

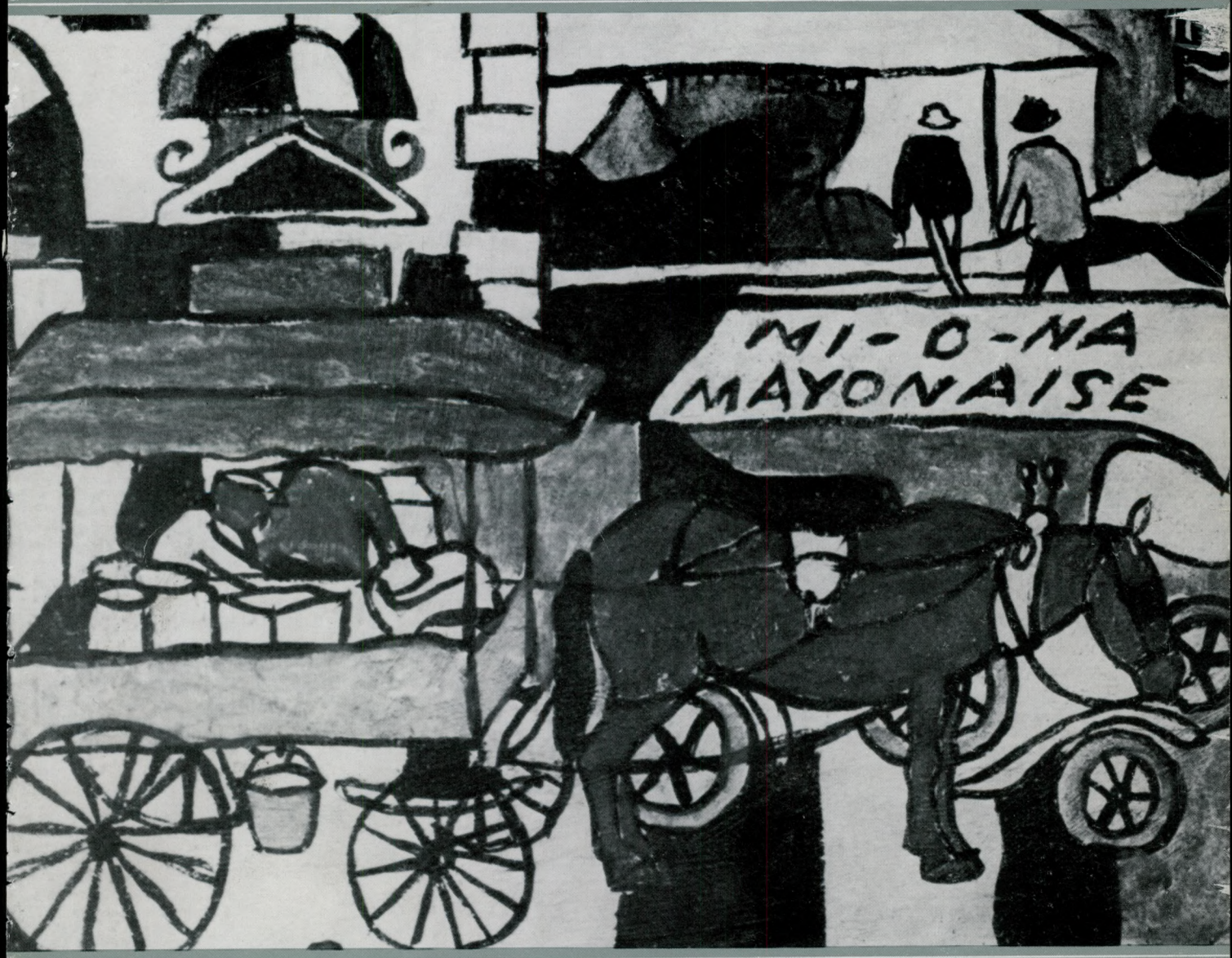


MONTHLY LABOR REVIEW

U.S. Department of Labor  
Bureau of Labor Statistics  
July 1982

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In this issue:  
Prices decelerate in the First Quarter







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

**BUREAU OF LABOR STATISTICS**  
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## MONTHLY LABOR REVIEW

JULY 1982  
VOLUME 105, NUMBER 7

Henry Lowenstern, Editor-in-Chief  
Robert W. Fisher, Executive Editor

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# Labor Month In Review



**WORK FORCE REDUCTIONS.** Around the world, many firms have found it necessary to reduce the number of workers on their payrolls. The problem has caused governments, business, and workers to essay new solutions through legislation, administrative action, and collective bargaining. To assess the significance of recent developments, the International Labor Office invited a number of experts to prepare studies of current law and practice in their countries. This year, the ILO issued a volume of selected studies. The following excerpts are taken from the comparative survey of national practices by Edward Yemin, editor of the volume and head of the Labor Legislation Section of the ILO:

**Change.** In the industrialized market economies, a decade of growth and relative full employment in the 1960's was followed by a decade in which recurrent recessions threw large numbers of persons out of work in circumstances in which the fight against inflation muted recourse to classical Keynesian solutions for growing unemployment. At the same time, the introduction of technological innovations caused redundancies in certain industries. In addition, certain important industries in some countries went through periods of crisis and contraction due to structural problems and international competition.

**Definition.** By work force reduction or redundancy, we mean dismissal or long-term layoff of workers for economic, structural, or technological reasons intended either to reduce the number of workers employed or to alter the composition of the work force. Work force reductions may be effectuated by different methods from the legal point of view. The distinctions between these methods, derived from the law governing contracts of employment in the countries concerned, have become more

sharply drawn in Europe and Japan, where a more formal legal view of the employment relationship has grown up, than in Canada and the United States, where the relationship still tends to be rather informal.

**Comparisons.** Work force reductions affect the contracts of employment of the workers concerned, involving a termination or suspension of such contracts. In European countries and in Japan, contracts of employment are either of an indefinite duration (in which case they may be terminated by giving prior notice, usually subject to rules protecting workers against unjustified dismissal), or they are for a fixed duration or specified task (in which case they terminate upon expiration of the agreed period or completion of the given task). In these countries, indefinite-duration contracts of employment tend to prevail, recourse to fixed-term contracts being limited in practice, sometimes as a result of legal restrictions on their use. In Canada and the United States, contracts of employment are generally deemed to be from day to day or even from hour to hour and may be terminated by either party at will in the absence of a contrary stipulation in the contract or in an applicable collective agreement.

In European countries, work force reductions tend to be carried out mainly through termination of the contracts of employment of the workers concerned (by dismissal, induced resignation or mutual agreement) and to a much lesser degree through nonrenewal of fixed-term contracts (few workers being employed under such contracts). Suspensions of the contract are sometimes resorted to in situations which clearly require very short interruptions of work and, when used in times of economic difficulties, are more closely associated with work-sharing arrangements such as short-time work.

In Japan, in situations where the

"life-time employment" system is implemented, employers avoid as far as possible termination of their regular work force, preferring to effectuate any needed work force reduction by non-renewal of a relatively small body of temporary workers employed under short fixed-term contracts. Where this is not sufficient, they still prefer to use other methods, including a form of temporary layoff with part pay, detachment to related companies, or induced voluntary departure. Dismissals of regular workers tend to be used only as a last resort in situations of very severe difficulty.

In Canada and the United States, work force reductions are generally carried out by layoff; however, this term is not used with conceptual precision and is employed to describe work force reductions intended to be of very brief duration and of a somewhat longer duration, and reductions that are intended to be permanent, as well as to reductions the length of which the employer is unable to foresee. Layoff may thus be intended at the outset to be either a suspension of the employment relationship or a termination; but it may also be a suspension which at some point in time becomes, either according to the terms of the applicable agreement or at the election of one of the parties, a termination. This can also occur in other countries, such as Great Britain, where a suspension of the employment relationship may be treated by the worker as a dismissal under certain circumstances.

The 214-page study, *Work force Reductions in Undertakings: Policies and measures for the protection of redundant workers in seven industrialized market economy countries*, is available from major booksellers or ILO local offices in various countries, or direct from ILO Publications, International Labour Office, CH-1211 Geneva 22, Switzerland. □



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## Inflation continues to abate during the first quarter

*The rate of price increases decelerated in both the retail and primary markets, with the Consumer Price Index posting its lowest quarterly rise since 1965*

CRAIG HOWELL, DAVID CALLAHAN,  
AND MARY BURNS

After slowing substantially in 1981, inflation continued to decelerate in both the retail and primary markets during the first quarter of 1982. The Consumer Price Index for All Urban Consumers (CPI-U) advanced at a seasonally adjusted annual rate of increase of 1.0 percent, the lowest quarterly rise since 1965.<sup>1</sup> (See table 1.) The recession and a continued abundance of oil were among the principal influences pushing inflation down. The housing and auto industries, particularly hard hit by slumping demand, showed significant price decreases. Retail gasoline prices fell at a record rate, as supplies remained high.

One measure of the underlying rate of inflation—the CPI for all items less food, energy, and mortgage interest costs—increased at an annual rate of 5.7 percent in the first quarter. This was slightly more than in the preceding 3 months but was somewhat slower than the 8.0-percent rise in 1981. Replacing the present homeownership component with the future rental equivalence measure (CPI-U-X1),<sup>2</sup> the index would have advanced at a rate of 2.7 percent, compared with 8.5 percent in 1981.

At the primary market level, the Producer Price Index (PPI) for Finished Goods edged up at a seasonally

adjusted annual rate of 0.6 percent, the slowest quarterly advance for this index since it dipped during the first quarter of 1976. The finished energy goods index fell at a rate of 18.5 percent, a drop approached only by a 14.2-percent rate of decline in the first quarter of 1976. Price increases for capital equipment and for finished consumer goods other than foods and energy both slowed to rates below 4 percent, considerably less than in other recent quarters. The index for finished consumer foods moved up moderately. Prices for intermediate goods declined slightly in the first 3 months of 1982, the first decrease since the second quarter of 1975. Because of higher raw foodstuff prices, the crude materials index rose at a rate of 1.0 percent, following sharp declines in the third and fourth quarters of 1981.

The continuing deterioration of the economy and the persistence of the highest levels of real (that is, inflation-adjusted) interest rates since the Great Depression restrained inflation in many retail and primary markets. Consumer reluctance to expand purchases of goods and services reflected such factors as fears of possible unemployment, the rising burden of interest costs on debts incurred in more inflationary times, and the difficulty of obtaining home mortgages. Some business firms canceled or postponed capital expenditures in the face of uncertain demand and their own strained profit and cash flow positions. Many companies liquidated excessive inventories because of poor

Craig Howell, David Callahan, and Mary Burns are economists in the Office of Prices and Living Conditions, Bureau of Labor Statistics. They were assisted by Jesse Thomas, Andrew Clem, John Wetmore, and Eddie Lamb, economists in the same office.



sales and high interest costs, or delayed rebuilding inventories until an end to the recession was more apparent. By boosting the value of the American dollar in international currency markets, high interest rates tended to price American exports out of foreign markets, while improving the competitive standing of imports in this country.

### New car prices decline

Retail prices for commodities other than food and energy increased at a seasonally adjusted annual rate of 4.5 percent, a larger increase than in the fourth quarter of 1981, but somewhat below the 1981 yearly rate of 5.9 percent. (See table 2.) Prices of most commodities

**Table 1. Changes in selected components of the Consumer and Producer Price Indexes, 1981-82**

Grouping	Relative importance Dec. 1981	Percent change Mar. 1981 to Mar. 1982	Compound annual rates, seasonally adjusted except as noted, for 3 months ended —			
			1981			1982
			June	Sept.	Dec.	Mar.
<b>Consumer Price Index for All Urban Consumers (CPI-U)<sup>1</sup></b>						
All items	100.0	6.8	8.1	12.8	5.4	1.0
Food and beverages	17.5	4.0	2.3	7.6	1.8	4.2
Food at home	11.3	3.2	0.3	7.8	-0.3	4.9
Food away from home	5.2	5.7	6.6	7.1	6.1	2.8
Alcoholic beverages	1.0	4.8	5.6	7.0	1.4	5.6
Housing	46.0	8.5	13.0	16.9	3.6	1.3
Shelter	31.9	8.6	15.1	19.8	1.8	-0.9
Rent, residential <sup>2</sup>	5.1	8.2	7.7	10.2	9.0	5.9
Homeownership	26.1	8.6	16.9	21.5	0.3	-2.4
Home purchase <sup>2</sup>	9.6	3.1	8.7	12.4	-5.7	-1.9
Financing, taxes and insurance <sup>2</sup>	12.9	13.6	25.9	33.1	3.6	-4.2
Maintenance and repairs	3.6	6.9	10.7	8.9	5.6	2.4
Fuel and utilities	6.9	10.0	8.6	14.8	9.3	7.5
Household furnishings and operation	7.2	6.8	7.8	6.9	6.8	5.7
Apparel and upkeep	4.6	3.2	2.6	6.4	0.8	3.2
Apparel commodities	4.0	2.6	1.8	5.5	-0.2	3.2
Apparel services	.7	7.5	8.9	9.8	7.7	3.6
Transportation	19.3	4.2	2.3	11.6	11.6	-7.2
Private transportation	18.0	3.5	1.6	10.0	12.0	-8.3
Public transportation <sup>2</sup>	1.3	14.6	14.3	37.5	5.8	3.5
Medical care	4.9	12.0	11.8	14.4	11.7	10.2
Medical care commodities	.8	10.7	12.3	11.9	9.1	9.5
Medical care services	4.1	12.2	11.6	14.9	12.3	10.4
Entertainment	3.6	6.7	5.1	6.9	7.3	7.4
Other goods and services	4.0	10.3	11.3	10.8	8.4	10.1
All items	100.0	6.8	8.1	12.8	5.4	1.0
Food	16.6	4.0	2.2	7.7	1.7	3.9
Commodities less food and energy	32.8	6.2	8.7	9.5	2.2	4.5
Energy <sup>2</sup>	11.1	-8	4.7	3.0	-2.4	-8.0
Services less energy	39.5	10.9	14.8	19.1	7.6	2.4
All items	100.0	6.8	8.1	12.8	5.4	1.0
Services	43.2	11.3	14.8	19.2	7.8	3.5
Commodities	56.8	3.6	3.2	8.5	3.6	-0.8
All items less food, energy and mortgage interest costs	61.5	7.7	8.6	11.4	5.2	5.7
All items (X-1 approach)	—	6.4	5.9	10.1	7.5	2.7
<b>Producer Price Index (PPI) by stage of processing<sup>1</sup></b>						
Finished goods	100.0	4.1	7.1	3.4	5.2	0.6
Finished energy goods	12.7	-2.8	3.5	-3.6	9.7	-18.5
Finished consumer goods	21.9	1.8	3.5	1.6	-3.7	5.8
Finished goods less foods	78.1	4.8	8.1	4.0	7.7	-7
Finished goods less foods and energy	65.3	6.3	9.0	5.6	7.4	3.2
Finished consumer goods less foods	57.2	4.0	7.6	3.2	7.2	-1.7
Finished consumer goods less foods and energy	44.5	6.0	8.8	5.4	6.4	3.6
Capital equipment	20.8	6.8	10.0	5.7	9.7	2.1
Intermediate materials, supplies and components	100.0	2.9	7.4	3.8	2.0	-1.2
Intermediate energy goods	17.0	-5	1.9	-2.1	4.2	-5.6
Intermediate foods and feeds	5.3	-7.0	-3	-18.3	-12.9	5.6
Intermediate materials less foods and feeds	94.7	3.6	8.0	5.2	2.8	-1.5
Intermediate materials less foods and energy	77.6	4.6	8.8	7.1	2.4	.3
Crude materials for further processing	100.0	-4.3	10.8	-9.7	-16.6	1.0
Crude energy materials <sup>2</sup>	33.6	.4	4.3	1.1	2.9	-6.5
Crude foodstuffs and feedstuffs	50.6	-5.4	6.4	-18.2	-25.5	23.3
Crude nonfood materials	49.4	-2.7	16.1	1.1	-5.6	-18.4
Crude nonfood materials less energy	15.8	-9.7	47.7	1.2	-22.5	-40.3

<sup>1</sup> See "Definition" and "Notes" preceding tables 19-27 of Current Labor Statistics in this Review.

<sup>2</sup> Not seasonally adjusted.

NOTE: PPI data shown above and elsewhere in this article may differ from those previously reported because PPI data through November 1981 have been revised to reflect the availability of late reports and corrections by respondents.



related to the depressed housing and automotive industries decelerated or declined. The home purchase component of the index decreased for the second consecutive quarter. Furniture price advances slowed, as the low level of new housing construction contributed to sluggish demand. Prices for textile housefurnishings also rose less than in the previous 3 months. However, price increases accelerated for many household appliances and equipment, reflecting the annual introduction of new models at higher prices.

New car prices dropped at a rate of 3.0 percent primarily because of rebates by domestic manufacturers. Despite the rebates and lower automobile finance charges, demand remained low throughout the quarter. Used car price increases slowed considerably, following large increases in the second half of 1981. Advances in tire prices continued to decelerate, reflecting the year-long slump in the market.

Retail prices of apparel other than footwear rose at an annual rate of 3.9 percent, after declining in the fourth quarter. The upturn reflected the end of discounts and higher prices for spring merchandise. Price increases for tobacco products, toilet goods, housekeeping supplies, and school books accelerated to double-digit rates.

The PPI for finished consumer goods other than foods and energy moved up at a seasonally adjusted annual rate of 3.6 percent. This represented a substantial slowdown from the 6.4-percent rate of advance at the end of 1981 and the 6.9-percent increase from December 1980 to December 1981. Unusually large rebates for some passenger cars and light motor trucks accounted for much of this deceleration. Continued rapid declines in precious metal prices were reflected in sharply lower prices for gold jewelry, silver flatware, and photographic film (which requires much silver to manufacture). Primary market prices for leather footwear, floor coverings, and televisions and radios also dropped in the first quarter. Price increases slowed markedly for soaps and detergents, books, and household furniture, while prices for sanitary paper products, tires and tubes, and glassware continued to show little or no change.

In contrast, inflation accelerated to double-digit rates in the PPI for a number of consumer products, including newspapers, periodicals, tobacco products, textile housefurnishings, cosmetics, household appliances, and prescription drugs. Each of these indexes climbed at a faster pace during the first 3 months of 1982 than in 1981 as a whole.

*Capital equipment.* The Producer Price Index for capital equipment rose at a seasonally adjusted annual rate of 2.1 percent, considerably less than in any other recent quarter and the slowest rate of advance since the final 3 months of 1972. (See table 3.) Most of this deceleration

**Table 2. Changes in retail prices for selected commodities less food and energy, 1981-82**

CPI grouping	Relative importance Dec. 1981	Percent change Mar. 1981 to Mar. 1982	Compound annual rate, seasonally adjusted except as noted, for 3 months ended —			
			1981			1982
			June	Sept.	Dec.	Mar.
Commodities less food and energy .....	100.0	6.2	8.7	9.5	2.2	4.5
Alcoholic beverages .....	2.9	4.8	5.6	7.0	1.4	5.6
Home purchase <sup>1</sup> .....	29.2	3.1	8.7	12.4	-5.7	-1.9
Maintenance and repair commodities <sup>1</sup> .....	1.0	4.6	6.2	1.8	2.6	7.7
Textile housefurnishings .....	1.5	9.0	8.4	10.3	11.7	5.4
Furniture and bedding .....	3.5	5.2	3.2	9.0	5.1	3.5
Appliances, including radio and TV <sup>1</sup> .....	4.0	4.1	6.0	3.9	5	6.1
Other household equipment <sup>1</sup> .....	2.7	6.4	6.0	6.6	2.7	10.2
Housekeeping supplies <sup>1</sup> .....	4.4	7.6	8.8	5.3	6.1	10.2
Apparel commodities less footwear .....	10.2	2.4	1.2	6.1	-1.4	3.9
Footwear .....	1.9	3.8	5.2	3.9	5.0	1.0
New cars .....	9.5	6.3	20.9	3.6	5.0	-3.0
Used cars .....	9.1	19.3	8.5	44.2	22.7	5.5
Auto parts and equipment <sup>1</sup> .....	1.8	4.4	4.0	8.0	3.6	2.1
Medical care commodities .....	2.4	10.7	12.3	11.9	9.1	9.5
Entertainment commodities .....	6.5	6.5	6.3	6.2	7.0	6.5
Tobacco products <sup>1</sup> .....	3.2	10.2	13.0	4.8	9.5	13.5
Toilet goods and personal care appliances <sup>1</sup> .....	2.2	8.2	11.6	4.6	6.2	10.4
Schoolbooks and supplies .....	.5	14.2	9.2	35.8	2.1	12.7

<sup>1</sup> Not seasonally adjusted.

was caused by the downturn in the motor vehicles index, reflecting manufacturers' rebates on some new cars and light trucks; prices for heavy trucks continued to rise, although at a slower pace than in any other recent quarter. Prices for generators, textile machinery, and food products machinery turned down in the first quarter, and increases slowed for railroad equipment, printing trades machinery, agricultural machinery, metal cutting machine tools, and transformers. Construction machinery prices jumped sharply as the year began but had retreated somewhat by March, reflecting the distressed state of the construction sector.

In contrast, accelerated advances were registered for commercial furniture, photographic equipment, wood-working machinery, metal forming machine tools, and pumps and compressors. Even though demand for most kinds of capital equipment weakened markedly at the end of 1981 and into early 1982, producers of these goods felt that demand was strong enough to permit price boosts. Recent changes in tax depreciation rules were especially beneficial to commercial furniture manufacturers.

