0	367.4	391.2	416.3
Netherlands .....	12.5	39.0	60.5	91.9	100.0	108.4	123.6	129.1	137.5	144.5	148.6	156.9	162.2	167.0	172.8
Norway .....	15.8	37.9	54.6	88.9	100.0	110.0	128.0	142.8	156.1	173.5	188.3	204.3	224.2	257.4	-
Sweden .....	14.7	38.5	54.2	91.5	100.0	111.4	133.6	148.1	158.9	173.3	189.7	212.4	228.7	244.8	261.1
United Kingdom .....	15.2	31.4	47.9	88.4	100.0	116.7	168.6	193.4	211.7	226.6	242.3	258.8	277.8	295.7	319.3
<b>Unit labor costs: National currency basis</b>															
United States .....	58.7	71.0	73.7	94.9	100.0	106.6	130.6	140.1	148.7	145.0	142.2	142.7	143.3	141.7	142.1
Canada .....	54.2	63.4	66.5	95.3	100.0	106.5	133.7	146.7	170.0	168.1	162.3	165.7	172.8	177.5	182.7
Japan .....	38.4	52.3	66.4	96.2	100.0	98.7	98.4	102.0	101.2	98.9	95.0	94.0	91.1	92.1	90.2
Belgium .....	41.7	57.8	67.9	93.9	100.0	101.6	109.2	113.2	111.5	107.9	111.7	115.8	116.0	114.2	-
Denmark .....	33.8	55.4	67.4	92.1	100.0	108.6	121.0	131.1	142.2	144.9	153.9	163.3	175.1	192.8	196.3
France .....	40.2	50.8	62.0	93.0	100.0	108.0	134.3	151.0	167.2	179.9	192.0	200.0	206.2	213.0	209.6
Germany .....	46.6	67.4	80.3	94.6	100.0	104.5	115.7	121.2	125.2	124.4	125.8	128.3	133.7	137.1	136.4
Italy .....	24.7	38.8	49.4	86.3	100.0	108.1	134.0	157.8	181.6	201.9	210.6	224.5	232.0	241.0	249.1
Netherlands .....	38.5	60.7	74.3	96.0	100.0	101.8	108.5	110.4	115.2	113.0	106.8	108.1	112.0	114.4	112.8
Norway .....	29.2	46.6	57.8	88.5	100.0	108.7	119.1	132.2	142.9	148.0	151.8	161.1	178.1	194.7	-
Sweden .....	34.8	47.7	57.2	90.0	100.0	108.4	118.6	130.9	136.3	138.1	144.8	156.1	168.2	172.6	180.0
United Kingdom .....	27.2	39.1	50.2	89.2	100.0	115.0	165.5	180.6	186.5	184.1	186.5	193.0	200.4	200.4	206.2
<b>Unit labor costs: U.S. dollar basis</b>															
United States .....	58.7	71.0	73.7	94.9	100.0	106.6	130.6	140.1	148.7	145.0	142.2	142.7	143.3	141.7	142.1
Canada .....	59.4	64.5	70.6	102.7	100.0	99.3	121.5	130.0	146.3	144.9	133.2	128.9	132.1	142.3	157.8
Japan .....	28.5	39.1	65.6	86.9	100.0	126.8	116.8	123.8	108.8	111.5	107.2	105.6	154.4	170.5	188.4
Belgium .....	30.0	41.7	62.7	87.2	100.0	115.8	134.0	109.6	87.2	75.6	69.3	69.9	93.1	109.5	-
Denmark .....	29.5	44.4	67.2	91.5	100.0	118.4	129.0	110.3	102.3	95.1	89.3	92.5	129.9	169.0	174.8
France .....	40.3	45.2	68.6	95.8	100.0	117.9	156.4	136.4	124.9	116.1	108.1	109.5	146.3	174.2	172.9
Germany .....	25.9	42.9	70.4	87.3	100.0	121.0	147.9	124.9	119.7	113.1	102.6	101.2	140.3	177.0	180.3
Italy .....	35.1	54.7	75.0	91.8	100.0	112.4	138.4	122.4	118.4	117.3	105.9	103.8	137.4	164.0	168.8
Netherlands .....	25.1	41.2	65.6	89.1	100.0	115.									