Prices for oilfield and gasfield machinery climbed at a 12.3-percent rate, twice as much as in the previous quarter, but not as fast as the 17.7-percent increase registered in 1981. Demand for these goods, which had



**Table 3. Changes in producer prices for selected capital equipment, 1981-82**

PPI grouping	Relative importance Dec. 1981	Percent change Mar. 1981 to Mar. 1982	Compound annual rate, seasonally adjusted except as noted, for 3 months ended—			
			1981		1982	
			June	Sept.	Dec.	Mar.
Capital equipment .....	100.0	6.8	10.0	5.7	9.7	2.1
Agricultural machinery and equipment .....	5.9	8.9	12.7	7.3	9.5	6.1
Construction machinery and equipment <sup>1</sup> .....	6.9	7.9	9.7	8.2	6.9	6.7
Metal cutting machine tools .....	1.7	8.2	4.0	7.6	12.7	8.7
Metal forming machine tools .....	1.0	6.5	5.2	11.3	2.5	7.1
Pumps, compressors, and equipment .....	2.1	9.7	12.5	13.4	5.3	8.0
Industrial material handling equipment .....	3.5	5.5	5.4	8.9	3.6	4.1
Food products machinery .....	1.8	8.4	12.5	12.5	10.9	-1.8
Textile machinery .....	1.4	5.6	15.3	4.5	5.2	-1.9
Generators and generator sets .....	2.4	10.4	10.1	13.5	20.8	-1.8
Transformers and power regulators <sup>1</sup> .....	2.3	9.5	12.0	10.2	10.1	5.8
Oilfield and gasfield machinery <sup>1</sup> .....	.9	14.3	11.2	28.8	6.1	12.3
Mining machinery and equipment .....	.7	8.2	7.2	12.0	7.4	6.1
Office and store machines and equipment <sup>1</sup> .....	5.8	2.7	.5	6.4	-3	4.4
Commercial furniture <sup>1</sup> .....	3.7	8.1	7.3	5.9	3.9	15.7
Passenger cars .....	10.9	6.9	15.6	-7.7	26.7	-3.3
Light motor trucks <sup>1</sup> .....	6.8	3.3	15.9	-26.9	76.4	-23.9
Heavy motor trucks <sup>1</sup> .....	5.3	8.8	13.8	12.6	5.8	3.3
Fixed wing, utility aircraft .....	4.4	7.9	12.2	11.3	2.8	5.3
Railroad equipment .....	2.1	5.7	-1.4	9.6	11.5	3.5
Photographic equipment .....	2.2	3.3	0	-1.5	4.1	11.2

<sup>1</sup> Not seasonally adjusted.

been largely impervious to sluggishness in the overall economy over the past several years, became much weaker as 1982 began. The worldwide glut of oil and its downward pressure on prices of many kinds of petroleum products led to a marked drop in domestic oil exploration and development.

### Gasoline cheaper, utilities higher

**Consumer energy prices.** Energy items in the CPI dropped at an annual rate of 8.0 percent in the first 3 months of 1982, the largest quarterly decrease since 1962. (See table 4.) Prices for all petroleum-based products continued the downward trend experienced since the spring of 1981. Gasoline and home heating oil supplies remained at very high levels relative to demand, leading to lower prices.

Retail gasoline prices plunged at a record rate of 27.8 percent, a dramatic contrast to the 50.4-percent rate of increase recorded for the first quarter of 1981. On an unadjusted basis, gasoline prices dropped each month without interruption from March 1981 to March 1982. The major factors pushing prices down were abundant supplies and lower demand. In addition, large supplies of low-cost Chinese gasoline were shipped to the Pacific and Gulf Coast areas. These additional supplies also reduced prices, particularly on the West Coast. Competitive pressures led to price wars in certain sections of the

country, with a resultant squeeze on retailer profit margins.

Fuel oil prices decreased at an annual rate of 10.4 percent for the first quarter, the largest decline since 1965, in spite of extremely cold weather in much of the country. Factors affecting gasoline prices had a similar impact on fuel oil prices. Fuel oil prices decreased continually from March 1981 through March 1982, except when increased seasonal demand pushed prices up slightly in December and January.

In contrast to the declining trend in prices of petroleum products, consumer price increases for gas and electricity accelerated to an annual rate of 15.4 percent in the first quarter, from a 10.6-percent rate in the fourth quarter. Utility rate increases in the West and fuel adjustment increases in the North Central and South regions contributed greatly to the rise in the electricity index. Higher purchased-gas adjustments and rate increases in the South were the major factors pushing up the natural gas index.

**Industrial fuels.** The PPI for intermediate energy goods turned down with a 5.6-percent seasonally adjusted annual rate of decline, after advancing at a 4.2-percent rate in the fourth quarter. Continued weakening of industrial demand coupled with lower costs of crude oil resulted in price decreases for all fuels derived from petroleum.

The index for liquefied petroleum gas plummeted at a 47.3-percent annual rate; as a result, by the end of the quarter, this index was at the lowest level since the end of 1979. Prices for residual fuel, diesel fuel, and commercial jet fuel continued to fall, but less rapidly than liquefied petroleum gas prices. In marked contrast, the electric power index rose even more sharply than in the fourth quarter. Regulatory authorities granted rate increases to cover greater capital construction costs resulting from high long-term interest rates; likewise, fuel adjustment charges had an upward effect on prices in areas where coal and natural gas are used for power generation.

**Crude energy.** The crude energy materials index declined at a 6.5-percent annual rate in the first quarter because of sharp decreases in the index for crude petroleum (which reflects only domestic prices). Demand for crude oil continued to slide, as evidenced by the reduced volume of imports (23 percent lower than in the first quarter of 1981 and the lowest level since 1974) and the record-low rate of refinery capacity utilization (65 percent). Domestic crude oil prices fell at a rate of about 20 percent, and import prices showed similar declines. The pricing structure of the Organization of Petroleum Exporting Countries (OPEC) continued to break down, as Libya, Iran, and some other members cut



their prices by more than \$4 per barrel in an effort to increase their share of a shrinking market. After an emergency meeting of OPEC in March, Saudi Arabia agreed to further reduce its production levels.

Producer prices of natural gas continued to advance, but less than in other recent quarters. The slowdown was concentrated in the intrastate portion of the market, where prices had jumped sharply at the end of 1981. In contrast, somewhat larger advances occurred for interstate gas prices, reflecting the growing share of more expensive "new" gas.<sup>3</sup> Price increases accelerated for coal, as a weather-related surge in demand quickly affected prices because of relatively slim inventories on hand.

### Food prices spurt, then dip

After showing small increases in each of the last three months of 1981, the food component of the Consumer Price Index increased rapidly in January and February, before turning down in March. The net annual rate of increase for the quarter was 3.9 percent after seasonal adjustment. The Producer Price Index for finished consumer foods showed a similar pattern during the first quarter, but rose at a net rate of 5.8 percent. The behavior of both indexes paralleled developments in the PPI category for crude foodstuffs and feedstuffs, which declined beginning in August 1981, surged in January, and then moderated in February and March.

Fresh vegetable prices showed the greatest volatility. Decreased winter acreage, the mid-January freeze in Florida, insect damage, shifts in production areas, and reduced imports from Mexico combined to lead to sharply reduced supplies as the year began. The PPI component for fresh vegetables jumped 14.7 percent in December, while the corresponding CPI measure rose 16.8 percent in January. Lettuce was particularly hard hit by whitefly damage in California and Arizona; in the CPI, prices doubled from November to January. By March, the downturn was just as sharp, with lettuce prices approaching the November level. Prices for tomatoes and many other fresh vegetables had a similar pattern. The PPI for fresh vegetables ended with a net decline for the quarter, while the corresponding CPI category ended with a net increase. Citrus fruits were also hit hard by the freeze, and retail prices for both oranges and orange juice rose substantially in January and February. Fresh orange prices had started to fall by March, though, after the extent of the damage turned out to be less than from the 1977 and 1981 freezes.

Cattle prices rose 7.8 percent; hog prices, 17.6 percent; and poultry prices, 9.7 percent over the first quarter as harsh winter weather disrupted production and marketing activity, especially in the North Central States where hog production is concentrated. In addition, hog inventories were down from year-earlier levels as farmers cut back production for 1982. Producer

Table 4. Changes in retail and producer prices for energy items, 1981-82

Item	Index	Relative importance Dec. 1981	Percent change Mar. 1981 to Mar. 1982	Compound annual rate, seasonally adjusted except as noted, for 3 months ended-			
				1981			1982
				June	Sept.	Dec.	Mar.
<b>Finished items (sold to consumers)</b>							
Energy items <sup>1</sup>	CPI	100.0	-0.8	4.7	3.0	-2.4	-8.0
Finished energy goods	PPI	100.0	-2.8	3.5	-3.6	9.7	-18.5
Motor fuels <sup>2</sup>	CPI	54.5	-8.5	-15.7	1.9	12.1	-27.3
Gasoline <sup>3</sup>	CPI	52.7	-8.7	-16.1	1.8	12.3	-27.8
	PPI	55.2	-8.0	-8.9	-8.4	14.7	-25.2
Household fuels	CPI	45.5	9.3	9.1	11.3	9.1	8.5
Fuel oil <sup>1,3,4</sup>	CPI	12.5	-4.2	-6.4	-4.9	5.5	-10.4
	PPI	14.8	-6.3	3.8	-5.8	1.2	-22.0
Gas (piped) <sup>3,5</sup>	CPI	13.4	16.0	17.5	15.6	9.9	21.2
	PPI	20.3	22.9	47.0	16.6	17.4	13.4
Electricity	CPI	19.7	14.4	15.5	20.6	9.9	11.7
<b>Intermediate goods (sold to business)</b>							
Intermediate energy goods	PPI	100.0	-5	1.9	-2.1	4.2	-5.6
Diesel fuel <sup>3,5</sup>	PPI	9.5	-3.8	4.9	-10.5	-2.1	-6.9
Commercial jet fuel <sup>3,5</sup>	PPI	8.5	-4	19.0	-10.9	-4.6	-2.8
Residual fuel <sup>3</sup>	PPI	14.1	-12.1	-9.1	-12.5	-17.2	-9.4
Liquefied petroleum gas <sup>5</sup>	PPI	4.4	-15.7	1.3	-7.9	2.5	-47.3
Electric power	PPI	30.6	15.1	11.5	19.6	12.2	17.1
<b>Crude materials</b>							
Crude energy materials <sup>5</sup>	PPI	100.0	.4	4.3	1.1	2.9	-6.5
Natural gas <sup>3,5</sup>	PPI	31.5	22.9	47.0	16.6	17.4	13.4
Crude petroleum <sup>5</sup>	PPI	55.3	-11.6	-12.2	-9.0	-4.6	-19.9
Coal <sup>5</sup>	PPI	13.2	9.5	9.1	15.9	4.3	9.1

<sup>1</sup> Not seasonally adjusted in the CPI.

<sup>2</sup> Includes motor oil, coolant, and similar products.

<sup>3</sup> Prices for these items are lagged one month in the PPI.

<sup>4</sup> Includes coal and bottled gas in the CPI.

<sup>5</sup> Not seasonally adjusted in the PPI.



prices for beef and veal, pork, and processed poultry also increased, although not as sharply. The 9.2-percent increase in producer pork prices translated into a 2.5-percent rise at the retail level.

Corn prices rose 8.7 percent in the first quarter, with virtually all of the increase occurring in January. Cold weather increased demand for feed grains. In addition, large quantities of corn were placed into the Federal grain reserve program. Wheat prices advanced 2.6 percent after seasonal adjustment. Export demand for wheat remained strong. Although cold weather did only minimal damage, the winter wheat crop was not in as good condition as last year's. Nevertheless, larger planted acreage may result in another record harvest. In contrast, milled rice prices continued to fall because of record harvests in the United States and some other rice exporting countries and improved harvests in several rice importing nations. Soybean prices also fell, as the Brazilian crop entered export markets.

Government price support programs played a key role for some farm commodities. Raw sugar prices initially rose in response to new duties and fees on imports designed to prop up domestic prices, but the target price was not achieved before prices started falling to nearly the December level.<sup>4</sup> Prospects of a large European sugar beet crop, large stockpiles of sugar imported before the duty was imposed, and the possibility of duty-free imports of Caribbean sugar all served to hold down prices. Because of a static support price, dairy products showed small retail price increases for four consecutive quarters despite chronic surpluses.

### Rent increases ease

The services less energy component of the CPI moved up at a rate of 2.4 percent, compared with a 7.6-percent rate of increase in the previous quarter. The slowdown was largely due to a downturn in contracted mortgage interest costs, as well as slower rates of advance for a broad range of other items, including residential rent, housekeeping services, transportation services, and apparel services. The categories for medical care services and for personal and educational services continued to move up at double-digit rates, although not as fast as in other recent quarters.

Contracted mortgage interest costs declined at a rate of 6.5 percent, following a 2.8-percent rate of increase in the fourth quarter and rapid runups earlier in 1981, reflecting decreases both in house prices and in mortgage interest rates. The component for mortgage interest rates fell at a rate of 5.1 percent, in line with other long-term interest rates. The increase in the residential rent component slowed to a rate of 5.9 percent, following a 9.0-percent rate in the fourth quarter.

The transportation services category moved up at a 6.0-percent rate, considerably less than in the previous

quarter. Auto finance charges moved down as some domestic car manufacturers slashed finance rates to make monthly car payments more affordable. The public transportation index (which includes fares for airlines, intercity buses and trains, and intracity mass transit) advanced at a 3.5-percent rate, somewhat less than in the preceding quarter and far less than earlier in 1981. The recent declines in fuel prices were a major factor in this slowdown.

The medical care services component of the CPI moved up at a rate of 10.4 percent, somewhat less than in other recent quarters. Charges for physicians' services moved up at a 9.7-percent rate, also less than in the fourth quarter. The index for hospital rooms rose at a rate of 12.7 percent.

### Steel prices steady; gold, silver drop

The Producer Price Index for intermediate materials except foods and energy edged up at a seasonally adjusted annual rate of just 0.3 percent in the first quarter, compared with a rate of 2.4 percent in the fourth quarter. The index for durable manufacturing materials declined at a rate of 7.8 percent, an even larger decrease than at the end of 1981. Lower prices were recorded for most nonferrous metals and mill shapes, jewelers' materials, and hardwood lumber. Steel prices continued to show virtually no change, as high interest rates both weakened domestic demand and encouraged a high level of imports as the dollar rose overseas.

Prices for primary nonferrous metals continued to move down substantially, although not quite as sharply as in the fourth quarter. High interest rates and weak domestic and export markets contributed to the decreases for these metals. The end of massive support buying that had kept tin prices artificially high in late 1981 caused prices to drop severely; by March, the tin index had retreated to virtually the same level as last summer just before the runup began. Copper prices, which had declined in most months since late 1980, were further weakened by high production levels in several South American and African countries.

Gold and silver prices fell 20.3 and 18.4 percent before annualizing. Among the major reasons for these steep declines were large sales of gold by Eastern bloc countries to pay their debts, silver auctions by the General Services Administration, and the attraction of high-yielding financial investments. Prices for jewelers' materials plummeted because of falling gold prices.

Hardwood lumber prices turned down partly because of poor demand from furniture manufacturers resulting from the weak residential construction market. But prices rose for foundry and forge shop products, chiefly because of increased labor and overhead costs.

The nondurable manufacturing materials category dropped at an annual rate of 3.9 percent, following a

small rise at the end of 1981. Prices for organic chemicals continued to recede because of low demand and strong competition from imports. The depressed housing and automotive industries caused a sharp downturn in the plastic resins index; prices for these materials had advanced in almost every month of 1981. An oversupply of cotton fabrics, coupled with a drop in domestic demand, meant lower prices for finished fabrics and processed yarns. Following several increases in late 1981, leather prices turned down, partly because tanners and shoe manufacturers were reluctant to rebuild inventories.

However, price increases for inorganic chemicals accelerated, with prices for caustic soda leading the way. Demand for caustic soda, particularly from the printing and publishing industry, remained relatively strong in spite of the recession. A strengthening in domestic demand for gray fabrics and synthetic fibers, especially nylon yarn, caused these prices to advance. Improved export demand led to higher prices for fats and oils.

The PPI measure for construction materials and components showed virtually no change from December to March, following generally small increases during the latter part of 1981. The poor state of construction activity permitted only marginal advances for most construction materials. Prices for a number of items, including plastic construction products, asphalt roofing, concrete products, and millwork, turned down after rising moderately in the closing months of 1981.

At the same time, the reverse was true for prices of gypsum products, building paper, and plywood. These prices advanced following declines at the end of the year, partly reflecting low supplies. Prices for refractories climbed at an unusually rapid pace; recent increases in charges for natural gas, a crucial element in the production of refractories, were the principal cause.

Among other intermediate goods, prices for machine tool parts moved up sharply during the first quarter, as

orders for new machine tools sagged and producers took advantage of the consequent firming of demand for replacement parts. Glass container prices moved up substantially in February and March, after showing very little change over the preceding 8 months; the increases passed through higher natural gas costs. The index for unsupported plastic film and sheeting also rose sharply, after edging down slightly over the last half of 1981. Prices for wooden pallets, a close indicator of the state of demand in the industrial sector, continued to fall, reaching their lowest level since May 1978.

### **Sensitive crude material prices drop sharply**

Producer prices for crude nonfood materials except energy, which tend to be highly responsive to shifts in general economic conditions, plunged at a seasonally adjusted annual rate of 40.3 percent. Prices for aluminum and copper base scrap and for iron and steel scrap continued to move down sharply in the first quarter, largely because of a lack of industrial and construction demand, weak export markets, and high interest rates. Wastepaper prices continued to fall, although not as sharply as in the fourth quarter. By the end of the first quarter, paper manufacturers had used only a portion of their wastepaper stockpiles but were purchasing additional supplies because prices were attractively low.

Crude rubber prices, which had fallen through most of 1981, continued to decline in the first quarter, largely because of persistent weakness in the automotive and tire industries. Prices for potash turned down because of an oversupply of fertilizers, excessive potash inventories, and a dwindling export market.

However, temporary short supplies of high quality cotton fibers, coupled with improved Far East and domestic demand, led to an upturn in prices for raw cotton. Prices for cattle hides also turned up as tanners began to replenish their inventories, which had been allowed to decline to unusually low levels. □

### — FOOTNOTES —

<sup>1</sup> For a report on the CPI in relation to the PCE Deflator, see Julie A. Bunn and Jack E. Triplett, "Reconciling the CPI and the PCE Deflator: first quarter 1982," pp. 37-38.

<sup>2</sup> For details on changing the homeownership component, see Robert Gillingham and Walter Lane, "Changing the treatment of shelter costs for homeowners in the CPI," *Monthly Labor Review*, June 1981, pp. 9-14.

<sup>3</sup> Under the Natural Gas Policy Act of 1978, higher prices are

allowed for gas produced from wells drilled since 1978.

<sup>4</sup> Effective December 23, 1981, the Government raised duties and fees to bring the price of imported sugar to 19.08 cents per pound, up from 15 cents. This would eliminate the need for the Government to stockpile domestic sugar at the support price of 16.75 cents per pound. However, after an initial sharp increase in price when the duty was raised, raw sugar prices fell in March to just over the support price.



# Clerical pay differentials in metropolitan areas, 1961–80

*Salaries of office workers generally  
are higher in large urban areas  
and in the North Central and Western regions;  
interarea differences narrowed  
in the 1960's and widened in the 1970's*

MARK S. SIELING

In 1980, salaries of office clerical workers varied widely among 52 areas included in the Bureau of Labor Statistics' area wage survey program. For example, in Davenport-Rock Island-Moline—the highest paying area—clerical pay rates averaged about 50 percent more than those in Norfolk-Virginia Beach-Portsmouth—the lowest paying area. Generally, salaries were higher in larger areas. The highest salaries were in North Central and Western areas, followed by Northeastern areas, and were lowest in Southern areas. Industry mix was an important determinant of an area's relative pay level.

The pay structure in 1980 resembled the pattern in 1961, although significant developments took place within this period. During the 1960's, area differentials gradually diminished. However, in the 1970's, the pattern reversed, and much of the growing uniformity disappeared. These contrasting developments can be attributed, in part, to the differing economic environments in the two decades. The 1960's was a period of almost uninterrupted prosperity, with only moderate rates of price increases during much of the decade; in contrast, the 1970's were characterized by both economic instability and inflationary pressures.

When the areas were ranked by the size of their pay

relatives, the order of ranking in 1980 was similar to that of 1961. However, pay relatives in some areas changed substantially over the 20 years, but the changes generally reflected a cumulation of small year-to-year adjustments.

Pay levels among areas mirror the interplay of a variety of forces, ranging from nationwide economic developments to factors unique to specific locations. Moreover, the intensity of these forces may vary over time, leading to changes in interarea wage relationships. This article examines salary levels of office clerical workers in 52 metropolitan areas, highlighting current pay differences and changes in them over the past two decades.<sup>1</sup> In this analysis, a pay relative is defined as each area's average straight-time hourly earnings expressed as a percent of the average for all metropolitan areas combined. For example, a pay relative of 110 indicates that clerical salaries in an area are 10 percent above the national average. Pay relatives were computed by averaging earnings of selected white-collar clerical occupations in an area, using national employments as weights for each job, then dividing the resulting area average by the corresponding national average. Use of national occupational employments for weighting purposes isolates the pay relatives from the influence of area differences in occupational composition. In addition, adjustments are made to eliminate the effect of differences in the timing of individual area surveys.<sup>2</sup>

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## Patterns in 1980

Area salary levels are determined by a combination of factors. Some, such as supply and demand conditions in the labor market and occupational employment composition, are unique to an area; others, such as the general pay level of an industry or the effect of nationwide collective bargaining, are determined in a broader context. Although salary levels are unique to an area, some grouping of areas according to common characteristics can be made.