51. Occupational injury and illness incidence rates by industry, United States

Industry and type of case <sup>1</sup>	Incidence rates per 100 full-time workers <sup>2</sup>								
	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>PRIVATE SECTOR<sup>3</sup></b>									
Total cases .....	9.5	8.7	8.3	7.7	7.6	8.0	7.9	7.9	8.3
Lost workday cases .....	4.3	4.0	3.8	3.5	3.4	3.7	3.6	3.6	3.8
Lost workdays .....	67.7	65.2	61.7	58.7	58.5	63.4	64.9	65.8	69.9
<b>Agriculture, forestry, and fishing<sup>3</sup></b>									
Total cases .....	11.7	11.9	12.3	11.8	11.9	12.0	11.4	11.2	11.2
Lost workday cases .....	5.7	5.8	5.9	5.9	6.1	6.1	5.7	5.6	5.7
Lost workdays .....	83.7	82.7	82.8	86.0	90.8	90.7	91.3	93.6	94.1
<b>Mining</b>									
Total cases .....	11.4	11.2	11.6	10.5	8.4	9.7	8.4	7.4	8.5
Lost workday cases .....	6.8	6.5	6.2	5.4	4.5	5.3	4.8	4.1	4.9
Lost workdays .....	150.5	163.6	146.4	137.3	125.1	160.2	145.3	125.9	144.0
<b>Construction</b>									
Total cases .....	16.2	15.7	15.1	14.6	14.8	15.5	15.2	15.2	14.7
Lost workday cases .....	6.8	6.5	6.3	6.0	6.3	6.9	6.8	6.9	6.8
Lost workdays .....	120.4	117.0	113.1	115.7	118.2	128.1	128.9	134.5	135.8
General building contractors:									
Total cases .....	16.3	15.5	15.1	14.1	14.4	15.4	15.2	14.9	14.2
Lost workday cases .....	6.8	6.5	6.1	5.9	6.2	6.9	6.8	6.6	6.5
Lost workdays .....	111.2	113.0	107.1	112.0	113.0	121.3	120.4	122.7	134.0
Heavy construction contractors:									
Total cases .....	16.6	16.3	14.9	15.1	15.4	14.9	14.5	14.7	14.5
Lost workday cases .....	6.7	6.3	6.0	5.8	6.2	6.4	6.3	6.3	6.4
Lost workdays .....	123.1	117.6	106.0	113.1	122.4	131.7	127.3	132.9	139.1
Special trade contractors:									
Total cases .....	16.0	15.5	15.2	14.7	14.8	15.8	15.4	15.6	15.0
Lost workday cases .....	6.9	6.7	6.6	6.2	6.4	7.1	7.0	7.2	7.1
Lost workdays .....	124.3	118.9	119.3	118.6	119.0	130.1	133.3	140.4	135.7
<b>Manufacturing</b>									
Total cases .....	13.3	12.2	11.5	10.2	10.0	10.6	10.4	10.6	11.9
Lost workday cases .....	5.9	5.4	5.1	4.4	4.3	4.7	4.6	4.7	5.3
Lost workdays .....	90.2	86.7	82.0	75.0	73.5	77.9	80.2	85.2	95.5
<b>Durable goods</b>									
Lumber and wood products:									
Total cases .....	20.7	18.6	17.6	16.9	18.3	19.6	18.5	18.9	18.9
Lost workday cases .....	10.8	9.5	9.0	8.3	9.2	9.9	9.3	9.7	9.6
Lost workdays .....	175.9	171.8	158.4	153.3	163.5	172.0	171.4	177.2	176.5
Furniture and fixtures:									
Total cases .....	17.6	16.0	15.1	13.9	14.1	15.3	15.0	15.2	15.4
Lost workday cases .....	7.1	6.6	6.2	5.5	5.7	6.4	6.3	6.3	6.7
Lost workdays .....	99.6	97.6	91.9	85.6	83.0	101.5	100.4	103.0	103.6
Stone, clay, and glass products:									
Total cases .....	16.8	15.0	14.1	13.0	13.1	13.6	13.9	13.6	14.9
Lost workday cases .....	8.0	7.1	6.9	6.1	6.0	6.6	6.7	6.5	7.1
Lost workdays .....	133.7	128.1	122.2	112.2	112.0	120.8	127.8	126.0	135.8
Primary metal industries:									
Total cases .....	17.3	15.2	14.4	12.4	12.4	13.3	12.6	13.6	17.0
Lost workday cases .....	8.1	7.1	6.7	5.4	5.4	6.1	5.7	6.1	7.4
Lost workdays .....	134.7	128.3	121.3	101.6	103.4	115.3	113.8	125.5	145.8
Fabricated metal products:									
Total cases .....	19.9	18.5	17.5	15.3	15.1	16.1	16.3	16.0	17.0
Lost workday cases .....	8.7	8.0	7.5	6.4	6.1	6.7	6.9	6.8	7.2
Lost workdays .....	124.2	118.4	109.9	102.5	96.5	104.9	110.1	115.5	121.9
Machinery, except electrical:									
Total cases .....	14.7	13.7	12.9	10.7	9.8	10.7	10.8	10.7	11.3
Lost workday cases .....	5.9	5.5	5.1	4.2	3.6	4.1	4.2	4.2	4.4
Lost workdays .....	83.6	81.3	74.9	66.0	58.1	65.8	69.3	72.0	72.7
Electric and electronic equipment:									
Total cases .....	8.6	8.0	7.4	6.5	6.3	6.8	6.4	6.4	7.2
Lost workday cases .....	3.4	3.3	3.1	2.7	2.6	2.8	2.7	2.7	3.1
Lost workdays .....	51.9	51.8	48.4	42.2	41.4	45.0	45.7	49.8	55.9
Transportation equipment:									
Total cases .....	11.6	10.6	9.8	9.2	8.4	9.3	9.0	9.6	13.5
Lost workday cases .....	5.5	4.9	4.6	4.0	3.6	4.2	3.9	4.1	5.7
Lost workdays .....	85.9	82.4	78.1	72.2	64.5	68.8	71.6	79.1	105.7
Instruments and related products:									
Total cases .....	7.2	6.8	6.5	5.6	5.2	5.4	5.2	5.3	5.8
Lost workday cases .....	2.8	2.7	2.7	2.3	2.1	2.2	2.2	2.3	2.4
Lost workdays .....	40.0	41.8	39.2	37.0	35.6	37.5	37.9	42.2	43.9
Miscellaneous manufacturing industries:									
Total cases .....	11.7	10.9	10.7	9.9	9.9	10.5	9.7	10.2	10.7
Lost workday cases .....	4.7	4.4	4.4	4.1	4.0	4.3	4.2	4.3	4.6
Lost workdays .....	67.7	67.9	68.3	69.9	66.3	70.2	73.2	70.9	81.5