Seven of the eight areas with pay relatives of 106 or more in 1980 were located in the North Central and Western regions. (See table 1.) These areas typically had large concentrations of workers in relatively high-wage manufacturing industries, such as motor vehicles and equipment (Detroit and Toledo), aircraft and parts (Los Angeles, Seattle, and Wichita), and farm machinery (Davenport). This does not imply that the nonmanufacturing sector is unimportant in contributing to overall wage levels. Each of the five areas with overall pay levels 11 percent or more above the national average also had nonmanufacturing pay levels at least 11 percent above the national nonmanufacturing average.

Of the nine areas with pay relatives of 90 or less, seven were in the South and two were in the Northeast.

The type of manufacturing industries in the area was a factor for several of these areas. For example, the textile industries are important in Chattanooga and Greenville, while leather footwear is important in Portland (Maine) and jewelry in Providence.

A relationship is also apparent between salary levels and the number of employees within a labor market. In 1980, only 11 of the 52 areas had nonagricultural employment of a million or more. Yet, four of them were among the eight areas with salaries 6 percent or more above the national average. All of the areas with salaries 10 percent or more below the national average had employment of less than a half million. A summary of this relationship was developed by calculating a Spearman rank correlation coefficient, comparing the ranking of areas by employment and salary levels.<sup>3</sup> The coefficient, .58, shows a positive relationship, but one that is far from a perfect correlation of 1. To illustrate that high employment does not necessarily mean higher salaries, Davenport had less than a quarter million workers in 1980, but had the highest average pay level of all the areas studied, while Boston and Minneapolis, with more than a million workers each, had average salaries 4 percent below the national average.

Salaries in Boston were also low compared to area living costs. Living costs, as measured by the BLS au-

**Table 1 Office clerical pay relatives, 52 Standard Metropolitan Statistical Areas, 1961-80**

[All metropolitan areas = 100]

Area	Pay relative			Area	Pay relative		
	1961	1970	1980		1961	1970	1980
<b>Northeast</b>				<b>North Central</b>			
Albany-Schenectady-Troy, N.Y. . . . .	99	99	101	Chicago, Ill. . . . .	107	105	104
Boston, Mass. . . . .	93	97	96	Cincinnati, Ohio-Ky.-Ind. . . . .	98	96	96
Buffalo, N.Y. . . . .	101	100	97	Cleveland, Ohio . . . . .	107	101	101
New York, N.Y. . . . .	102	105	100	Columbus, Ohio . . . . .	96	95	93
Newark, N.J. . . . .	101	101	103	Davenport-Rock Island- Moline, Iowa-Ill. . . . .	103	105	127
Paterson-Clifton-Passaic, N.J. . . . .	100	99	93	Dayton, Ohio . . . . .	106	103	93
Philadelphia, Pa.-N.J. . . . .	95	97	98	Detroit, Mich. . . . .	115	116	122
Pittsburgh, Pa. . . . .	107	101	104	Indianapolis, Ind. . . . .	100	98	97
Portland, Maine . . . . .	84	86	90	Kansas City, Mo.-Kans. . . . .	98	96	99
Providence-Warwick-Pawtucket, R.I.-Mass. . . . .	83	88	86	Milwaukee, Wis. . . . .	100	99	99
Trenton, N.J. . . . .	99	97	96	Minneapolis-St. Paul, Minn.- Wis. . . . .	94	93	96
Worcester, Mass. . . . .	91	93	95	Omaha, Nebr.-Iowa . . . . .	96	91	94
York, Pa. . . . .	92	91	91	St. Louis, Mo.-Ill. . . . .	99	98	98
<b>South</b>				<b>West</b>			
Atlanta, Ga. . . . .	95	99	102	South Bend, Ind. . . . .	99	92	96
Baltimore, Md. . . . .	94	97	105	Toledo, Ohio-Mich. . . . .	106	106	108
Chattanooga, Tenn.-Ga. . . . .	87	86	86	Wichita, Kans. . . . .	102	101	106
Dallas-Fort Worth, Tex. . . . .	93	94	98	<b>West</b>			
Greenville-Spartanburg, S.C. . . . .	80	85	85	Denver-Boulder, Colo. . . . .	97	97	100
Houston, Tex. . . . .	100	100	106	Los Angeles-Long Beach, Calif. . . . .	109	110	111
Jackson, Miss. . . . .	83	85	87	Portland, Oreg.-Wash. . . . .	100	98	104
Jacksonville, Fla. . . . .	87	90	90	Salt Lake City-Ogden, Utah . . . . .	91	91	95
Louisville, Ky.-Ind. . . . .	94	94	98	San Francisco-Oakland, Calif. . . . .	109	109	114
Memphis, Tenn.-Ark.-Miss. . . . .	85	89	94	Seattle-Everett, Wash. . . . .	104	105	111
Miami, Fla. . . . .	90	93	97				
New Orleans, La. . . . .	89	93	93				
Norfolk-Virginia Beach-Ports- mouth, Va.-N.C. . . . .	93	89	83				
Oklahoma City, Okla. . . . .	88	90	94				
Richmond, Va. . . . .	94	91	89				
San Antonio, Tex. . . . .	82	83	84				
Washington, D.C.-Md.-Va. . . . .	99	104	102				



tumn 1980 lower budget for a 4-person family,<sup>4</sup> are available for 22 of the areas studied. In 13 of the areas, living cost relatives (expressed as a percent of the national average for all metropolitan areas) were within 3 percentage points of the area pay relatives. Seven of the nine areas with differences greater than 3 points—Pittsburgh, Atlanta, Baltimore, Dallas, Houston, Detroit, and Los Angeles—had pay relatives that exceeded their living cost relatives; only Boston and Washington showed substantial pay disadvantages. A Spearman rank correlation coefficient of .27 confirms the lack of significant relation in the ranking of relative salary levels and local living costs in the 22 areas.<sup>5</sup>

**Long-term trends, 1961–80**

The 1980 pattern of office clerical pay relatives among areas resembled the 1961 pattern.<sup>6</sup> For example, in both years, Southern areas tended to be lower paying while Western areas generally were higher paying. Nevertheless, in each of the 52 areas, the pay relative changed over the 1961–80 period. Most often, the change was small, but some areas did have substantial changes. Among the larger differences, Dayton’s pay relative of 106 in 1961 tied with Toledo’s for seventh place; by 1980, however, Dayton’s relative had decreased to 93, among the bottom third of all pay relatives. At the same time, Davenport’s office pay relative rose from 103 to 122, moving from ninth to first place.

Changes in pay relatives varied by region. The pay position of all Western areas and 14 of 17 Southern areas improved by at least 1 percentage point from 1961 to 1980. By comparison, only 7 of 13 Northeastern and 6 of 16 North Central areas experienced such gains. Similarly, gains of at least 3 percentage points were proportionately more frequent in the West and South. The following tabulation shows gains and losses in pay relatives during the 1961–80 period, by area:

Percentage point change	Northeast	South	North Central	West
<b>Gains:</b>				
1 or 2 . . . . .	2	1	3	1
3 or 4 . . . . .	4	5	1	3
5 or 6 . . . . .	1	4	—	1
7 or 8 . . . . .	—	2	1	1
9 or more . . . . .	—	2	1	—
<b>Losses:</b>				
9 or more . . . . .	—	1	1	—
7 or 8 . . . . .	1	—	—	—
5 or 6 . . . . .	—	1	1	—
3 or 4 . . . . .	3	—	4	—
1 or 2 . . . . .	2	1	4	—

Major changes in area pay relatives can generally be traced to local developments. For example, changes in an area’s industrial composition may have a marked im-

pact on its salary levels. To illustrate, the decline of Dayton’s office clerical pay relative (from 105 in 1973 to 93 in 1980) paralleled a decline in its manufacturing employment, especially in the rubber goods, household appliance, and office machinery sectors. These declines were offset to some extent by an expansion of service employment; however, the expanding service industries tended to be lower paying. In contrast, Houston’s office clerical pay relative rose from 100 in 1970 to 106 in 1980. This gain can be attributed to general economic expansion, particularly in the energy field and as a site for corporate headquarters. Nonagricultural employment in Houston nearly doubled over the period.

The increase in Davenport’s office clerical pay relative (from 103 in 1961 to 127 in 1980) can be traced, in part, to the combined effects of industrial composition, unionization, and inflation. A major component of Davenport’s economy is farm equipment manufacturing, traditionally one of the higher paying industry groups. Most of Davenport’s nonsupervisory plant and office workers in this industry are unionized; since the early 1970’s, their contracts have included an uncapped cost-of-living adjustment provision. During the 1970’s, the inflation rate was relatively high and, hence, these workers received relatively large wage gains through cost-of-living adjustment provisions. Although not all of Davenport’s clerical work force obtained cost-of-living increases, the gains were sufficiently widespread to influence the area-wide data.

**Short-term trends**

Concentration on changes in area pay relatives over the 1961–80 period overlooks the contrasting patterns of change found in the 1960’s and 1970’s. In the 1960’s, wages in the relatively low-wage Southern areas slowly approached the national average, while movement in other areas was mixed. In the 1970’s, the Southern wage advances continued. In addition, pay levels in Davenport, Detroit, and most Western areas rose much faster than the average for all metropolitan areas combined. The average percent difference in pay relatives among the 52 areas narrowed from 10.0 percent in 1961 to 8.1 percent by 1969; then the pattern reversed, and the difference expanded to 10.4 percent by 1980.<sup>7</sup> The following tabulation shows the average percent difference among area pay relatives, from 1961 to 1980:

1961 . . . . .	10.0	1971 . . . . .	9.0
1962 . . . . .	9.9	1972 . . . . .	9.6
1963 . . . . .	9.3	1973 . . . . .	9.3
1964 . . . . .	9.0	1974 . . . . .	9.3
1965 . . . . .	9.0	1975 . . . . .	9.4
1966 . . . . .	8.6	1976 . . . . .	9.4
1967 . . . . .	8.8	1977 . . . . .	9.6
1968 . . . . .	8.4	1978 . . . . .	9.7
1969 . . . . .	8.1	1979 . . . . .	9.8
1970 . . . . .	8.7	1980 . . . . .	10.4

**Table 2. Distribution of year-to-year percentage point changes in office clerical pay relatives, 52 Standard Metropolitan Statistical Areas, by population size and region, 1961-80**

Size of change	All areas	By population			By region			
		250,000 to 500,000	500,000 to 1,000,000	1,000,000 or more	Northeast	South	North Central	West
Total observations	988	180	247	551	247	323	304	114
1961-80:								
No change	390	61	94	235	101	130	115	44
1 point	433	88	105	240	113	143	131	46
2 points	120	28	33	59	24	35	43	18
3 points	26	7	7	12	7	10	5	4
4 points or more	19	6	8	5	2	5	10	2
Average annual percentage point change	.9	1.0	.9	.8	.8	.8	.9	.9
1961-70:								
No change	204	32	50	122	48	70	60	26
1 point	208	45	51	112	61	62	67	18
2 points	46	12	10	24	8	14	14	10
3 points	9	1	5	3	—	6	3	—
4 points or more	1	—	1	—	—	1	—	—
Average annual percentage point change	.7	.8	.8	.7	.7	.7	.7	.7
1970-80:								
No change	186	29	44	113	53	60	55	18
1 point	225	43	54	128	52	81	64	28
2 points	74	16	23	35	16	21	29	8
3 points	17	6	2	9	8	4	2	4
4 points or more	18	6	7	5	1	4	10	2
Average annual percentage point change	1.0	1.2	1.1	.9	.9	.9	1.1	1.1

NOTE: Changes are computed from pay relatives rounded to the nearest percent. Signs of changes are ignored.

The contrasting behavior of geographic wage differentials in the 1960's and 1970's is related to the markedly different economic conditions in those decades. The 1960's were essentially a period of economic growth. The uninterrupted economic expansion from February 1961 to December 1969, was the longest in the Nation's history. The unemployment rate—an indicator of slack in the labor market—turned downward, from 6.7 percent in 1961 to 3.5 percent in 1969. However, inflationary pressures did not surface until the latter half of the decade: annual increases in the Consumer Price Index were below 2 percent through 1965, when they began to rise, reaching 4.7 percent in 1968 and 6.1 percent in 1969. Amendments to the Fair Labor Standards Act in 1961 and 1966 raised the Federal minimum wage from \$1 to \$1.60 an hour; these adjustments had their greatest impact in relatively low-paying industries, and they tended to reduce wage dispersion within and among labor markets.

On the other hand, the decade of the 1970's was characterized by growing economic instability and actual or suppressed inflation. Economic recessions began in December 1969, November 1973, and January 1980. The unemployment rate rose to 8.5 percent in 1975, dropped to 5.8 percent in 1979, and then rose again to 7.1 percent in 1980. The inflation rate varied substantially: annual increases in the CPI ranged from 3.4 per-

cent in 1971 and 1972—a period of wage and price controls—to 12.2 percent in 1974, and 13.3 percent in 1979. As in the prior decade, amendments to the Fair Labor Standards Act raised the Federal minimum wage—to \$3.10 an hour in January 1980.

*Year-to-year changes.* For each area studied, the total change over the 1961-80 period typically reflects the cumulation of relatively small year-to-year changes. About 40 percent of the 988 annual comparisons possible over the 19 years studied showed no year-to-year change in area pay relatives. (See table 2.) A slightly larger proportion had changes of 1 percentage point. Less than 2 percent had changes of 4 percentage points or more. The average year-to-year change in pay relatives for all 52 areas was .9 percentage point.

Significantly, the tendency for small average annual changes in pay relatives appeared in each of the population size groups examined separately and in each region. Not surprisingly, the greatest stability of pay relatives was in areas with 1 million inhabitants or more—the areas which tend to have the more varied labor markets.

Annual changes in area pay relatives were small in each decade, but both the size of the average change and the frequency of relatively large change were distinctly greater in the 1970's. This finding is consistent



with the tendency, already noted, for a widening of wage differences among areas in the 1970's, after a period of contraction during the 1960's.

THE WIDELY DIFFERING salary levels examined here and their behavior between 1961 and 1980 emphasize the difficulty of generalizing about the structure and trends in geographic wage differentials. Area pay rates respond to many forces that apply unequally across areas and over time. The findings of this study suggest

areas of future investigation. For example, the year-to-year stability in pay relationships among areas raises the possibility of using a national survey—over short time periods—to update local pay data, thereby eliminating the need for frequent pay studies in individual localities. In addition, it would be interesting to determine if the patterns for manual jobs parallel those for white-collar jobs. Also, a study could focus on average earnings of specific occupations, rather than on average pay levels for broad employment groups within areas. □

— FOOTNOTES —

<sup>1</sup> This study is based on salary data from the Bureau of Labor Statistics' area wage survey program. All 52 areas surveyed annually from 1961 through 1980 are included in the analysis. (Currently, about 70 areas are surveyed.) The program provides pay estimates for office clerical; professional and technical; maintenance, toolroom, and powerplant; and material movement and custodial occupations. However, only office clerical workers are included in this analysis. The surveys of Standard Metropolitan Statistical Areas include establishments employing 50 workers or more in manufacturing; transportation, communication, and other public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and selected services. In the 13 largest areas, the minimum is 100 workers in manufacturing; transportation, communication, and other public utilities; and retail trade.

<sup>2</sup> Pay relatives are computed annually for the metropolitan areas currently included in the area wage survey program. They are produced for four occupational groups—office clerical, electronic data processing, skilled maintenance, and unskilled plant workers. For a description of the method, as well as data for 1980, see *Wage Differences Among Metropolitan Areas, 1980*, BLS Summary 81-15, September 1981. A companion report, *Wage Differences Among Selected Areas, 1980*, BLS Summary 81-16, October 1981, provides wage comparisons for three occupational groups among 102 areas surveyed under contract to the Employment Standards Administration for use in administering the Service Contract Act.

<sup>3</sup> The Spearman coefficient measures the degree of association between two variables based on the ranks (or order) of the observations, rather than their actual values. A coefficient of +1 indicates complete agreement in the order of the ranks while -1 indicates completely opposite order of the ranks. A coefficient of 0 indicates the absence of any association between the variables.

<sup>4</sup> The lower budget was used in the comparison, because it most closely approximates expenditure levels consistent with the earnings of an office clerical worker. If the intermediate budget had been used, there would have been considerably more variation between relative wages and living costs, generally with areas in the West doing better and areas in the Northeast not doing as well. In some cases, the geographic definitions used in the budget studies did not completely correspond to those used in the salary level studies. These differences did not appreciably affect the comparison and, therefore, were ignored in the analysis. These living cost measurements reflect different consumption patterns among areas. For example, in the South a higher proportion of the meat consumed is pork than in Northern areas. The Bureau has conducted research on measuring price variations among areas assuming standard consumption patterns in all areas. The standardized consumption patterns, however, had little effect on interarea differences. See Mark K. Sherwood, "Family budgets and geographic differences in price levels," *Monthly Labor Review*, April 1975, pp. 8-15.

<sup>5</sup> An earlier BLS study found a relationship between area wage levels and living costs only after pay data were adjusted for differences in industry mix. See John E. Buckley, "Do area wages reflect area living costs?" *Monthly Labor Review*, November 1979, pp. 24-29.

<sup>6</sup> The Spearman coefficient comparing 1961 and 1980 rankings of the 52 areas is .79.

<sup>7</sup> Average pay differences were computed by subtracting an area's pay relative from each higher pay relative; dividing by the lower relative; totaling these differences (expressed in percent), and dividing by the number of comparisons made. For a further discussion of this technique, see Mark S. Sieling, "Interpreting pay structures through matrix application," *Monthly Labor Review*, November 1979, pp. 41-45.

# How accurate were projections of the 1980 labor force?

*All four Bureau of Labor Statistics projections, the first in 1965 and the last in 1976, were lower than the actual 1980 labor force; most of the discrepancy can be attributed to the underestimation of the participation rates of women*

HOWARD N FULLERTON

The final step in the projection process is evaluation. The Bureau of Labor Statistics has always assessed each of its labor force projections, but only the evaluation of the 1975 estimates has been published. The 1970 projections were evaluated by Marc Rosenblum of the City University of New York.<sup>1</sup> Both evaluations concluded that the BLS had underestimated the number of persons in the labor force, with too many men and too few women. Rosenblum also concluded that the BLS estimate of the 1975 labor force would be too low, based on a comparison with projections by Alfred Tella and Thomas F. Dernberg and others.<sup>2</sup> Bureau of Labor Statistics economist Paul Ryscavage confirmed the underestimation of the BLS projections for the 1975 labor force, finding that an earlier projection, made when the program was still in the Bureau of the Census, was more accurate. He also suggested that the projections for 1980 and 1985 would be too low, primarily because of underestimation of female labor force growth. All four of the BLS projections of the 1980 labor force demonstrated the same pattern of lower than actual growth; generally the male labor force was too high and the female labor force was always too low.<sup>3</sup>

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## Trend, projected, and actual rates

The Bureau of Labor Statistics published four projections of the 1980 labor force.<sup>4</sup> They were general purpose projections prepared using demographic techniques. In 1965, BLS projected a 1980 labor force (including the armed forces) of 100 million; in 1970, of 101 million; in 1973, of 102 million; and, finally, in 1976, of 104 million. (See table 1.) The actual 1980 labor force was 107 million (1970 census weights).

Each estimate of the 1980 labor force overprojected the male labor force and grossly underprojected the female labor force. For example, the 1970 projection had the men's labor force at 64 million; it totaled 62 million in 1980. At the same time, the 1970 projection placed the women's labor force at 37 million; it reached 45 million in 1980.

The most difficult group to project has been women age 25 to 34. In 1965, the 1980 labor force participation rate for these women was projected to be 40.3 percent. In 1970, the rate was estimated to be 46.5 percent; in 1973, 50.2 percent; and in 1976, 57.3 percent. The rate turned out to be 65.3 percent in 1980, or 25 percentage points higher than the 1965 projection.

The next most difficult group to project was women age 35 to 44. Projection errors ranged from 15.2 percent for the 1965 estimate to 7.2 percent for the 1976 estimate.



The most difficult male labor force group to project was men 55 to 64. The participation rate projected in 1965 was 12.3 percent too high; however, the 1976 projection missed by only 1.1 percent. For men 25 to 34, errors ranged from 2.0 percent in the 1965 projection to -0.1 percent in the 1976 projection.

Generally, more accurate projections are made over a recent period. But, how would the projections have fared if they were adjusted for the length of the projection span? To find out, we compared historic, projected, and actual growth rates. Historic growth rates use the same number of years back as the projection is forward. For example, the 1965 projection covered 16 years (from 1964 to 1980), making 1948 the reference year for the historic growth rate. The following tabulation shows the historic and the projected and actual growth rates of the 1980 labor force:

Historic reference year	Year projection was published	Growth rate		
		Historic	Projected	Actual
1948 . . . .	1965	1.25	1.73	2.14
1960 . . . .	1970	1.43	1.84	2.38
1966 . . . .	1973	2.00	1.68	2.28
1970 . . . .	1976	1.97	1.81	2.39

Both the historic and the actual labor force growth rates increased between projections, but the projected growth changed only slightly. In effect, the improvement in the projections of the 1980 labor force was due to the application of the same growth rate to a labor force that was actually growing faster than anticipated. A simple extrapolation made on the basis of the historic growth rate would have increased the accuracy of the 1973 and 1976 projections, but not the 1965 and 1970 projections.<sup>5</sup>

There was a steady increase in the discrepancy between actual and projected labor force growth. The successive projected growth rates were less accurate as 1980 approached. The following tabulation presents the change between the historical growth rate and the projected growth rate (projected change), the change between the historical and actual growth rate (actual change), and the difference between the two, which is also the error in the projected growth rate (a plus sign indicates growth was projected to increase from the historical rate; minus indicates that growth was projected to decrease):

Year published	Projected change	Actual change	Difference (error)
1965	+0.48	+0.89	-0.41
1970	+ .41	.95	-.54
1973	-0.32	.28	-.60
1976	-0.16	.42	-.58

**Participation rates of groups**

How accurate were the projections for individual age-sex groups? Among individual groups, some differences between projected and actual rates leap out; for example those for women age 25 to 34 for all four projections. However, the median of all the differences between the actual and projected rates was zero—the median for men was 1.2 percentage points and for women, -6.0. This was expected because the rates for men have been dropping while those for women have been rising rapidly.

The range of differences between actual and projected participation rates for women was very large. Usual methods for detecting unusually large values, or outliers, detected none. Combining the differences for male

**Table 1. The 1980 labor force and participation rates, actual and as projected in 1965, 1970, 1973, and 1976**

Age	Labor force (in thousands) as projected in —				Actual 1980 <sup>1</sup>	Participation rates as projected in —				Actual 1980 <sup>1</sup>	Difference			
	1965	1970	1973 <sup>1</sup>	1976 <sup>1</sup>		1965	1970	1973 <sup>1</sup>	1976 <sup>1</sup>		1965	1970	1973 <sup>1</sup>	1976 <sup>1</sup>
Men, total . . . . .	64,061	63,612	62,590	61,988	62,088	80.3	79.2	78.0	76.8	76.8	3.5	2.4	1.2	0.0
16 to 19 . . . . .	4,824	4,895	4,668	5,239	5,191	56.7	56.7	56.0	61.8	61.2	-4.5	-4.5	-5.2	0.6
20 to 24 . . . . .	9,064	8,795	8,852	8,852	9,022	87.2	83.0	83.0	84.1	85.7	1.5	-2.7	-2.7	-1.6
25 to 34 . . . . .	17,590	17,815	17,523	16,925	16,943	96.2	96.0	94.6	94.1	94.2	2.0	1.8	0.4	-0.1
35 to 44 . . . . .	12,084	12,086	11,851	11,878	11,901	96.7	96.1	95.1	94.6	94.6	2.1	1.5	0.5	0.0
45 to 54 . . . . .	10,219	10,082	9,908	9,929	9,989	95.0	94.0	91.6	90.0	90.3	4.7	3.7	1.3	-0.3
55 to 64 . . . . .	8,184	7,849	7,730	7,275	7,165	83.7	80.5	79.1	72.5	71.4	12.3	9.1	7.7	1.1
65 and over . . . . .	2,096	2,090	2,058	1,890	1,877	21.8	22.0	21.2	18.7	18.3	3.5	3.7	2.9	0.4
Women, total . . . . .	35,881	37,115	39,219	41,771	44,733	41.9	43.0	45.0	47.7	50.9	-9.0	-7.9	-5.9	-3.2
16 to 19 . . . . .	3,286	3,449	3,669	4,246	4,358	46.6	41.0	45.5	44.6	53.0	-6.4	-12.0	-7.5	-8.4
20 to 24 . . . . .	5,380	5,991	6,592	7,116	7,170	52.6	57.7	63.4	68.4	69.0	-16.4	-11.3	-5.6	-0.6
25 to 34 . . . . .	7,347	8,427	9,250	10,417	11,890	40.3	46.5	50.2	57.3	65.3	-25.0	-18.8	-15.1	-8.0
35 to 44 . . . . .	6,386	6,708	6,869	7,638	8,605	50.0	53.3	53.2	58.0	65.2	-15.2	-11.9	-12.0	-7.2
45 to 54 . . . . .	6,805	6,259	6,537	6,609	6,973	59.5	55.2	56.2	56.6	59.6	-0.1	-4.4	-3.4	-3.0
55 to 64 . . . . .	5,337	5,103	5,057	4,628	4,591	47.3	45.0	44.7	45.6	41.1	6.2	3.9	3.6	4.5
65 and over . . . . .	1,340	1,178	1,239	1,737	1,144	9.9	8.5	8.6	11.7	7.6	2.3	0.9	1.0	4.1

<sup>1</sup> Middle scenarios.

<sup>2</sup> The 1980 labor force data are based on 1970 census weights.

NOTE: Differences with negative values were projected less than actual; those with a positive value were projected higher than actual.

and female rates does detect some outliers. The rates projected in 1965 and 1970 for women age 25 to 34 were underprojected by 25.0 and 18.8 percent. This group also had the greatest change in labor force participation over the period. One question is if a projected rise in participation of more than 25 percentage points would have been credible in 1965. The changes affecting labor force participation of women—fewer births, fewer marriages, unprecedented inflation, more education—affected women in the 25 to 44 age group the most.

**Labor force composition.** The projected labor force composition (age-sex structure) is of concern to those using the projections for equal opportunity purposes or for some types of market research. Table 2 shows the projected and actual distribution of the labor force. The actual and projected labor force participation rates for all four projections are illustrated in chart 1. If the projections were perfect, they would be plotted on a straight line with a slope of one (an angle of 45 degrees) going through the origin, which is the line of perfect projection.<sup>6</sup> When the four projections are combined, our hypothesis that the actual and projected fall on the line of perfect projection, or that the composition was correctly projected is rejected. The implication is that the composition of the labor force was poorly projected.

The bars on chart 1 show the means of the actual and projected labor force rates; if the bars were on the line of perfect fit, there would be no bias in the projection. The fit of projected against actual always goes through the point where the two means cross. If the slope of this line is different from the line of perfect fit, the composition has not been accurately projected. If the line is parallel to the line of perfect fit, then it is biased. On the other hand, if the projection is unbiased but the trend has not been accurately projected, the projection line will cross the line of perfect fit where the means cross on the line of perfect forecast.

### Assumptions and realities

The Bureau of Labor Statistics' labor force projections have been based on past trends of labor force activity extended forward to particular "target" years. The extrapolated rates (modified when necessary) are then applied to population levels projected by the Bureau of the Census, producing projected labor force levels.

This general approach is essentially supply oriented. Because of this orientation, the characteristics which received the most attention from the analysts were the impact of marital status and the presence of children on the labor force activity of women and the impact of school enrollment on the participation of younger workers. For example, the analysts who prepared the 1965 and 1970 projections considered work and childrearing

**Table 2. Distribution of the 1980 labor force, actual and as projected in 1965, 1970, 1973, and 1976**

Age	Projected in				Actual 1980 <sup>2</sup>	Difference			
	1965	1970	1973 <sup>1</sup>	1976 <sup>1</sup>		1965	1970	1973	1976
Men, total	64.1	63.2	61.5	59.7	58.1	6.0	5.0	3.4	1.6
16 to 19	4.8	4.9	4.6	5.0	4.9	-0.1	0.0	-0.3	0.2
20 to 24	9.1	8.7	8.7	8.5	8.4	0.6	0.3	0.2	0.1
25 to 34	17.6	17.7	17.2	16.3	15.9	1.7	1.8	1.4	0.5
35 to 44	12.1	12.0	11.6	11.4	11.1	0.9	0.9	0.5	0.3
45 to 54	10.2	10.0	9.7	9.6	9.4	0.9	0.7	0.4	0.2
55 to 64	8.2	7.8	7.6	7.0	6.7	1.5	1.1	0.9	0.3
65 and over	2.1	2.1	2.0	1.8	1.8	0.3	0.3	0.2	0.0
Women, total	35.9	36.8	38.5	40.3	41.9	-6.0	-5.0	-3.4	-1.6
16 to 19	3.3	3.4	3.6	4.1	4.1	-0.8	-0.7	-0.5	0.0
20 to 24	5.4	5.9	6.5	6.9	6.7	-1.3	-0.8	-0.2	0.1
25 to 34	7.4	8.4	9.1	10.0	11.1	-3.8	-2.8	-2.0	-1.1
35 to 44	6.4	6.7	6.7	7.4	8.1	-1.7	-1.4	-1.3	-0.7
45 to 54	6.8	6.2	6.4	6.4	6.5	0.3	-0.3	-0.1	-0.2
55 to 64	5.3	5.1	5.0	4.5	4.3	1.0	0.8	0.7	0.2
65 and over	1.3	1.2	1.2	1.7	1.1	0.3	0.1	0.1	0.6

<sup>1</sup> Middle scenarios.

<sup>2</sup> The 1980 labor force data are based on 1970 census weights.

incompatible roles. The analysts who prepared the 1973 projections felt that the rapid changes in participation rates would not continue; the analyst who prepared the 1976 projection allowed the rapid changes in female participation rates to continue.<sup>7</sup>

It will be helpful to review the changes in marital status, presence of children, and educational attainment that have occurred since 1965. While such a discussion will not explain the projection errors, it will indicate whether the underlying supply assumptions of the four BLS projections were met.<sup>8</sup>

**Fertility.** Births, which peaked in 1958 with a total fertility rate of 3.8 children per woman, dropped during the 1960's, turned up slightly at the end of the decade, and then dropped until 1976, when fertility rates were below those of the Great Depression. Since then, the rate has risen slowly. The decline in fertility was not anticipated and is an important factor in the underprojection of the labor force activity of women. The negative relationship between fertility and participation lessened, which also was not anticipated. These assumptions by the BLS projectionists were not different from those of other projectionists.

Three points should be remembered when considering the effect of fertility on the labor force status of women. First, the total fertility rate—the sum of the birth rates in a year by specific age groups—overstates the actual changes. That is, no cohort of women averaged 3.8 children, nor does it appear likely that the average will drop to 1.7 children. The changes in fertility were accomplished by shifting both the timing of marrying and of giving birth.<sup>9</sup> It appears that 20 to 30 percent of recent generations of women will not have children.<sup>10</sup> Second, the direction of causality between births and labor force activity is ambiguous. Both are affected by similar

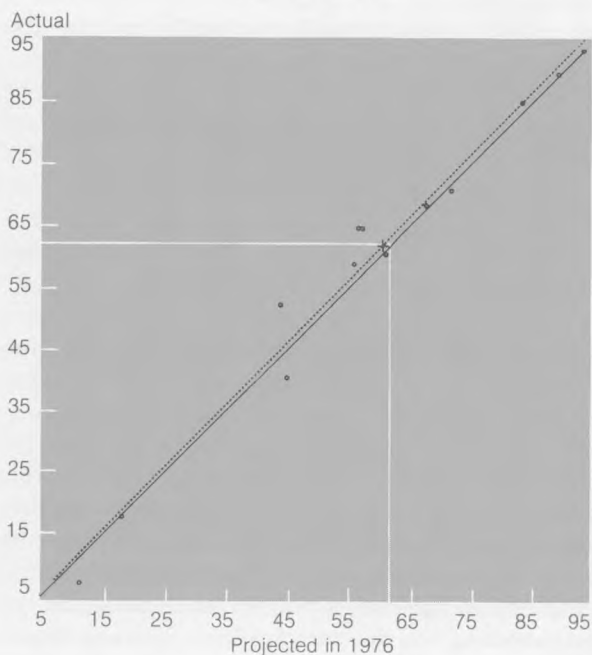
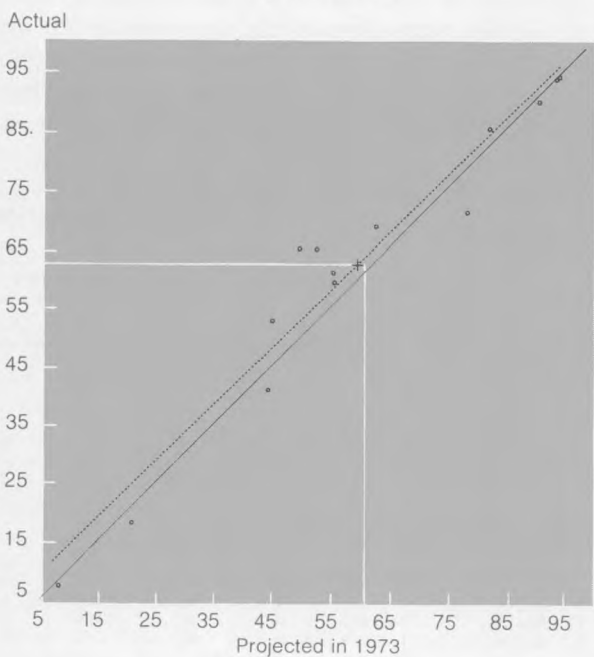
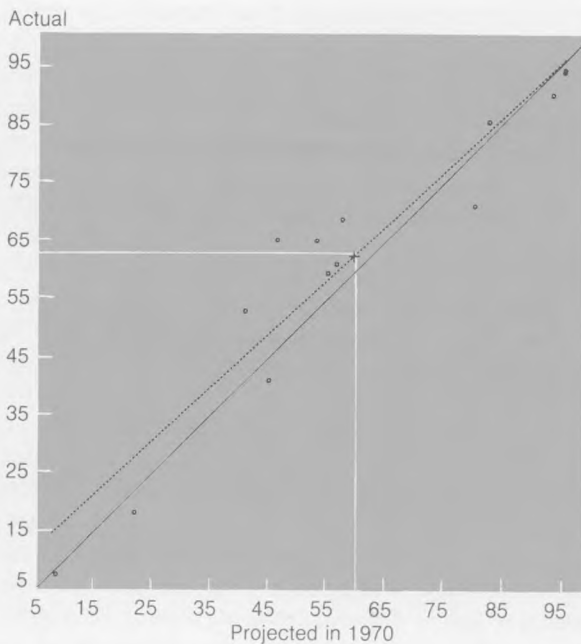
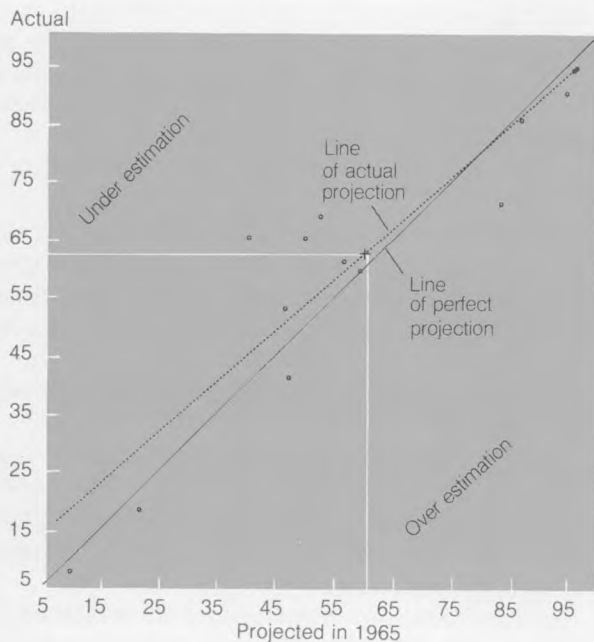


factors, such as education, inflation, and the changing social expectation. Increased labor force participation may induce tastes that are incompatible with motherhood. Third, there is a direct effect on labor force participation in that childbirth generally results in the mother withdrawing from the labor force, even if for a short time.

*Marital status.* The changing marital status of the population also affected the growth of the labor force. Not as many married women lived in traditional (spouse present) households.

There was a small, 3-percent annual change in the proportion of married women over the 15-year-period, but if applied to the 87 million women in 1980 who

**Chart 1. Labor force participation rates for 1980, actual and projected in 1965, 1970, 1973, and 1976**



were 16 or older, it amounts to almost 3 million fewer married women. This shift in the proportion of married women resulted in a greater number of women in the labor force, and was reinforced by the increase in the participation rates of married women. The drop in the proportion of married women reflects the "marriage squeeze," the increased divorce rate, and the postponement of marriage. (Marriage squeeze refers to the joint effect of increasing births and the marriage of women to men about 2 years older. About 20 years after the period of increasing births, there would be fewer men than women of marriageable age.) These factors also lowered the birth rate and the proportion of women with young children.

*Parental status.* As the proportion of women with young children dropped (as the lower fertility rates implied), their share of the labor force rose. The 1965 projection did not assume growth in the labor force participation of mothers of young children and also did not expect births to drop to such a low level. The 1970 projection also did not explicitly include these assumptions. The 1973 and the 1976 projections attempted to project the number of women with young children by using the current population projections of births. However, both projections overestimated the proportion of mothers of young children and, thus, underprojected the growth of the labor force. The implicit assumption in each projection of the size of the negative relationship between the presence of young children and the labor force activity of their mothers was another factor in the underprojection of the labor force activity of women with young children. In addition, it is more difficult to project marital and parental status than labor force status.

*Education.* American workers steadily increased their years of formal schooling between 1965 and 1980. This behavior was explicitly modeled in the 1965 and 1970 projections and implicitly assumed in the 1973 and 1976 projections. As education increases, the labor force participation of women also increases.<sup>11</sup>

*Inflation.* Price changes affect many aspects of economic and social life and, thus, would be expected to have some effect upon labor force activity. Certainly, the projectionists made no explicit assumptions about the rate of price increase, but its effect on participation has been explored by many.<sup>12</sup> Valerie K. Oppenheimer suggested that wives participate more actively in the labor force to maintain family spending because real earnings of the husband remain constant while the family life-cycle requires increasing real income. James E. Duggan found that increased participation of wives is partly caused by the uncertainty engendered by rapid rates of price

change. Thus, the rapid price changes of recent years probably contributed to the larger than anticipated labor force growth.

To summarize the assumed versus actual experiences affecting the 1980 labor force, fertility was lower than anticipated, resulting in higher female participation than projected; the lesser rate of withdrawal by women to tend young children also meant higher participation. The proportion of women living with their spouses dropped, which would tend to make female participation rise. We cannot evaluate how well this was anticipated in 1965 because of data limitations; since 1970, it has not been formally a part of the "model." The number of years of schooling completed rose and, for women, so did participation.<sup>13</sup> Finally, the unprecedented rise in inflation was not anticipated and probably resulted in more wives actively seeking work.

### Comparison with other projections

In 1977, Data Resources, Inc., projected that the civilian labor force would increase to 102,500,000 in 1980, or 1.95 percent per year.<sup>14</sup> By comparison, in 1976, BLS projected a civilian labor force of 101,600,000 in 1980, a growth rate of 1.86 percent per year. The 1980 labor force was 104,700,000, a 2.46-percent growth rate.

Data Resources projection had a somewhat smaller error (-.51 percent) than the BLS projection (-.60 percent), and, of course, was made a year later. Table 3 compares the projected civilian labor force rates of Data Resources and BLS.

Overall, BLS did slightly better at projecting 1980 participation rates than did Data Resources; the mean of the absolute values of the deviations is 2.0 for BLS and 2.5 for Data Resources. Both were good at projecting male rates, but Data Resources was superior at projecting female rates. Interestingly, Data Resources was

**Table 3. Comparison of Data Resources and BLS projections of 1980 civilian labor force participation rates**

[In percent]

Age	Projection		Actual	Errors	
	Data Resources	BLS		Data Resources	BLS
<b>Women:</b>					
16 to 17 .....	45.3	43.1	43.8	1.5	-0.7
18 to 19 .....	62.5	60.0	62.1	.4	-2.1
20 to 24 .....	69.7	68.4	69.0	-.7	-.6
25 to 34 .....	62.4	57.4	65.4	-3.0	-8.0
35 to 44 .....	60.1	58.3	65.5	-5.4	-7.2
45 to 54 .....	55.7	57.1	59.9	-4.2	-2.8
<b>Men:</b>					
16 to 17 .....	50.3	50.6	50.1	.2	.5
18 to 19 .....	66.5	71.5	71.5	-5.0	0
20 to 24 .....	81.6	84.2	86.0	-4.4	-1.8
25 to 34 .....	93.1	95.2	95.3	-2.2	-.1
35 to 44 .....	94.0	95.5	95.5	-1.5	0
45 to 54 .....	89.9	91.2	91.2	-1.3	0

NOTE: These rates do not reflect any adjustment for the 1980 census.



much better at projecting rates for women age 25 to 34 (estimating rates for this age group has always been difficult for BLS). Also, Data Resources' worst projection, that for women age 35 to 44 years, was still better than any of the BLS projection rates for women. Among women, only for those age 16 and 17, and 45 to 54, did BLS have lower projection errors than Data Resources. Among men, the Data Resources projection was better than the BLS projection only for those 16 to 17 years. The feat of projecting some of the rates for men exactly should be discounted, indeed the Data Resources error of 0.2 percentage point should be considered equivalent to an exact projection. In general, the superior projection made by one projecting group for a sex was offset by the errors made in projecting rates for the other group.

### Guidelines for users

The labor force projections are prepared for a variety of users. Within the Bureau of Labor Statistics, they are an input into the employment, output, and occupational projections; they are also used in employment and training policy development, in market research, in equal employment opportunity work, and by many States as inputs into State labor force and population projections.<sup>15</sup> It is not clear what level of accuracy is satisfactory—we presented several measures of errors; the user of the projections should select the measure most relevant to the specific application.

There are occasions when the levels or accuracy described here are not sufficient (for example, when the range of uncertainty exceeds the usual levels of unemployment).