See footnotes at end of table.

51. Continued— Occupational injury and illness incidence rates by industry, United States

Industry and type of case <sup>1</sup>	Incidence rates per 100 full-time workers <sup>2</sup>								
	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>Nondurable goods</b>									
Food and kindred products:									
Total cases .....	19.9	18.7	17.8	16.7	16.5	16.7	16.7	16.5	17.7
Lost workday cases .....	9.5	9.0	8.6	8.0	7.9	8.1	8.1	8.0	8.6
Lost workdays .....	141.8	136.8	130.7	129.3	131.2	131.6	138.0	137.8	153.7
Tobacco manufacturing:									
Total cases .....	9.3	8.1	8.2	7.2	6.5	7.7	7.3	6.7	8.6
Lost workday cases .....	4.2	3.8	3.9	3.2	3.0	3.2	3.0	2.5	2.5
Lost workdays .....	64.8	45.8	56.8	44.6	42.8	51.7	51.7	45.6	46.4
Textile mill products:									
Total cases .....	9.7	9.1	8.8	7.6	7.4	8.0	7.5	7.8	9.0
Lost workday cases .....	3.4	3.3	3.2	2.8	2.8	3.0	3.0	3.1	3.6
Lost workdays .....	61.3	62.8	59.2	53.8	51.4	54.0	57.4	59.3	65.9
Apparel and other textile products:									
Total cases .....	6.5	6.4	6.3	6.0	6.4	6.7	6.7	6.7	7.4
Lost workday cases .....	2.2	2.2	2.2	2.1	2.4	2.5	2.6	2.7	3.1
Lost workdays .....	34.1	34.9	35.0	36.4	40.6	40.9	44.1	49.4	59.5
Paper and allied products:									
Total cases .....	13.5	12.7	11.6	10.6	10.0	10.4	10.2	10.5	12.8
Lost workday cases .....	6.0	5.8	5.4	4.9	4.5	4.7	4.7	4.7	5.8
Lost workdays .....	108.4	112.3	103.6	99.1	90.3	93.8	94.6	99.5	122.3
Printing and publishing:									
Total cases .....	7.1	6.9	6.7	6.6	6.6	6.5	6.3	6.5	6.7
Lost workday cases .....	3.1	3.1	3.0	2.8	2.9	2.9	2.9	2.9	3.1
Lost workdays .....	45.1	46.5	47.4	45.7	44.6	46.0	49.2	50.8	55.1
Chemicals and allied products:									
Total cases .....	7.7	6.8	6.6	5.7	5.5	5.3	5.1	6.3	7.0
Lost workday cases .....	3.5	3.1	3.0	2.5	2.5	2.4	2.3	2.7	3.1
Lost workdays .....	54.9	50.3	48.1	39.4	42.3	40.8	38.8	49.4	58.8
Petroleum and coal products:									
Total cases .....	7.7	7.2	6.7	5.3	5.5	5.1	5.1	7.1	7.3
Lost workday cases .....	3.6	3.5	2.9	2.5	2.4	2.4	2.4	3.2	3.1
Lost workdays .....	62.0	59.1	51.2	46.4	46.8	53.5	49.9	67.5	65.9
Rubber and miscellaneous plastics products:									
Total cases .....	17.1	15.5	14.6	12.7	13.0	13.6	13.4	14.0	15.9
Lost workday cases .....	8.2	7.4	7.2	6.0	6.2	6.4	6.3	6.6	7.6
Lost workdays .....	127.1	118.6	117.4	100.9	101.4	104.3	107.4	118.2	130.8
Leather and leather products:									
Total cases .....	11.5	11.7	11.5	9.9	10.0	10.5	10.3	10.5	12.4