If the projections are to be used in simulations con-

cerning unemployment, they should be used with great caution. Nathan Keyfitz commented that the errors in population projections over a 20-year span are sufficiently wide as to limit their usefulness; labor force projections are even more constrained.<sup>16</sup>

Most users tolerate a lower accuracy in long-run than in short-run projections because of their different purposes, and because decisions based on long-run projections can be revised or shifted over time. For example, the decision to build or to not build a sewage treatment facility does not depend on the accuracy of the population projected for a locality, but rather on the likelihood of the population exceeding a specific number. If the facility is built and the population does exceed the threshold number, then the projection was useful even if it was not accurate.<sup>17</sup>

If the future labor force could be determined with no error, it would not be necessary to revise projections. Four comments should be helpful. First, at the time each of the four projections was made the assumptions about the future of the labor force were reasonable. Second, none of the projections has any turning points; it is quite likely that some of the labor force series will indeed change direction. Third, as Henri Theil points out, projections must at some place in their structure hold change constant, whether it is the level of net migration or the rate of change; this has the effect of underestimating the amount of change.<sup>18</sup> Further Jacob Mincer and Victor Zarnowitz say that it is harder to project a rising level of activity.<sup>19</sup> These tendencies results in overestimate of the level of men's labor force activity—and underestimate of the activity of women. The relative sizes of the two components of the labor force is more poorly projected. □

### FOOTNOTES

<sup>1</sup> Marc Rosenblum, "On the accuracy of labor force projections," *Monthly Labor Review*, October 1972, p. 22-29.

<sup>2</sup> Alfred Tella, "Labor Force Sensitivity to Employment by Age, Sex," *Industrial Relations*, February 1965; and Thomas F. Dernberg, Kenneth Strand, and Judith Dukler, "A Parametric Approach to Labor Force Projection," *Industrial Relations*, October 1966.

<sup>3</sup> Labor force projections are used in preparing employment, output, and occupational projections. The Bureau's occupational projections for 1980 are evaluated by Max L. Carey and Kevin Kasunic, in "Evaluating the 1980 projection of occupational employment," *Monthly Labor Review*, this issue, pp. 22-30.

<sup>4</sup> See the following *Monthly Labor Review* articles: Sophia Cooper and Denis F. Johnston, "Labor Force Projections for 1970-80," February 1965, p. 129-39 (reprinted as Special Labor Force Report 49); Sophia Cooper Travis, "The U.S. labor force; projections to 1985," May 1970, pp. 3-12 (reprinted as Special Labor Force Report 119); Denis F. Johnston, "The U.S. labor force; projections to 1990," July 1973, pp. 3-13 (reprinted as Special Labor Force Report 156); and Howard N Fullerton and P.O. Flaim, "New labor force projections to 1990," December 1976, pp. 3-13 (reprinted as Special Labor Force Report 197).

<sup>5</sup> Michael A. Stoto, "The Accuracy of Population Projections" (Laxenburg, Austria, International Institute for Applied Systems Analysis, 1979). Stoto also found that over the first 10 years of a population projection, the naive extrapolation method was more accurate than other methods.

<sup>6</sup> For more information on this type of comparison, see Henri Theil, *Economic Forecasts and Policy* (Amsterdam, North-Holland Publishing Co., 1965), and *Applied Econometric Forecasting* (Chicago, Rand-McNally and Co., 1966).

<sup>7</sup> The 1965, 1973, and 1976 projections each looked at specific population groups (for example, mothers of young children), thus, it should be possible to partition the error in the labor force projection into that due to the size of a specific group and that due to the projection of labor force rate. However, the archives for the labor force projections are not available, and we can only look at the overall error for the major group.

<sup>8</sup> Only 1965 projections considered the effects of a drop in the unemployment rate (to 3 percent); it concluded that for every 3 jobs created 2 would be filled by the unemployed and one by new labor force entrants. Attempts to prove the effect symmetric were unsuccessful, so it is not possible to conclude what effect the higher unemployment rate would have had on the labor force.

<sup>9</sup> Arthur A. Campbell, "Beyond the Demographic Transition," *Demography*, 1974, pp. 549-61; and "Baby Boom to Birth Dearth and Beyond," *Annals*, American Academy of Political and Social Sciences, January 1978, pp. 40-60.

<sup>10</sup> David E. Bloom, "What's Happening to the Age at First Birth in the United States? A Study of Recent White and Nonwhite Cohorts," a paper presented at the 1981 meetings of the Population Association of America.

<sup>11</sup> Although increases in educational attainment of the population were considered in making labor force projections, the Bureau's two projections of the educational attainment of the labor force were made by forcing the overall labor force projections to the Census Bureau's educational attainment projection for the population.

<sup>12</sup> See, for example, Valerie K. Oppenheimer, "The Life-Cycle Squeeze: The Interaction of Men's Occupational and Family Life Cycles," *Demography*, 1974, pp. 227-45; James E. Duggan, "Inflation, uncertainty, and labor force participation," Bureau of Labor Statistics, 1979; and "The Labor Supply of Married Persons: Evidence From the Current Population Survey," Bureau of Labor Statistics, 1981.

<sup>13</sup> Reasons for the decrease in male participation rates are not explored in this article. For an analysis, see William V. Deutermann, Jr., "Another look at working-age men who are not in the labor force," *Monthly Labor Review*, June 1977, pp. 9-14.

<sup>14</sup> James Yrshus and Roger Brinner, "Labor force growth to 1990: The impact of changing social roles," *DRI Long Term Review*, Winter 1977, pp. 92-100.

<sup>15</sup> See Ronald E. Kutscher, "New economic projections through 1990—an overview," *Monthly Labor Review*, April 1979, pp. 9-17.

<sup>16</sup> Nathan Keyfitz, "The Limits of Population Forecasting," *Population and Developments Review*, December 1981, pp. 579-93.

<sup>17</sup> Nathan Keyfitz, *Applied Mathematical Demography* (New York, John Wiley and Sons, 1977).

<sup>18</sup> Henri Theil, *Applied Econometric Forecasting*.

<sup>19</sup> Jacob Mincer, and Victor Zarnowitz, "The Evaluation of Economic Forecasts," in Jacob Mincer, ed, *Economic Forecasts and Expectations: Analysis of Forecasting Behavior and Performance* (New York, National Bureau of Economic Research, Columbia University Press, 1969), pp. 3-46.

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#### A note on communications

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

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# Evaluating the 1980 projections of occupational employment

*Job projections prepared by BLS in 1970 proved slightly less accurate than estimates for 1965-75; classification changes again restricted comparability, permitting analysis of fewer than half of 160 occupations*

MAX L. CAREY AND KEVIN KASUNIC

How reliable were the 1980 occupational employment projections? The Bureau of Labor Statistics' estimates were on target for professional and service occupations, the two fastest growing occupational groups between 1970 and 1980.<sup>1</sup> The projections were fairly accurate for farm, craft, clerical, and sales occupations. For the remaining three major occupational groups, BLS projections missed the mark by significant margins. BLS underestimated employment growth for managerial and administrative occupations and for nonfarm laborers, while overestimating employment in operative occupations.

Among individual occupations, the projections proved accurate for optometrists, physicians, veterinarians, elementary schoolteachers, police, and welders. Opportunities for lawyers and psychologists grew faster than anticipated. In a seeming anomaly of the impending "cashless society," cashiers and bank tellers could count on many more jobs than BLS projected, while the number of credit managers was less than anticipated.

As expected, projections for specific occupations were less accurate than for the major occupational groups. Despite some refinements, the 1980 projections were not quite as accurate as the 1975 estimates, which also spanned 10 years.<sup>2</sup>

In evaluating the 1980 projections, comparability again proved to be a major problem. Fewer than half of the detailed occupations studied in the base year could be evaluated, specifically, only 64 of 160 occupations.

## Results by occupational group

Among the nine major occupational groups, projection errors were relatively large for nonfarm laborers, managers and administrators, and operatives. The number of nonfarm laborers employed in 1980 was underprojected by 17 percent, and the number of managers and administrators, by 13 percent. (See table 1.) By contrast, operative employment was overprojected by 11.8 percent. The average of the absolute percentage errors for all groups was 6.7 percent.

The direction of employment change was not correctly anticipated for nonfarm laborers and operatives. The number of nonfarm laborers was projected to be 3.7 million in 1980, or about 1 percent lower than the 1970 level. Instead of declining, employment in this group increased to almost 4.5 million. This projection was probably influenced by the trend of the 1960's, when employment remained at about the same level. Conversely, operative employment was projected to rise from 13.9 million in 1970 to 15.4 million in 1980, but declined to 13.8 million. The 1.6-million overestimate of operatives was the largest error in number for a major occupational group. Operative employment is concentrated in manufacturing industries, which are sensitive to economic fluctuations. After recovering from the re-

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cession of the mid-1970's, operative employment had grown steadily and might have reached the projected level if the economy had continued to improve. Employment was at 14.5 million in 1979. The direction of employment change was correctly anticipated for managers and administrators, but employment grew twice as rapidly as projected, resulting in a 1.4-million underestimate of the 10.9 million employed in 1980. The projection of managers was probably influenced by the employment trend in 1962-67, when employment only grew from 7.4 million to 7.5 million, with very little fluctuation during that period.

Projection errors in the remaining groups were comparatively small. Differences between projected and actual employment levels ranged from less than 1 percent for professional and technical workers and service workers to 6.7 percent for salesworkers. Moreover, the projected and actual amounts of change were very close in some occupations. The estimated increase in professional and technical workers was only 2.5 percent lower than the approximately 4.5-million increase that occurred, and the estimated growth in service workers was only 3.1 percent greater than the actual increase of 3.2 million. The projections correctly identified the professional and technical workers, service workers, and clerical workers as the three fastest growing groups.

### Results by specific occupation

Differences between projected and actual employment in the 64 detailed occupations ranged from an underestimate of 47 percent for psychologists to an overestimate of 89 percent for locomotive engineers' helpers. (See table 2.) The absolute percentage errors for all 64 occupations averaged 22.4 percent. About one-half of the occupations had errors lower than the average. Absolute errors ranged from a 444,000-underestimate of cashier employment in the target year to a 181,000-overestimate of telephone operators.

Employment was overprojected in slightly more than one-half of the occupations; on average, by 25.8 per-

cent. Among the occupations in which employment was overstated by more than 50 percent were photoengravers and lithographers, patternmakers, airplane mechanics, telephone operators, and credit managers. Employment was underprojected in almost one-half of the occupations. The average underestimate was 19.5 percent. Employment in several occupations was underprojected by more than 30 percent, including cooks, bartenders, bank tellers, lawyers, and roofers.

The occupational estimates are products of the projections of industry employment and of industry-occupational staffing patterns. Many of the largest errors resulted primarily from misestimates of industry-occupational staffing patterns. The decline in the ratio of telephone operators to total employment in the telephone industry, for example, was greater than anticipated, and consequently the demand for workers in this occupation was overprojected. Staffing pattern estimates also led to large errors in the projections for locomotive engineers' helpers, psychologists, credit managers, lawyers, and roofers. Misestimates of industry employment totals, rather than industry staffing patterns, were the primary causes of large errors for some occupations. The banking industry, for example, grew much more rapidly than expected, resulting in an underprojection of the demand for bank tellers. Projection errors for cooks, bartenders, and aircraft mechanics also were largely a result of poor projections for the industries in which these workers were concentrated.

### Size makes a difference

Projection accuracy was related to size of employment. When weighted by employment in each occupation, the average absolute error drops from 22.4 percent to 14.1 percent, indicating that the largest occupations generally had the more accurate projections. Relatively accurate projections for the following three categories, each with more than 1 million workers in 1980, contributed substantially to the improved results: blue-collar supervisors; elementary schoolteachers; and stenogra-

**Table 1. Comparison of projected employment and actual employment in major occupational groups, 1970-80**

[Workers in thousands]

Occupational group	1970	1980		Percent change		Difference between projected and actual	
		Projected	Actual	Projected	Actual	Level	Percent
Total	78,627	95,085	97,270	20.9	23.7	-2,185	-2.2
Professional and technical workers	11,140	15,500	15,613	39.1	40.2	-113	-0.7
Managers and administrators	8,289	9,500	10,919	14.6	31.7	-1,419	-13.0
Salesworkers	4,854	5,760	6,172	18.7	27.2	-412	-6.7
Clerical workers	13,715	17,285	18,105	26.0	32.0	-820	-4.5
Craft and kindred workers	10,158	12,240	12,529	20.5	23.3	-289	-2.3
Operatives	13,909	15,440	13,814	11.0	-0.7	1,626	11.8
Nonfarm laborers	3,724	3,700	4,456	-0.6	19.7	-756	-17.0
Service workers	9,712	13,060	12,958	34.5	33.4	102	0.8
Farmworkers	3,126	2,600	2,704	-16.8	-13.5	-104	-3.9

NOTE: Individual items may not add to totals because of rounding. Percent differences are based on unrounded numbers.



phers, typists, and secretaries. Sampling errors for Current Population Survey estimates diminish relatively as employment size increases, so the long-run data for large occupations would be expected to provide more reliable trends to use in the projections:

<i>Number of workers</i>	<i>Number of occupations</i>	<i>Average absolute percent error</i>
Total . . . . .	64	22.4
Less than 50,000 . . . . .	18	29.5
50,000 to 99,999 . . . . .	9	24.9
100,000 to 299,999 . . . . .	14	26.3
300,000 to 599,999 . . . . .	11	17.2
600,000 and more . . . . .	12	10.1

The direction of employment change between 1970 and 1980 was correctly anticipated for 50 of the 64 detailed occupations. Again, results were better in the larger fields of employment. Less than one-sixth of the occupations with more than 50,000 workers in 1970 had projections that were in the wrong direction, compared with more than one-third of the smaller fields. Some of the differences, however, between projected increases and actual declines, or vice versa, were relatively small.

For each occupation in which the direction of employment change was correctly anticipated, the percentage of the actual change accounted for by the projection was computed. In about two-thirds of the occupations the projections underestimated the employment change. In the remaining occupations, the projections overestimated the change.

Employment grew in 46 of the occupations between 1970 and 1980 and declined in the remaining 18. Increases were estimated more accurately than decreases. Projections of growth averaged an absolute 16.1 percent off actual employment, while those of loss averaged 38.4 percent off. Employment in two-thirds of growing occupations was underestimated. All employment declines either were underestimated or not foreseen at all.

The direction of employment change was correctly anticipated for all but two of the growing occupations. The number of elementary schoolteachers increased by about 4 percent, instead of declining by 0.9 percent. Jewelers and watchmakers increased more than 37 percent, against a projected 0.9-percent decline.

Occupations with the most rapid growth had the largest projection errors. Projected 1980 levels for those with employment increases of more than 50 percent between 1970 and 1980 averaged 30.1 percent off actual 1980 levels. Projection errors averaged only 9.4 percent for occupations with slower growth. Target-year employment usually was underestimated in the fastest-growing occupations and overestimated in those with the slowest growth. Projections were lower than actual levels in the 15 fastest-growing occupations and higher than actual in 12 of the 15 with the slowest increases.

Decreases were not anticipated in 12 of the 18 occupations that declined in employment. The projections correctly identified weaver, knitter, compositor and typesetter, locomotive engineer's helper, railroad conductor, and brake and switch operator as occupations which would decline in employment, although the rate of decrease was generally underestimated.

### Testing for accuracy

One way to judge the accuracy of an occupational employment projection is to determine whether the projection or the base-year employment is closer to the target-year employment. In 45 of the 64 occupations, the projections were closer to the target than base-year employment. In the remaining 19 occupations, the projections either were in the wrong direction or overstated the employment growth by wide margins. Another way to judge projections is to compare them with the results obtained from simple alternative methods. Extrapolations of employment data by simple linear regression would have been an inexpensive and easy way of projecting. Extrapolations based on this simple method were more accurate than the projections for 46 of the 64 occupations.<sup>3</sup> Several of the extrapolations, however, missed targets by wide margins, which resulted in a slightly lower weighted error for the projections. The weighted absolute average error was 15.1 percent for the extrapolations, compared to 14.1 percent for the projections. Unweighted errors were about the same for both methods.

The evaluation has focused on differences between projected and actual employment *levels*, rather than differences between actual and projected employment *changes*. Generally, occupations with accurately projected levels also were accurate in terms of the proportion of actual change that was estimated. Comparisons of levels, however, have a conservative bias in that projections for occupations which have relatively little employment change tend to get better marks than those which have the most change, as demonstrated in the following occupations. Employment of psychologists was projected to increase from 33,200 in 1970 to 56,000 in 1980, but actually rose to 106,000, which means that target-year employment was underestimated by 47.2 percent. In contrast, the number of cabinetmakers was projected to increase from 70,000 to 72,700, but rose to 85,000, resulting in an underestimate of 14.5 percent. In terms of the difference between projected and actual employment levels, the projection for cabinetmakers is by far the better of the two. The projection for psychologists, however, accounted for about 31 percent of the employment increase that occurred, while the one for cabinetmakers accounted for only 18 percent. Therefore, if the measure of accuracy is the proportion of actual change that was estimated, the projection for psycholo-

gists is better. Both kinds of accuracy are important. The accuracy of level is particularly important, however, because projected levels are used in calculating replacement needs resulting from retirements and deaths.

### Rating the handbook ratings

In addition to publication in *Tomorrow's Manpower Needs*, many of the 1980 projections were used as a basis for qualitative descriptions in another BLS publication, the 1972-73 edition of the *Occupational Outlook Handbook*, designed to help young people make career plans. In most cases, the handbook description of employment outlook for an occupation includes a sentence about the expected change in employment through the 1970's. The adjectives used to describe expected changes in employment requirements generally corresponded to these ranges of percent change (increase or decrease): very rapid, 40 or more; rapid, 30 to 39.9; moderate, 15 to 29.9; slow, 5 to 14.9; little or no change, 0 to 4.9. The handbook contained occupational statements for 45 of the 64 occupations for which projections were evaluated, and the standard adjectives were used in describing the outlook in 34 of these statements. Statements on only two occupations, elementary schoolteachers and telephone operators, were incorrect about the direction of employment change. The handbook expected employment in this teaching field to decline slowly, but it showed little or no change. The number of telephone operators was expected to grow slowly instead of declining moderately. The outlook description for telephone operators was misleading, but the one for elementary teachers was not.

The adjectives were on target or only one category off target for about two-thirds of the remaining statements. Rapid growth in surveyor employment was projected, for example, instead of very rapid growth. Adjectives for about one-fourth of the statements were off by two categories, but in some cases it is difficult to determine whether this degree of inaccuracy was misleading. The difference between moderate growth and very rapid growth, for example, does not seem as significant as the difference between moderate growth and little or no change. Adjectives for the following occupations were three categories off the mark: jewelers and watchmakers, boilermakers, and cement and concrete finishers. The outlook descriptions for these occupations likely were misleading.

### The framework

The 1980 projections of occupational requirements were developed within the framework of a 1970-80 matrix that described the relationship of employment in 160 occupations and 116 industries.

The long-term data used in developing the 1970 ma-

trix and projected 1980 matrix were obtained from a variety of sources. The primary sources of data on occupational staffing patterns by industry were the 1950 and 1960 censuses. The primary source of total employment in each industry was the Bureau of Labor Statistics' Current Employment Survey (a payroll survey) for 1947 through 1969. The Current Population Survey (a household survey) was the chief source of total employment of occupational groups and most occupations after 1960. Data for some occupations, however, were obtained from independent sources, such as professional societies and regulatory agencies.

The primary data source for occupational employment by industry was the 1960 census, because information from the 1970 census was not available. However, the 1980 data used in the analysis were largely derived from the 1980 Current Population Survey (CPS), which used the 1970 census occupational classification system. Because the Census Bureau revised its 1960 system for classifying employment by occupation for use in the 1970 census, a large proportion of the 160 occupations examined in 1970 were not sufficiently comparable for evaluation.<sup>4</sup>

According to the Census Bureau, all nine occupational groups had 96 percent or better comparability between the two classification systems. Specifically, if the 1960 labor force data were retabulated, 95 percent or more of the employment reported in a particular major occupational group under the 1960 classification system would remain in the same group under the 1970 system, and these workers would represent 95 percent or more of the total for that group. For detailed occupations, there was far less comparability. Of the 297 occupations in the 1960 census classification system, only 171 had 90 percent or better comparability in the 1970 system. About one-half of these occupations, however, were not included in the matrix. In addition, the accuracy of some of the projections that were based on historical data from sources other than the census could not be verified. After eliminating occupations which were less than 90 percent comparable and those which had verification problems, the evaluation of projections was limited to 64 of the 160 detailed occupations covered in the matrix.

In addition to the comparability and verification problems, the comparison of actual and projected data were hampered by the sampling errors of the CPS. For a CPS estimate of 50,000, for example, the standard error would be about 6,700 or roughly 13 percent of the employment level. This much variance would have a great impact on evaluating accuracy, for projections averaged only 28 percent off the CPS-derived 1980 estimates for occupations with employment of less than 100,000.<sup>5</sup>

Data constraints precluded construction of a 1980



matrix with actual data comparable to the projected 1980 matrix. Consequently, 1980 employment levels for most occupations were estimated from CPS data, the primary source of occupational data for matrices between

decennial censuses. Data on 1980 employment were also obtained from independent sources, such as professional associations, in cases where the 1960 and 1970 matrices used these sources rather than the census or CPS.<sup>6</sup>

**Table 2. Comparison of projected, simulated, and actual 1980 employment in selected occupations**

[Workers in thousands]

Occupation	1970	1980			Difference between projected and actual		Difference between simulated and actual		Percent change		
		Projected	Simulated	Actual	Level	Percent	Level	Percent	Projected	Simulated	Actual
Composers and typesetters	175.0	165.0	199.5	165.0	0.0	0.0	34.5	20.9	-5.7	14.0	-5.7
Optometrists	17.5	21.0	24.9	20.9	0.1	0.5	4.0	19.1	20.0	42.3	19.4
Delivery, route, and taxi drivers	655.0	750.0	696.7	746.0	4.0	0.5	-49.3	-6.6	14.5	6.4	13.9
Food counter and fountain workers	291.0	411.0	368.4	417.0	-6.0	-1.4	-48.6	-11.7	41.2	26.6	43.3
Blue-collar worker supervisors	1488.0	1700.0	1708.9	1729.0	-29.0	-1.7	-20.1	-1.2	14.2	14.8	16.2
Heat treaters, annealers, and temperers	22.0	24.4	24.7	24.0	0.4	1.7	0.7	2.9	10.9	12.3	9.1
Veterinarians	24.0	33.0	23.3	33.8	-0.8	-2.4	-10.5	-31.1	37.5	-2.9	40.8
Welders and flame cutters	535.0	675.0	616.4	693.0	-18.0	-2.6	-76.6	-11.1	26.2	15.2	29.5
Osteopaths	13.5	19.4	20.1	18.8	0.6	3.2	1.3	6.9	43.7	48.9	39.3
Physicians and surgeons	266.0	395.0	391.5	381.3	13.7	3.6	10.2	2.7	48.5	47.2	43.3
Police and detectives	415.0	600.0	584.7	579.0	21.0	3.6	5.7	1.0	44.6	40.9	39.5
Radio and television repairers	132.0	163.0	148.8	170.0	-7.0	-4.1	-21.2	-12.5	23.5	12.7	28.8
Elementary schoolteachers	1260.0	1249.0	1856.7	1313.0	-64.0	-4.9	543.7	41.4	-0.9	47.4	4.2
Furnace tenders, smelters, and pourers	60.0	64.0	63.3	61.0	3.0	4.9	2.3	3.8	6.7	5.5	1.7
Plumbers and pipefitters	350.0	470.0	439.4	444.0	26.0	5.9	-4.6	-1.0	34.3	25.5	26.9
Railroad conductors	40.0	39.0	31.3	36.7	2.3	6.3	-5.4	-14.7	-2.5	-21.8	-8.3
Electricians	440.0	585.0	534.7	625.0	-40.0	-6.4	-90.3	-14.5	33.0	21.5	42.0
Machinists and related workers	585.0	660.0	671.8	616.0	44.0	7.1	55.8	9.1	12.8	14.8	5.3
Stenographers, typists, and secretaries	3504.0	4580.0	4418.2	4963.0	-383.0	-7.7	-544.8	-11.0	30.7	26.1	41.6
Molders, metal, except coremakers	56.0	62.5	62.3	58.0	4.5	7.8	4.3	7.4	11.6	11.3	3.6
Dentists	96.7	127.6	144.1	118.3	9.3	7.9	25.8	21.8	32.0	49.0	22.3
Meatcutters and butchers, except meatpackers	190.0	200.0	214.4	185.0	15.0	8.1	29.4	15.9	5.3	12.8	-2.6
Carpenters	830.0	1075.0	1079.9	1172.0	-97.0	-8.3	-92.1	-7.9	29.5	30.1	41.2
Railroad brake and switch operators	88.0	85.0	70.2	78.2	6.8	8.7	-8.0	-10.2	-3.4	-20.2	-11.1
Mail carriers, post office	254.0	320.0	315.8	357.2	-37.2	-10.4	-41.4	-11.6	26.0	24.3	40.6
Registered nurses	688.7	983.0	984.6	1101.0	-118.0	-10.7	-116.4	-10.6	42.7	43.0	59.9
Waiters and waitresses	1040.0	1240.0	1225.3	1413.0	-173.0	-12.2	-187.7	-13.3	19.2	17.8	35.9
Millwrights	80.0	94.0	88.7	108.0	-14.0	-13.0	-19.3	-17.9	17.5	10.9	35.0
Cabinetmakers	70.0	72.7	84.6	85.0	-12.3	-14.5	-0.4	-0.5	3.9	20.9	21.4
Shipping and receiving clerks	379.0	430.0	437.9	505.0	-75.0	-14.9	-67.1	-13.3	13.5	15.5	33.2
Postal clerks	300.0	385.0	372.9	456.3	-71.3	-15.6	-83.4	-18.3	28.3	24.3	52.1
Mechanical engineers	206.7	276.8	253.2	232.0	44.8	19.3	21.2	9.1	33.9	22.5	12.2
Firefighters	180.0	275.0	251.2	227.0	48.0	21.2	24.2	10.7	52.8	39.6	26.1
Aeronautical engineers	63.9	77.6	72.9	64.0	13.6	21.3	8.9	13.9	21.4	14.1	0.2
Civil engineers	179.9	235.6	245.7	192.0	43.6	22.7	53.7	28.0	31.0	36.6	6.7
Locomotive engineers	43.0	43.0	34.7	34.2	8.8	25.7	0.5	1.5	0.0	-19.3	-20.5
Surveyors	51.2	68.2	74.8	93.0	-24.8	-26.7	-18.2	-19.6	33.2	46.1	81.6
Dietitians and nutritionists	30.0	37.4	42.0	51.0	-13.6	-26.7	-9.0	-17.6	24.7	40.0	70.0
Jewelers and watchmakers	35.0	34.7	37.6	48.0	-13.3	-27.7	-10.4	-21.7	-0.9	7.4	37.1
Guards	373.0	425.0	507.9	589.0	-75.0	-27.8	-81.1	-13.8	13.9	36.1	57.9
Boilermakers	24.0	26.5	26.5	37.0	-10.5	-28.4	-10.5	-28.4	10.4	10.4	54.2
Cashiers	847.0	1110.0	984.4	1554.0	-444.0	-28.6	-569.6	-36.7	31.1	16.2	83.5
Cement and concrete finishers	65.0	90.0	86.1	70.0	20.0	28.6	16.1	23.0	38.5	32.5	7.7
Chemical engineers	50.9	59.3	58.4	46.0	13.3	28.9	12.4	27.0	16.5	14.7	-9.6
Plasterers	35.0	40.0	46.4	31.0	9.0	29.0	15.4	49.7	14.3	32.6	-11.4
Postmasters and assistants	35.0	35.0	43.5	27.1	7.9	29.2	16.4	60.5	0.0	24.3	-22.6
Cooks, except private household	740.0	930.0	922.5	1335.0	-405.0	-30.3	-412.5	-30.9	25.7	24.7	80.4
Asbestos and insulation workers	25.0	34.0	30.8	49.0	-15.0	-30.6	-18.2	-37.1	36.0	23.2	96.0
Crane, derrick, and hoist operators	145.0	179.0	162.1	137.0	42.0	30.7	25.1	18.3	23.4	11.8	-5.5
Weavers, textile	60.0	50.0	57.1	38.0	12.0	31.6	19.1	50.3	-16.7	-4.8	-36.7
Bank tellers	225.0	337.0	269.7	506.0	-169.0	-33.4	-236.3	-46.7	49.8	19.9	124.9
Photographers	65.0	72.0	87.6	111.0	-39.0	-35.1	-23.4	-21.1	10.8	34.8	70.8
Bartenders	160.0	200.0	185.5	311.0	-111.0	-35.7	-125.5	-40.4	25.0	15.9	94.4
Lawyers and judges	286.9	342.0	381.5	539.0	-197.0	-36.6	-157.5	-29.2	19.2	33.0	87.9
Roofers and slaters	60.0	76.0	78.8	124.0	-48.0	-38.7	-45.2	-36.5	26.7	31.3	106.7
Knitters, loopers, toppers	47.5	46.0	44.9	33.0	13.0	39.4	11.9	36.1	-3.2	-5.5	-30.5
Inspectors, log and lumber	20.0	23.0	21.2	16.0	7.0	43.8	5.2	32.5	15.0	6.0	-20.0
Psychologists	33.2	56.0	47.6	106.0	-50.0	-47.2	-58.4	-55.1	68.7	43.4	219.3
Photoengravers and lithographers	34.0	50.0	38.3	32.0	18.0	56.3	6.3	19.7	47.1	12.6	-5.9
Patternmakers, metal and wood	43.0	56.8	50.7	36.0	20.8	57.8	14.7	40.8	32.1	17.9	-16.3
Airplane mechanics and repairers	140.0	194.0	172.6	121.0	73.0	60.3	51.6	42.6	38.6	23.3	-13.6
Telephone operators	420.0	480.0	497.0	299.0	181.0	60.5	198.0	66.2	14.3	18.3	-28.8
Credit managers	68.0	100.0	80.5	54.0	46.0	85.2	26.5	49.1	47.1	18.4	-20.6
Locomotive engineers' helpers	17.2	14.0	13.4	7.4	6.6	89.2	6.0	81.1	-18.6	-22.1	-57.0

*Methods and assumptions.* The basic approach used to estimate future occupational employment requirements was to project total employment by industry, project occupational staffing patterns (ratios) by industry, and then multiply the industry totals by the ratios to obtain occupational estimates. The results were then summed across industries to obtain occupational totals.

Projections of the occupational structure of each industry were based on examination of historical statistics and the analysis of the factors that influence occupational structure changes, such as new technology and changes in the product mix of industry. Employment requirements for many occupations, however, were projected independent of their relationships to industry employment. The projection of schoolteachers, for example, was based on an analysis of trends in pupil-teacher ratios and the projected school-age population. This technique was preferred in cases where such reliable predictive relationships could be established.<sup>7</sup>

The 1980 occupational projections embodied certain assumptions about the size of the labor force, Armed Forces strength, the rate of unemployment, and other selected assumptions. Full employment was assumed in the target year and defined as a civilian labor force with a 3-percent unemployment rate. A total labor force of 100.7 million was projected for 1980, and it was assumed that 2.7 million persons would be in the Armed Forces, yielding a civilian labor force of 98 million. With the assumed unemployment rate, the result was projections of 95.1 million employed and 2.9 million unemployed workers. The employment number was used as a control total for the occupational projections.

### Total employment underestimated

The projection of total employment for 1980 was 2.2 percent below the actual 97.3 million. Ironically, the error would have been greater if either the labor force or the unemployment rate had been accurately projected. The labor force projection was 5.7 percent lower than the actual 106.8 million, primarily because the number of women entering the labor force was greater than anticipated.<sup>8</sup> In addition, Armed Forces strength was overprojected by 600,000. The net result was a 6.7-million, or 6.4-percent, understatement of the civilian labor force (workers in thousands);

<i>Labor force group</i>	<i>Projected</i>	<i>Actual</i>	<i>Percent difference</i>
Total . . . . .	100,700	106,821	-5.7
Armed Forces . . . . .	2,700	2,102	28.4
Civilian labor force . . . . .	98,000	104,719	-6.4
Employment . . . . .	95,085	97,270	-2.2
Unemployment . . . . .	2,915	7,448	-60.9

The unemployment rate in 1980 averaged 7.1 percent, instead of the assumed 3 percent. Consequently, the number of unemployed workers was underestimated by

about 4.5 million. In terms of employment, however, this error offset a large part of the error in the civilian labor force projection. If the civilian labor force had been projected correctly, the unemployment assumption would have resulted in a 4.4-percent overstatement of 1980 employment, rather than the 2.2-percent underestimate that occurred. Conversely, if the unemployment rate had been accurately anticipated, the civilian labor force projection would have resulted in a 6.4-percent understatement of employment.

The recovery and expansion that followed the 1974-75 downturn came to an end in 1980, as the economy felt the effects of the 1979 oil-price shock. After declining from 8.5 percent in 1975 to 5.8 percent in 1979, the unemployment rate rose to 7.1 percent in 1980. Even if the economy had continued to improve, however, it is not likely that unemployment would have declined to the 3-percent rate assumed in the projections. The economic downturn of 1980 affected employment in some occupations more than others. Because unemployment rates for individual occupations were not specified in the assumptions, however, the effect of economic conditions on the accuracy of a projection for any given occupation is difficult to measure.

### Simulated projections

A simulated matrix based on projected 1980 industry employment totals and 1970 staffing patterns for each industry was developed to determine whether these base-year patterns would have resulted in better or worse occupational employment estimates than the projected patterns that were used. Neither was clearly superior, but the 1980 estimates for many occupations changed substantially.<sup>9</sup>

The projections were more accurate than the simulations for 6 of the 9 major occupational groups. (See table 3.) However, the average absolute error for all groups declined from 6.7 percent to 5.7 percent as a result of the simulations. The improvement in this average was largely because of a much more accurate estimate for nonfarm laborers. Employment in this group was projected to increase less than 1 percent between 1970 and 1980, but actually rose 19.7 percent. The simulated estimate was very close to actual employment. Simulations also were more accurate than projections for managers and farmworkers.

The simulation improved the projection accuracy for exactly one-half of the 64 detailed occupations in the study and reduced it for the remainder. (See table 2.) The average absolute percentage error increased slightly, from 22.4 percent to 22.9 percent. Errors from the simulation ranged from a 55-percent understatement of psychologists to a 81-percent overstatement of locomotive engineers' helpers. The same occupations had the most extreme errors in the projections, and the values



**Table 3. Comparison of projections and simulations of 1980 employment by occupational group**

[Workers in thousands]

Occupational group	1980			Difference between projected and actual		Difference between simulated and actual	
	Projected	Simulated	Actual	Level	Percent	Level	Percent
Total .....	95,085	95,085	97,270	-2,185	-2.2	-2,185	-2.2
Professional and technical workers .....	15,500	15,117	15,613	-113	-0.7	-496	-3.2
Managers and administrators .....	9,500	9,910	10,919	-1,419	-13.0	-1,009	-9.2
Salesworkers .....	5,760	5,541	6,172	-412	-6.7	-631	-10.2
Clerical workers .....	17,285	16,763	18,105	-820	-4.5	-1,342	-7.4
Craft and kindred workers .....	12,240	12,143	12,529	-289	-2.3	-386	-3.1
Operatives .....	15,440	15,830	13,814	1,626	11.8	2,016	14.6
Nonfarm laborers .....	3,700	4,377	4,456	-756	-17.0	-79	-1.8
Service workers .....	13,060	12,695	12,958	102	0.8	-263	-2.0
Farmworkers .....	2,600	2,709	2,704	-104	-3.9	5	0.2

NOTE: Details may not add to totals because of rounding. Percent differences are based on unrounded numbers.

were about the same. However, considerable differences appear when the occupations are ranked according to accuracy. Only two occupations were among the 10 with the most accurate projections in each version. Even among each top 20, there were only nine occupations in common. Similarly, only two occupations were among the 20 with the worst projections in each version.

The simulation increased projection errors substantially for several occupations. One of the better projections, a 5-percent underestimate of elementary schoolteachers, was raised to a 41-percent overestimate. Because these teachers declined as a percentage of total employment in the educational services industry between 1970 and 1980, the use of 1970 staffing patterns in the matrix resulted in an overstatement of employment.<sup>10</sup> Some other occupations with much less accurate projections as a result of the simulation were veterinarians, optometrists, composers and typesetters, and postmasters. In contrast, projection errors were reduced significantly in several occupations, including credit managers, airplane mechanics, photoengravers and lithographers, and locomotive engineers. Many of the occupations most affected by the simulation were concentrated in relatively small numbers of industries, thus reducing chances of compensating errors in industry-occupation cells in the matrix.

Similar patterns were observed in both the projections and the simulations. The largest occupations generally had the most accurate 1980 estimates. In each case, the direction of employment change was correctly anticipated in about 5 out of every 6 occupations. Employment in about two-thirds of the growing occupations was underestimated, and nearly all employment declines were underestimated.

The simulation exercise indicated that the extrapolation of staffing patterns did not, on average, produce more accurate projections for detailed occupations than the assumption that the patterns would not change over

the projection period. This suggests that future work should concentrate on analysis of factors that affect the patterns, rather than extrapolations based on limited observations.

### Projections for 1975

The 1980 occupational projections were slightly less accurate than those previously developed by the Bureau for 1975. The 1980 estimates have the disadvantage of being based on more dated statistics on occupational staffing patterns of detailed industries as the 1960 census was the most recent source for both projections. However, a larger number of CPS annual estimates of total employment in each occupation was available for the 1980 projections.

Although the 1975 projections were published with a 1960 matrix base, CPS estimates of annual employment were available annually through 1965 at the time the projections were being developed and were used in the analysis. Annual CPS estimates through 1970 were available for the 1980 projections. Therefore, both the 1975 and 1980 projections covered a 10-year span.

The projection of total civilian employment in 1975 was 2.9 percent higher than the actual level of 84.8 million. The 1980 projection, by contrast, was 2.2 percent lower than the actual level of 97.3 million. The difference is explained primarily by the underlying labor force projections. In both periods, labor force participation rates for women rose more rapidly than expected, resulting in underestimates. However, the labor force was underestimated by only 2.3 percent in 1975, compared with 5.7 percent in 1980. For each year, it was assumed that Armed Forces strength would be 2.7 million and the unemployment rate would be 3 percent. The number of military personnel was overestimated by about 24 percent in 1975 and by more than 28 percent in 1980. The economic recession of the mid-1970's negated the assumption of a full-employment economy in 1975. The unemployment rate in 1975 averaged 8.5 per-

cent, or almost triple the assumed rate. Although the downturn in 1980 was not as severe, the unemployment rate averaged 7.1 percent.

Among the comparable detailed occupations, the 1975 projections averaged 21.1 percent off the mark, while the 1980 estimates averaged 22.4 percent off. Accuracy improved, however, for about one-half of the occupations. The largest error among the 1975 projections, a 136-percent overestimate of plasterers, was reduced to 29 percent. Large projection errors for civil engineers and knitters, loopers, and toppers also were reduced. Occupations with worse projections in 1980 included airplane mechanics, lawyers, telephone operators, locomotive engineers' helpers, and crane, derrick, and hoist operators.

Only two occupations were among the 10 with the most accurate projections for each year. Among the leading 20, there were eight occupations in common. In addition, relatively few of the same occupations were among the least accurate projections for each year.

Again, similar patterns were observed in both sets of projections. The largest occupations usually had the most accurate projections. The direction of employment change was correctly anticipated for about 5 out of every 6 occupations in each set. In both the 1975 and the 1980 projections, errors for occupations that declined in employment averaged more than twice as high as those with employment growth. Nearly all employment declines were underestimated. However, employment in about one-half of the growing occupations was underprojected in 1975, compared with two-thirds in 1980.

The 1975 projections performed better against simple extrapolations than the 1980 projections, but the extrapolations for these two target years were not based on the same number of employment observations. For the 1975 study, annual employment data were available only for 6 years, whereas most of the extrapolations to 1980 were based on 9 years of data.

The earlier evaluation did not include a simulation of target-year employment using base year occupational staffing patterns and projected industry employment totals. Instead, it focused on a simulation based on projected staffing patterns and actual 1975 employment totals for each industry, which disclosed that errors in the occupational employment projections were mostly a

result of the staffing patterns. Unfortunately, data limitations precluded a similar study of the 1980 projections.

### New projections

Since the 1980 projections were published, the Bureau has taken steps to improve its occupational outlook program. Recently, the first matrix to be developed from data from the Occupational Employment Statistics survey was completed and projected to 1990.<sup>11</sup> Previous matrices were based largely on census information on trends in staffing patterns from decade to decade. Because census data are collected only once every 10 years, they do not capture the latest developments in occupational employment requirements in different industries. The occupational employment survey provides much more timely information, as it collects data on a 3-year cycle. The survey also is more specific in its definition of occupations and has a larger sample than the census-derived sample.<sup>12</sup>

Both this study and that of the 1975 projections indicated weaknesses in industry-occupation staffing patterns. The evaluation of the 1980 projections disclosed that mechanical extrapolation of staffing patterns in the matrix does not necessarily produce better results than static patterns. In preparing the 1990 survey-based projections, patterns were extrapolated only when detailed analysis showed that there were reasons to expect them to change. As a result, the matrix has more industry-occupation cells that remain static between the base and target years.

The 1980 projections were based on a single set of assumptions. Three alternative sets of occupational employment projections were developed for 1990 from different assumptions about growth of the labor force, production, productivity, and other factors. While many users of the data may prefer a single set of estimates, the Bureau's evaluations have demonstrated a wide range of errors in previous occupational projections. In addition, a single estimate concerning the future inevitably causes users to attribute a precision to it that should not be afforded. Alternatives also are of more value to planners who are concerned with how differences in the assumptions might affect the demand for some occupations more than others. □

#### FOOTNOTES

<sup>1</sup> The Bureau's occupational projections for 1980 were published in *Tomorrow's Manpower Needs*, Volume IV, revised 1971, Bulletin 1737.

<sup>2</sup> See Max L. Carey, "Evaluating the 1975 projections of occupational employment," *Monthly Labor Review*, June 1980, pp. 10-20.

<sup>3</sup> CPS annual averages of employment for 1962 through 1970 were extrapolated for the 51 occupations which use the Census and CPS as data sources for the matrix. Twelve other occupations had matrix estimates based on independent sources. Rather than attempting to reconstruct annual data from independent sources, estimates from 1960

and 1970 matrixes were extrapolated for these occupations. An extrapolation was not developed for osteopaths because an estimate for this occupation was not available from the 1960 matrix. The extrapolation for locomotive engineers' helpers resulted in negative employment in 1980; the negative number was arbitrarily adjusted to a positive level of 100 workers.