Lost workday cases .....	4.9	5.0	5.1	4.5	4.4	4.7	4.6	4.8	5.8
Lost workdays .....	76.2	82.7	82.6	86.5	87.3	94.4	88.3	83.4	114.5
<b>Transportation and public utilities</b>									
Total cases .....	10.0	9.4	9.0	8.5	8.2	8.8	8.6	8.2	8.4
Lost workday cases .....	5.9	5.5	5.3	4.9	4.7	5.2	5.0	4.8	4.9
Lost workdays .....	107.0	104.5	100.6	96.7	94.9	105.1	107.1	102.1	108.1
<b>Wholesale and retail trade</b>									
Total cases .....	8.0	7.4	7.3	7.2	7.2	7.4	7.4	7.7	7.7
Lost workday cases .....	3.4	3.2	3.1	3.1	3.1	3.3	3.2	3.3	3.4
Lost workdays .....	49.0	48.7	45.3	45.5	47.8	50.5	50.7	54.0	56.1
Wholesale trade:									
Total cases .....	8.8	8.2	7.7	7.1	7.0	7.2	7.2	7.2	7.4
Lost workday cases .....	4.1	3.9	3.6	3.4	3.2	3.5	3.5	3.6	3.7
Lost workdays .....	59.1	58.2	54.7	52.1	50.6	55.5	59.8	62.5	64.0
Retail trade:									
Total cases .....	7.7	7.1	7.1	7.2	7.3	7.5	7.5	7.8	7.8
Lost workday cases .....	3.1	2.9	2.9	2.9	3.0	3.2	3.1	3.2	3.3
Lost workdays .....	44.7	44.5	41.1	42.6	46.7	48.4	47.0	50.5	52.9
<b>Finance, insurance, and real estate</b>									
Total cases .....	2.1	2.0	1.9	2.0	2.0	1.9	2.0	2.0	2.0
Lost workday cases .....	.9	.8	.8	.9	.9	.9	.9	.9	.9
Lost workdays .....	13.3	12.2	11.6	13.2	12.8	13.6	15.4	17.1	14.3
<b>Services</b>									
Total cases .....	5.5	5.2	5.0	4.9	5.1	5.2	5.4	5.3	5.5
Lost workday cases .....	2.5	2.3	2.3	2.3	2.4	2.5	2.6	2.5	2.7
Lost workdays .....	38.1	35.8	35.9	35.8	37.0	41.1	45.4	43.0	45.8

<sup>1</sup> Total cases include fatalities.

<sup>2</sup> The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as: (N/EH) X 200,000, where: N = number of injuries and illnesses or lost workdays.

EH = total hours worked by all employees during calendar year.  
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year.)

<sup>3</sup> Excludes farms with fewer than 11 employees since 1976.

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<b>Producer Price Indexes</b>	November 9	October	December 15	November	January 12	December	2; 34-37
<b>Occupational injuries and illnesses</b>	November 15	1988					51
<b>Consumer Price Index</b>	November 21	October	December 19	November	January 18	December	2; 31-33
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<b>U.S. Import and Export Price Indexes</b>	November 22	October	December 21	November	January 25	4th quarter	38-43
<b>Employment Cost Index</b>					January 25	4th quarter	22-25
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