<sup>4</sup> *Technical Paper 26 1970 Occupation and Industry Classification System in Terms of Their 1960 Occupation and Industry Elements*. (Washington, U.S. Bureau of the Census, 1972.)



<sup>5</sup> The formula and parameters established from the CPS were not developed specifically for use in identifying standard errors of employment in detailed occupations, but, nevertheless, should approximate the magnitude of error.

<sup>6</sup> For some occupations, the 1970 matrix employment levels and 1970 CPS employment levels were identical. In these cases, the 1980 CPS employment was accepted without adjustment. For many other occupations, however, differences existed between CPS and matrix employment levels for 1970, even though the matrix estimates were not developed from independent sources. If a difference was large, the occupation was not included in the evaluation. The 1980 CPS employment levels were adjusted to account for small differences in the 1970 numbers from the CPS and the matrix. If matrix employment for an occupation in 1970 was 2 percent higher than CPS employment, for example, the 1980 CPS employment was increased by 2 percent. A similar procedure was followed in preparing employment estimates from data obtained from independent sources.

<sup>7</sup> For a detailed discussion of the methodology used in developing employment projections, see *Tomorrow's Manpower Needs*, pp. 3-6.

<sup>8</sup> The total labor force participation rate for women was projected at 43.0 percent for 1980. See "The United States economy in 1980," *Monthly Labor Review*, April 1970, pp. 3-34. The labor force participation rate for women in 1980 was actually 50.9 percent. For an evaluation of the 1980 labor force projections, see Howard N Fullerton, "How accurate were projections of the 1980 labor force?", elsewhere in this issue.

<sup>9</sup> Other simulations based on different combinations of actual and projected data on staffing patterns and industry employment totals

would have been interesting. The occupational totals resulting from a matrix based on 1970 staffing patterns and actual 1980 industry employment levels could be compared with the actual 1980 occupational totals to determine the extent to which static patterns alone would have affected projection accuracy. Similarly, simulations could be developed by combining actual 1980 staffing patterns with projected 1980 industry employment, and projected 1980 staffing patterns with actual 1980 industry employment. These two simulations could be used to determine whether the projections of staffing patterns or the projections of industry employment contributed most to the projection error for each occupation. Unfortunately, some of the data needed for these studies were unavailable. The Current Population Survey (CPS), which was the primary source of data on total employment by detailed occupation for 1980, gives staffing patterns only for industry groups. The Bureau's establishment survey, which is the source of data on wage and salary employment in each industry, changed from the 1967 Standard Industrial Classification (SIC) to the 1972 SIC in 1978, and, consequently, projected and actual employment levels for 1980 are not comparable for many industries.

<sup>10</sup> Actually, the 1970 staffing patterns for elementary schoolteachers were not the sole source of the overprojection of employment in the simulated matrix. The error was compounded by an overprojection of total employment in the educational services industry for 1980. If the industry projection had been correct, the overprojection of elementary teachers would have been reduced by more than one-third.

<sup>11</sup> See Max L. Carey, "Alternative occupational employment projections, 1980-90," *Monthly Labor Review*, August 1981, pp. 42-55.

<sup>12</sup> For a description of the survey, see *Occupational Employment Statistics Handbook*, Bureau of Labor Statistics, April 1979.

# Shortages of machinists: an evaluation of the information

*Shortages of machinists appear to exist but the statistics that quantify the shortages are unreliable; some employers can cope by offering higher wages, others may use technological improvements or increase training*

NEAL H. ROSENTHAL

Is there a shortage of machinists? Will machinists be in short supply in the future? Various studies offer conflicting answers that cannot be resolved with available data. However, an examination of Current Population Survey, Area Wage Survey, and other data can shed light on *why* the conflict exists. This article undertakes such an examination.

During the past few years many articles dealing with current and expected future shortages of machinists were published in national periodicals. Their basic conclusions are generally consistent: Employers currently are not able to hire as many skilled machinists as they would like; current training is not sufficient to alleviate shortages; and similar conditions have existed for some time. Concern about the future supply is also based on the expected decline in the number of 18- to 24-year-old workers in the 1980's. However, different conclusions result from studies concerning technological change. They generally state that the need for manual labor in factories, especially highly skilled machinists, will be reduced significantly in the future.

Because of the different viewpoints of these studies, future supply-demand conditions for machinists are unclear. Furthermore, very little of the statistical information used to present both sides is based on "hard

data." Most data are obtained from employers in surveys that have questionable reliability. Existing Federal programs do not collect data on shortages of workers in specific occupations; such data would be very expensive to collect and because of their complexity their reliability would be questionable. Also, information about future occupational shortages is very limited. Nevertheless, by summarizing and analyzing a wide variety of data, insights can be gained into the problems and issues.

## Definition of terms

*Shortages.* Data are often misused or misinterpreted because definitions of terms are not clearly specified. Shortage, as used here, means that sufficient workers are not available and willing to work at the existing wage level. Traditional economic theory, which states that if wages are raised, supply will increase because more workers will seek jobs, is consistent with this definition. However, it usually takes time to acquire the required skills, so demand may not be met in the short run. Under these conditions, wages can be expected to rise as employers hire trained workers from each other, overtime will be used to meet production schedules, and less skilled workers will be employed. These factors are apt to raise prices and reduce productivity.

In addition, it is likely that employers would raise wages for trainees in an attempt to attract qualified

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workers to machinist training programs and thereby reduce future shortages. However, wages alone do not affect one's career choice; working conditions, social status, and personal abilities and preferences are also considerations.

Hence, the job market for an occupation is very complex. Workers employed in a specific occupation may shift to another occupation; die; retire; change jobs by switching employers but remaining in the same occupation; or lose their jobs and become unemployed. Most occupations also have several skill levels, and employees can change jobs within the same occupation by moving up the skill ladder. At the same time that individuals leave an occupation or change jobs within it, others enter the occupation. They come from outside the labor force, as do new young workers and persons who are returning to work after raising a family, pursuing some additional education, or a short period of retirement. Entrants also may come from another occupation or from the ranks of the unemployed. Unfortunately, available data do not quantify these various situations accurately.

*Machining occupational classification.* Many discussions about shortages of machinists are confusing because it is unclear which jobs are included in the job classification. For example, the occupational titles of machinist, machining occupations, and metalworking occupations are often used to mean different groups of workers but sometimes they are used interchangeably. Furthermore, because consistency in occupational definitions does not exist among all Federal statistical programs, data on machinists from various sources may reflect different groupings of workers. For example, the occupational classification used by the Bureau to collect data on wages of machinists from the Area Wage Survey Program is not identical to the classification in the Current Population Survey (CPS). Similarly, the definition of machinists for which data are compiled on job openings registered by employers with the U.S. Employment Service does not match the CPS definition. Data on vocational programs also are classified differently.<sup>1</sup> The coverage of machinists in the various surveys conducted by employer associations to identify shortages also differs from that used in most Federal statistical programs. Inclusion of specific jobs within the broad term machinists also changes from one employer survey to another and probably among employers responding to the same survey. Therefore, results from one survey should not be compared with data based on other surveys unless consistency of job content has been ensured. Unfortunately, such comparisons have been made in the past even though the data were not comparable. This practice has contributed to much of the perplexity concerning shortages of machinists.

To avoid confusion in this article, the CPS definition of machinists was used because that survey provides more data than any other single source about employment and unemployment trends for workers in machining occupations. Furthermore, many other statistical series are reasonably compatible with the CPS or can be related through crosswalks.

Machining workers are classified in two skill-level groups in the CPS—skilled workers and operatives. Three skilled machining occupations identified separately in the CPS are discussed here—machinists, tool-and-die makers, and job and die setters. Data for five operative occupations—drill-press operatives; grinding-machine operatives; lathe and milling-machine operatives; punch-press-machine operatives; and other precision machine operatives—are also analyzed.

Each of these occupations includes workers found in a variety of jobs as classified by employers. For example, the occupation of tool-and-die maker in the CPS's conducted during 1972–80, includes 35 separate job titles, including diemaker, diesinker, jig-bore-tool maker, tool adjuster, and jig-and-fixture builder. Similarly, skilled machinists comprise about 25 specific job titles such as fitter-machine, precision machinist, toolroom machinist, lathe machinist, and aircraft machinist. Lathe and milling-machine operatives include more than 60 different job titles, such as lathe operator, lathe turner, tool-lathe operator, milling-machine operator, and gear cutter.

It should be pointed out that CPS statistics are compiled as if there were a clear break in skills between occupations rather than a continuum within each category. For example, all workers in the machinist or the lathe operators category do not perform at the same skill level. Also, the skills of workers who are counted in the skilled machining occupations in the CPS overlap with those of some operatives.

### **Machinists in the 1970's**

*Employment.* Combined employment in the three skilled machining occupations covered separately in the CPS—job and die setters, metal; machinists; and tool-and-die makers—increased from 655,000 to 834,000, or 27 percent, between 1972 and 1980.<sup>2</sup> Job growth averaged 22,400 a year. (See table 1.) In comparison, employment in manufacturing industries, where most machinists are employed, grew by only 6 percent over the same period. Machinist employment grew from 377,000 to 567,000, or 50 percent, but the other skilled machining occupations—job and die setters and tool-and-die makers—declined slightly. During the 1975 recession, employment did not decrease significantly for any of the skilled machining occupations.

Employment in each of the operative machining occupations fell between 1972 and 1980 or remained at

**Table 1. Employment in machining occupations, annual averages, 1972-80**

[Numbers in thousands]

Occupation	1972	1973	1974	1975	1976	1977	1978	1979	1980
Skilled machining occupations, total	655	682	735	731	758	768	773	824	834
Job and die setters, metal	94	93	97	96	92	97	98	90	91
Machinists	377	402	461	461	478	478	493	552	567
Tool-and-die makers	184	187	177	174	188	193	182	182	176
Operative machining occupations, total	625	595	601	489	508	524	542	562	502
Drill press	75	77	69	61	65	62	64	67	61
Grinding machine	130	140	152	132	133	126	129	143	134
Lathe milling machine	123	136	137	118	106	121	125	123	114
Punch stamping press	157	175	170	130	155	152	156	158	127
Other precision machines	140	67	73	48	49	63	68	71	66

roughly the same level. For operative machining occupations as a group, employment dropped by an average of 15,400 annually. However, during the 1975 recession, employment decreased significantly in each of these occupations.

*Unemployment.* Unemployment rates for machinists and tool-and-die makers were lower than those for craftworkers as a whole in each year from 1972 to 1980. (See table 2.) The unemployment rates for tool-and-die makers were very low—less than 3 percent—for most of the period. However, even for this occupation the rate jumped significantly to 7.1 percent during the 1975 recession, although it declined to 3.3 percent in 1976. The unemployment rate for machinists was lower than that for tool-and-die makers prior to the 1975 recession, but was higher after 1975. The unemployment rate for job and die setters was also relatively low in the 1970's. During the 1970's, the unemployment rate for the skilled machining occupations was lower than that for durable goods manufacturing as a whole, in which more than 80 percent of all skilled machining workers are employed. Unemployment rates for operative machining occupations were generally higher than average.

*Earnings.* Earnings data for machinists, tool-and-die makers, and machine-tool operators are collected through the Bureau's Area Wage Surveys. The definitions for both machinists and tool-and-die makers used in these surveys are not identical to those in the CPS, but they are very comparable. However, the skill level of the machine-tool operators for which wage data are collected is much higher than that which the average worker reported in operative machining occupations in the CPS.

The hourly earnings of machinists, tool-and-die makers, and machine-tool operators from the Area Wage Surveys varied only slightly within the same city for each year in which data were available during 1972-80. In general, tool-and-die makers earned a little more than machinists who in turn earned slightly more than

machine-tool operators, although the pattern varied among cities. (See table 3.) For each occupation, there were some significant earnings differentials among cities.

Workers in the machining occupations covered in the BLS Area Wage Surveys had higher average hourly earnings than all production workers in manufacturing industries in the same city as reported in the Bureau's Current Employment Statistics program. Between 1972 and 1980, the wages of workers in the machining occupations relative to all production workers remained the same or declined slightly in five cities for which data are readily available.

*Training.* Data on registered apprenticeships indicate that completions declined significantly between 1970 and 1980 for machinists and tool-and-die makers. The number of machinist apprenticeship completions fell from 3,822 to 1,905 between 1970 and 1975, increased to nearly 3,000 in 1977, and then decreased to 2,450 in 1979. Tool-and-die makers followed a similar pattern but their decline from 1970 was even greater. The following tabulation shows the number of completions and additions to registered apprenticeship programs in 1972-79 for machinists and tool-and-die makers:

	Machinists		Tool-and-die makers	
	Completions	Additions	Completions	Additions
1972 ..	3,695	—	3,825	—
1973 ..	2,357	—	2,716	—
1974 ..	2,047	6,526	2,051	4,934
1975 ..	1,905	4,858	1,849	2,900
1976 ..	2,526	5,567	1,901	3,888
1977 ..	2,967	5,488	2,387	5,150
1978 ..	2,859	6,385	2,311	5,501
1979 ..	2,450	6,397	1,807	5,379

However, workers who complete apprenticeship programs are not new entrants to an occupation in an accounting sense, because apprentices are counted in the employment totals for the occupation. Adding them as new workers, when they complete training, would result in double counting. Data on the additions to apprenticeship programs each year provide a better measure of new entrants to an occupation. These data show that the number of new additions to apprenticeship programs averaged between 5,000 and 6,500 for machinists and 3,000 to 5,500 for tool-and-die makers from the mid- to late 1970's. They do not display the declining pattern shown by completions.

Training programs for tool-and-die makers, machine-tool operators, and machine-shop occupations also are offered in public vocational educational programs. Data on completions are very sparse and their meaning is vague because both secondary and post-secondary completions are added together in reports. Thus, the completions may reflect a 1- or 2-year program or just one course. Furthermore, the skills of the individuals com-



pleting these programs are minimal compared to those of persons finishing apprenticeship programs, and completion of vocational courses does not qualify individuals for journeyman positions. Generally, those completing these programs subsequently enter apprenticeship programs in order to pursue careers in machining occupations. In 1978, 2,400 students completed tool-and-die making training in public vocational schools, 3,400 completed training in machine-tool operation, and 32,000 completed training in other machine-shop occupations.

### Implications of the data

The data presented above do not prove or disprove that shortages of machinists exist. Nevertheless, they are compatible with the existence of such shortages. The data indicate that skilled machinists are important in production activities: During the 1970's, they increased as a proportion of total employment, and even during the 1975 recession, their employment did not decrease. The very low unemployment rates for skilled machining workers during the 1970's also is very compatible with a shortage of workers. However, it is doubtful that general shortages of machine operatives occurred during this period because of their relatively high unemployment rates. However, during some years, these rates were very low for certain operative occupations and indicate possible shortages.

Unlike the data on unemployment, those on earnings of machining workers do not show a pattern that would, in theory, be expected with the existence of shortages. When there are shortages in an occupation over time, its wages should increase relative to those of other workers who are not in limited supply. This was not the case for machinists, as the differential wage between machinists and all production workers did not change significantly. However, the constant wage differential is not definitive proof that a shortage did not exist. Wage structures are interconnected in complex

**Table 3. Earnings of workers in selected machining occupations relative to those of all production workers, selected cities, 1972 and 1980**

City and occupation	1972	1980
Boston:		
Machinists .....	1.47	1.22
Machine-tool operators .....	1.43	1.12
Chicago:		
Machinists .....	1.31	1.32
Tool-and-die makers .....	1.41	1.39
Machine-tool operators .....	1.28	1.30
Houston:		
Machinists .....	1.29	1.23
Tool-and-die makers .....	1.17	1.15
Baltimore:		
Tool-and-die makers .....	1.32	1.31
Machine-tool operators .....	1.15	1.14
Cincinnati:		
Tool-and-die makers .....	1.30	1.26
Machine-tool operators .....	1.24	1.17

ways, and there could be conditions that would not allow the differential to change significantly despite a shortage. For example, the industries employing many machinists and tool-and-die makers have numerous small firms that compete for work through bids in response to service requests. If one firm raises its wages, it must also raise its bids, and risk losing work. Thus, raising wages to attract workers may be counter-productive, if the new workers are subsequently not needed because work is not available.

Trends in training through apprenticeship programs shed some light on the job market situation for machining workers because apprenticeship training is provided by employers. During periods of shortages or expected shortages, employers should be willing to increase training. However, during the 1970's, apprenticeships decreased, implying that shortages did not exist or that they were not severe enough to warrant increased training opportunities. However, the employer surveys conducted by associations discussed earlier in this article not only indicate the existence of shortages, but expanded apprenticeship training programs. But many employers prefer not to have registered apprenticeship programs because these must strictly conform to Department of Labor regulations, and last for 4 years. Many employers evidently feel they can train workers to acceptable standards in less time through nonregistered programs. Reducing the length of training is very consistent with the existence of shortages. Data on enrollment and completions of nonregistered programs do not show up in Federal statistics.

As indicated previously, specific data designed to measure occupational shortages are not compiled by the Federal Government. Although data are available on job orders placed with U.S. Employment Service offices throughout the country, they are not comprehensive, covering only an estimated 10 to 15 percent of all job

**Table 2. Unemployment rates for machining occupations, annual averages, 1972-80**

[In percent]

Occupation	1972	1973	1974	1975	1976	1977	1978	1979	1980
Total, all workers .....	5.6	4.9	5.6	8.5	7.7	7.0	6.0	5.8	7.1
Craftworkers .....	4.3	3.7	4.4	8.3	6.9	5.6	4.6	4.5	6.6
Job and die setters, metal ..	3.1	1.2	2.2	7.8	4.0	3.2	2.8	3.5	4.8
Machinists .....	3.2	1.9	2.2	7.0	5.9	3.8	3.1	2.7	4.8
Tool-and-die makers .....	4.0	1.6	2.5	7.1	3.3	2.0	2.6	.9	2.8
Nontransport operatives .....	7.6	6.1	13.2	14.7	10.8	9.5	8.1	8.4	12.2
Drill press .....	9.5	6.3	9.9	20.0	15.8	9.5	4.9	5.8	13.4
Grinding machine .....	5.6	2.2	4.5	11.8	7.1	4.7	4.9	3.1	8.8
Lathe milling machine .....	5.1	1.8	3.4	13.1	8.6	5.3	4.6	2.9	9.1
Punch stamping press .....	8.2	4.7	9.5	23.2	12.1	9.4	8.0	12.9	24.1
Other precision machines ..	5.8	3.4	4.9	14.5	10.3	5.6	7.0	6.7	12.8
Total, durable goods manufacturing .....	5.4	7.9	5.4	11.3	7.7	6.2	4.9	5.0	8.9



openings, and they are not statistically valid for analyzing year-to-year changes.

However, a 1980 pilot survey of job vacancies in Massachusetts, conducted to test the collectibility of such data, point to the existence of a shortage of machinists—at least in that State. The job vacancy rate (vacant jobs divided by total employment) for machinists was 13.3 percent in 1979 and 12.5 percent in 1980,<sup>3</sup> significantly higher than for any other occupation in the State. High vacancy rates (over 4 percent in each year) also were found for mechanical engineers, computer scientists, registered nurses, licensed practical nurses, and computer programmers. These occupations are traditionally placed in the “shortage” category, and it is significant that the vacancy rate for machinists was much higher.

Journal articles analyzing employment and shortages of machinists often discuss the age distribution of these workers. Much is written that the average age of machinists is increasing. Such reports generally imply that the age distribution of machinists is becoming skewed toward the older age groups; but data on the age distribution of machinists and job and die setters collected in the CPS dispute this conclusion. For example, between 1972 and 1980, the proportion of these workers who were 55 to 64 years old declined, and significant increases were recorded in the 20 to 24 and 25 to 34 age groups. The rise in the younger group followed the trend of the total population and of craftworkers as a whole. Some of the employer surveys we have mentioned, which indicate shortages and the need for more training, also imply that the increasing average age of these workers is not a problem.

### **A look at the 1980's**

Because machining workers are key to many types of industrial production, economic and industrial planners are very concerned about the future job market for these workers. The issue is particularly significant to those concerned with the capability of U.S. industry to cope with a major defense buildup. Some insights about this topic can be gained from BLS projections of employment in machining occupations.<sup>4</sup>

Until 1980, the Bureau's occupational projections were developed using historical employment data derived from the CPS. However, in 1980, the Bureau shifted the base for current occupational employment from the CPS to employment data generated by the Occupational Employment Statistics (OES) Survey. OES data are obtained by mail questionnaire from a sample of establishments that is designed to produce estimates of industry staffing patterns. Specific occupational definitions are listed on the questionnaire for each major occupation in an industry, and up to 16 different machining occupations can be found on an industry ques-

tionnaire. For these reasons, as well as others related to survey methods and procedures, OES survey-based employment data are believed to be more accurate than those derived from the CPS for measuring employment data by detailed industry. However, because national OES survey data were not available prior to 1978, analysis of historical data is CPS-based.

Employment data on machining occupations in the CPS and the OES survey are not strictly comparable because of differences in definitions, as well as in survey procedures and methods. For example, the 1980 CPS total for skilled machining occupations—job and die setters, machinists, and tool-and-die makers—was 834,000, about 266,000 higher than the 568,000 in 12 separate OES occupations that are in theory comparable to the three CPS groups combined. Actually, the numbers of job and die setters were reasonably close, 91,000 (CPS) and 93,300 (OES), as were the totals for tool-and-die makers, 176,000 (CPS) and 170,000 (OES). However, figures for machinists varied considerably, 304,000 (OES) and 567,000 (CPS).

Data in the CPS are collected directly from individuals who respond to questions about their work activities. It is very likely that operators of numerically controlled machine tools, and the highly skilled “machine tool operators, combo” who operate several machines are included in the CPS machinist category rather than in the operative category, “other precision machine operatives.” These workers probably consider themselves to be machinists rather than machine operators, and they are apt to report to a CPS interviewer in a manner that would result in their being classified as the former. Their salaries also are very close to, if not higher than, machinists' and tool-and-die makers', and far exceed those of other workers in the machine operator class. If one assumes that these workers are counted in the CPS machinist category, and adds their OES employment (52,700 numerically controlled machine tool operators and 170,700 machine tool operators, combo) to the OES employment of skilled machining workers, the OES total would be 791,300, compared with 773,000 in the CPS.

The above discussion was designed to establish reasonable comparability of data on employment of skilled machining workers based on CPS and OES survey data. If the data are reasonably comparable, comparisons can be made between historical and projected data. As noted earlier, employment in skilled machining occupations grew an average of 22,400 a year between 1972 and 1980. In the Bureau's three alternative projections of employment to 1990, the average annual growth of employment for skilled machining workers (including numerically controlled machine tool operators and machine tool operators, combo) ranged from 11,900 to 23,200 from 1980 to 1990. In each projection, the rate of growth of employment is expected to be slower than

in the 1970's, and only in the high-trend model is the 1980-to-1990 numerical average annual growth similar to that of the 1970's. (See table 4.)

## Conclusions

Information about the job market for skilled machining workers during the 1970's is consistent with the existence of shortages. However, statistics generated by ongoing government data collection programs do not provide the information necessary to quantify the shortage. Quantitative data from surveys conducted by employer associations are statistically unreliable and probably overstate the numerical shortage. Some employers do not experience a shortage of skilled machining workers because they offer higher than average wages, benefits, or both. Also, the severity of the shortages varies among geographic areas.

Employers can deal with shortages in many ways. Some can offer wages that are higher than other employers in their locality and therefore are able to hire the workers they need, while others implement technological gains or increase training.

Those using technological development to cope with shortages may expand their use of numerically controlled machine tools, machining centers, adaptive control, digital readout, manual data input control, improved cutting-tool materials, and group technology.<sup>5</sup> However, because technological improvements often require substantial capital investment, smaller employers may have great difficulty in obtaining the required funds and therefore cannot make the desired innovations.

Many employers have increased training in an effort to reduce shortages of skilled machining workers. Skilled machining workers must be trained on the job; therefore, unless employers cooperate, additional workers will not become available. However, training is expensive and many employers are not able to significantly expand their training efforts.

General shortages of skilled machinists should not worsen during the 1980's, but they may be marked in some localities. For example, if defense purchases were to rise rapidly during a short time frame and affect industries in a specific area, the shortage could become so acute that the planned increases in production could not occur.

In general, however, unless programs are designed to

**Table 4. Employment in skilled machining occupations, 1980 and projected 1990**

[Numbers in thousands]

Occupation	1980 employment	Projected 1990 employment		
		Low trend	High trend I	High trend II
Total, all skilled machining occupations . . . . .	791.4	910.4	1,023.2	958.2
Job and die setters, metal . . . . .	93.3	112.5	124.2	114.5
Diesetters . . . . .	4.3	5.2	5.8	5.4
Machine toolsetters, metal . . . . .	55.5	65.9	73.7	67.2
Setters, molding and coremaking machines . . . . .	1.3	1.9	1.9	1.9
Punch press setters, metal . . . . .	19.2	23.3	25.9	23.9
Shear and slitter setters . . . . .	5.5	6.6	7.2	6.7
Setters, plastic molding machine . . . . .	7.4	9.6	9.8	9.4
Machinists . . . . .	304.3	352.2	390.8	386.3
Layout markers, metal . . . . .	21.3	24.3	27.2	24.8
Machinists . . . . .	281.9	326.7	362.3	335.4
Moldmakers, pottery . . . . .	1.1	1.2	1.4	1.3
Tool and die makers . . . . .	170.3	184.3	212.2	188.7
Tool-and-die makers . . . . .	162.8	175.7	202.5	180.7
Diesinkers . . . . .	3.1	3.4	3.9	3.5
Instrument makers . . . . .	4.3	5.1	5.7	5.1
Machine-tool operators, combo . . . . .	170.7	199.9	226.2	205.9
Machine-tool operators, numerical control . . . . .	52.7	61.2	69.9	62.8

foster action on the part of employers, current shortages are not likely to be reduced significantly. Some specific program may be necessary to provide employers with an incentive to expand the rate at which new technology is introduced or to increase the number of workers trained each year.

Because skilled machining workers must be trained on the job in 3- to 4-year programs, increases in such programs providing machining skills offered in vocational education and Comprehensive Employment and Training Act (CETA) programs will not reduce shortages. However, individuals who complete these programs do qualify for entry into employer training programs and many employers prefer to enroll individuals who have completed an appropriate vocational education or CETA program. Because machinists are expected to have excellent job prospects through the 1980's, earnings are above average, and unemployment rates are low, expansion of these programs is appropriate. However, the major impact of this action will be to improve the quality of the individual entering employer training programs, rather than increasing their number. □

## FOOTNOTES

<sup>1</sup> The value of consistency in data collection programs is recognized by the Federal Government. In 1980, the Office of Management and Budget issued the Standard Occupational Classification (SOC) which is to be used by all Federal agencies in collecting occupational data. Federal statistical data therefore will become more compatible throughout the 1980's, as agencies convert to the SOC.

<sup>2</sup> Data from the Current Population Survey are not presented for the years prior to 1972 because the data are not comparable.

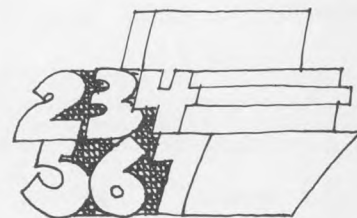
<sup>3</sup> See Massachusetts Division of Employment Security, *Job Openings in Massachusetts, 1980*, and *An Analysis of Selected High Net Demand*

*Occupations: Findings From a State-Wide Survey* (Massachusetts, The Executive Office of Economic Affairs, 1981).

<sup>4</sup> Projections are developed of the labor force, the gross national product, industry output, industry employment, and occupational employment. The latter are available by 3-digit Standard Industrial Classification industry detail in the form of an industry-occupational matrix.

<sup>5</sup> See *Technology and Labor in Four Industries*, Bulletin 2104 (Bureau of Labor Statistics, January 1982), ch. 3.

# The Anatomy of Price Change



## Reconciling the CPI and the PCE Deflator: first quarter 1982

JULIE A. BUNN AND JACK E. TRIPLET

This reconciliation of the Federal Government's two major inflation measures—the Consumer Price Index (CPI), published by the Bureau of Labor Statistics, and the Implicit Price Deflator for Personal Consumption Expenditures (PCE Deflator), produced by the Bureau of Economic Analysis—extends the data through the first quarter of 1982.<sup>1</sup>

*Reconciling period-to-period changes.* For only the second time in the past 3 years, the Consumer Price Index for All Urban Consumers (CPI-U) rose more slowly than the comparable PCE price measure (the "PCE: Chain-Weight" index)<sup>2</sup> in the first quarter of 1982 (table 1). The most recent quarter is the first time that all three elements—differences in the measurement of housing costs, differences in weighting, and the effect of "all other" factors—of the reconciliation operated to slow the CPI-U relative to the "PCE: Chain-Weight" index.

For the second quarter in a row, the CPI-X1, the version of the Consumer Price Index which approximates a "rental equivalence" measure of housing identical to that employed in calculating the PCE Deflator, increased at a faster rate than the CPI-U. Thus the "housing effect" in table 1 was negative (meaning that, in the most recent quarter, the treatment of housing has contributed to the PCE measure rising faster than the CPI-U).

For the third quarter in a row (and contrary to what is usually expected) the "PCE: Chain-Weight" index, which draws its weights from the immediately preceding period has risen more rapidly than an index based on the same price data, but using 1972 weights.<sup>3</sup> This creates a negative "weighting effect" in table 1.

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Finally, the "all other" effect, which measures the influence of compilation and computational differences other than the drawing of weights from different periods and the treatment of owner-occupied housing, continues the first quarter behavior of previous years, but stands out as the largest negative "all other" effect in more than 3 years. Differing seasonal adjustment methods account for part of the "all other" effect.

The most striking result from table 1 is the emergence of negative values for the weighting effect. It is usually expected that an index that uses 10-year-old weights will rise somewhat more rapidly than one that uses recent or current weights, and the weighting effect bore out this presumption for earlier periods (even though weights have never contributed very much to the difference in CPI and PCE movements). In the seven quarters since mid-1980, however, the weighting effect has taken on its expected positive sign in only one quarter (1981-I); in three other quarters, different weighting periods made no difference in the index measurement,

**Table 1 "Reconciliation" of annual and quarterly percent changes in the CPI-U and the Personal Consumption Expenditure price measures, 1980 to 1982-I**

Difference	1980	1981	1981 <sup>1</sup>				1982
			I	II	III	IV	
CPI-U <sup>2</sup> .....	13.5	10.4	11.0	7.8	11.8	7.7	3.2
PCE: Chain-Weight <sup>3</sup> .....	10.6	9.0	10.3	6.5	8.7	7.4	5.7
Total difference <sup>4</sup> (CPI-U minus PCE: Chain-Weight) .....	2.9	1.4	0.7	1.3	3.1	0.3	-2.5
Housing treatment <sup>5</sup> .....	2.3	0.9	0.4	0.5	2.7	-0.5	-1.3
Weighting effect <sup>6</sup> .....	0.4	0.1	0.6	0.0	-0.5	-0.2	-0.5
"All other" effect <sup>7</sup> .....	0.2	0.4	-0.3	0.8	0.9	1.0	-0.7

<sup>1</sup> Owing to changes in seasonal adjustment factors, the quarterly figures, seasonally adjusted annual rates, may differ slightly from those which appeared in table 1, p. 43, January 1982, *Monthly Labor Review*.

<sup>2</sup> Annual and quarterly changes in the CPI-U are taken from tables provided by the Office of Prices and Living Conditions, Bureau of Labor Statistics. The changes are compiled from 1967 based indexes.

<sup>3</sup> Data for the "PCE: Chain-Weight" were obtained from the Bureau of Economic Analysis, U.S. Department of Commerce.

<sup>4</sup> CPI-U minus "PCE: Chain-Weight" equals the sum of "housing treatment", "weighting", and "all other" effects.

<sup>5</sup> Change in CPI-U minus change in CPI-X1. See September 1981 *Monthly Labor Review*, p. 21, for fuller explanation. Source of CPI-X1 data is same as footnote 2.

<sup>6</sup> Change in "PCE: 1972-Weight" minus change in "PCE: Chain-Weight." See September 1981 *Monthly Labor Review*, pp. 8-9, for fuller explanation. Data source for "PCE: 1972-Weight" changes is same as for footnote 3.

<sup>7</sup> Change in CPI-X1 minus change in "PCE: 1972-Weight." See September 1981 *Monthly Labor Review*, p. 6, for fuller explanation.



**Table 2. "Reconciliation" of the CPI-U and the Personal Consumption Expenditure price measures: cumulative percent change from 1972 to the date shown**

Difference	1980	1981	1981 <sup>1</sup>				1982
			I	II	III	IV	I
CPI-U (1972 = 100) <sup>2</sup> . . . . .	197.0	217.4	210.3	214.3	220.4	224.6	225.9
PCE Deflator (1972 = 100) (Current-Weight) <sup>3</sup> . . . . .	178.9	193.8	188.5	191.5	195.7	199.4	201.8
Total difference (CPI-U minus PCE Deflator) <sup>4</sup> . . . . .	18.1	23.6	21.8	22.8	24.7	25.2	24.1
Housing treatment <sup>5</sup> . . . . .	11.7	14.5	13.3	13.7	15.4	15.5	14.9
Weighting effect <sup>6</sup> . . . . .	5.4	7.2	7.3	7.4	7.2	7.0	7.4
"All other" effect <sup>7</sup> . . . . .	1.0	1.9	1.2	1.7	2.1	2.7	1.9

<sup>1</sup> Owing to changes in seasonal adjustment factors, quarterly figures may differ slightly from those which appeared in table 2, p. 44, January 1982, *Monthly Labor Review*.

<sup>2</sup> Annual data for the CPI-U were computed by the Office of Research and Evaluation (BLS) from unadjusted monthly data provided by the Office of Prices and Living Conditions (BLS). The quarterly data for 1980 and 1981 were computed by the Office of Research and Evaluation employing seasonally adjusted monthly data provided by the Office of Prices and Living Conditions.

<sup>3</sup> Data for the implicit PCE Deflator, or "PCE: Current-Weight" index, were provided by the Bureau of Economic Analysis. The data incorporate revisions released in April 1981.

<sup>4</sup> CPI-U minus PCE Deflator equals the sum of "housing treatment", "weighting", and "all other" effects.

<sup>5</sup> CPI-U minus CPI-X1. See September 1981 *Monthly Labor Review*, p. 5, for fuller explanation. Data source for the CPI-X1 is the same as footnote 2.

<sup>6</sup> "PCE: 1972-Weight" minus "PCE: Current-Weight." See September 1981 *Monthly Labor Review*, p. 6, for fuller explanation. Data source for the "PCE: 1972-Weight" is same as footnote 3.

<sup>7</sup> CPI-X1 minus "PCE: 1972 Weight." See September 1981 *Monthly Labor Review*, p. 6, for fuller explanation.

while in the three most recent quarters values for the weighting effect have negative signs, reflecting the fact that the index with the most recent weights has registered the larger increase.

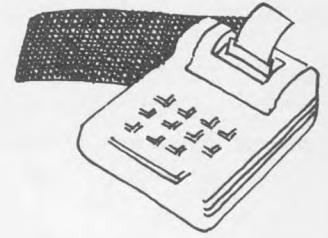
*Reconciling cumulative changes.* Table 2 presents a cumulative reconciliation of the CPI-U and the PCE Deflator (or PCE: Current-Weight), from 1972 to the first quarter of 1982. This table continues the cumulative comparisons of previous reconciliation articles. □

— FOOTNOTES —

<sup>1</sup> The initial reconciliation and technical basis for the analysis is contained in Jack E. Triplett, "Reconciling the CPI and PCE Deflator," *Monthly Labor Review*, September 1981, pp. 3-15.

<sup>2</sup> As discussed in Triplett, pp. 7, 13-14, the "PCE: Chain-Weight" index is comparable to the CPI-U for the purpose of making period-to-period comparisons, while the PCE Deflator, a Paasche-formula index, is used for the cumulative reconciliation because Paasche-formulas lend themselves to statistical interpretation only when referring back to the base year (in this case, 1972).

<sup>3</sup> See footnote 7 to table 1 and the Triplett, "Reconciling the CPI and PCE Deflator," for information on the computation of the weighting effect.



# Technical Note

## Labor force data: the impact of the 1980 census

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The widely publicized national unemployment figures are derived from the Current Population Survey. This survey, conducted by the Bureau of the Census for the Bureau of Labor Statistics, obtains information from approximately 60,000 households each month, making it the largest survey of its type in the world. It provides data on employment and the labor force as well as unemployment, including information on age, sex, race, occupation, and industry.

A sample survey is a cost effective means of obtaining current labor force data. Every surveyed individual, 16 years or older, is classified as employed, unemployed, or not in the labor force, based on the responses to a structured questionnaire focusing on specific activities during the reference week. Because labor force classifications are obtained from the sample households rather than a complete universe, the responses must be transformed from raw survey data into estimates which reflect the target national population—the civilian noninstitutional population 16 years and older. This process has several steps which have been detailed in various technical publications.<sup>1</sup> This article addresses only one aspect of the process—the use of independent population estimates derived and updated from the decennial censuses, which are used to transform the sample data into meaningful statistics.

### Population estimates

In a simple example, if information were obtained from a sample of 5 individuals who represent a universe of 100, each response would be multiplied by 20. However, in the CPS, independent population estimates have been established for each of 64 age-sex-race groups. The reason for using separate weights by demographic group is to adjust for the fact that the distribution of the individuals who fall into the sample in any month may differ somewhat from that of the entire Nation in

terms of age, race, or sex. Because these characteristics are closely correlated with labor force status, sample estimates are more accurate when weighting is done separately for each age-sex-race group rather than with a single population estimate for the sample as a whole.

Population estimates are derived by taking population counts by age, sex, and race from the preceding decennial census and adjusting them monthly throughout the ensuing decade, taking into account the aging of the population, mortality, and net migration. When the actual counts from the subsequent census are available, they become the new benchmark from which to estimate future population levels. In past decades, there has generally been a small discrepancy between the new benchmark and the population estimate for that period as derived from the previous census. As the Census Bureau changed from one set of population controls to the next, there would be a corresponding break in the various labor force series because they were based on these population estimates.

Historically, the effect of the change from one population base to the next was relatively minor. For example, the net differences resulting from the introduction of the 1970 census-based population estimates to the CPS were about 800,000 for population and 300,000 for labor force and employment. However, the conversion to the 1980 census-based population estimates has an entirely different order of magnitude. When the 1980 census was taken, the resident population estimate based on the extrapolation of the 1970 census was 221.7 million. However, the 1980 census actually enumerated 226.5 million persons. Consequently, the population estimates underlying the CPS—the civilian noninstitutional population 16 years and over—were increased by 3.7 million (on an annual average basis in 1981) expanding the labor force by 2.3 million and employment by 2.1 million.

### Data adjustment

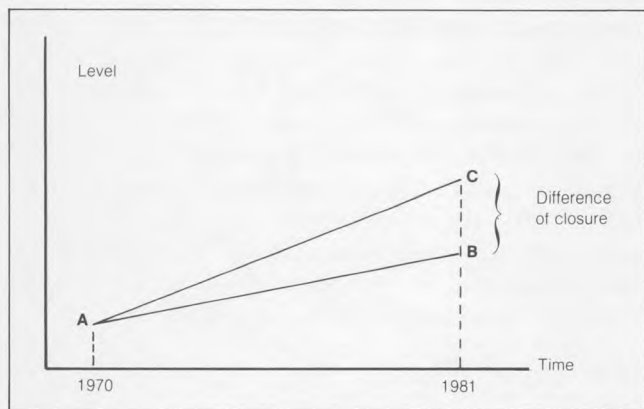
The Census Bureau and BLS have historically followed the procedure of introducing population weights based on the new decennial census into the CPS in a single month (at the beginning of a year to avoid distortions to annual average data), and indicating in footnotes and technical articles the presence of a series break.<sup>2</sup> Because of the magnitude of the change, this approach was not suitable this time. Accordingly, the Census Bureau revised its intercensal population esti-

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mates and the Bureau of Labor Statistics adjusted many of the more important labor force series in order to avoid sizable discontinuities. Using an estimating methodology developed jointly by BLS and the Census Bureau, the BLS developed revised estimates for some 30,000 labor force series for the 1970's that are consistent with the 1980 census-based population controls as well as the 1970 census.

The revision procedure takes the April 1970 labor force estimates as the last "true" estimate and adjusts each subsequent data cell. The estimated difference in 1981 between each labor force estimate generated by the 1980 census count and the corresponding 1970-based population estimate—called the "difference of closure"—is wedged back in time from December 1980 to April 1970. The procedure takes into account both the distance in time from the 1970 census and the specific size of the difference of closure for each series.<sup>3</sup>

The following simplified diagram may serve to illustrate the procedure. For any labor force series, point A represents the estimate for 1970, point B represents the estimate for 1981 as originally published using the population weights derived from the 1970 census, and point C represents the estimate for 1981 based on the population weights derived from the 1980 census. Thus, line AB represents the 1970–81 trend in the labor force series as originally published, line AC represents the trend after revision, and BC represents the difference of closure. (Had a real labor force series been graphed, AB and AC would not, of course, be straight lines, but rather would follow paths influenced by secular and cyclical developments.)



One reason for revising the data is that many users need to examine trends over time. In fact, one of the strengths of the CPS is that it provides a consistent time series which permits the tracking of cyclical and secular movement among demographic groups.

These labor force revisions are necessarily provisional

because the underlying estimates of population for the 1970–80 period are considered preliminary by the Bureau of the Census. Completion of the 1980 census coverage studies and evaluation of the 1970–80 population estimates may cause the Census Bureau to readjust its revised population estimates for the 1970–80 period, which, in turn, may cause the BLS to further revise the CPS labor force estimates.

The wedge procedure is based on the premise that within each group the unexpected population increase took place on a consistent basis throughout the 1970's. Without specific evidence to the contrary, this was the most reasonable assumption to make. While the provisional revision provides a smooth, continuous, and reasonable time series, there are several key questions to consider in determining whether the existing wedge procedure will remain the most appropriate. Studies that could aid in this determination include comparisons of 1970 and 1980 census coverage; evaluation of any estimates of undercount in the 1980 census and how they may differ by age, sex, and race from previous censuses; as well as estimates of the number of illegal aliens counted in the 1980 census and judgments about how long such persons have been living in the United States.<sup>4</sup>

Revised labor force data are being issued by the Bureau of Labor Statistics in several steps. More than 350 series of revised monthly seasonally adjusted data were published in the February 1982 issue of *Employment and Earnings*, which also contained revised annual averages for major estimates back to 1970. The March 1982 issue of *Employment and Earnings* contained 62 tables of 1981 annual averages, some including comparisons with 1980, on a revised basis. (Annual averages for 1981, prior to revision, were published in the January 1982 issue and, thus, are available for comparison.) In terms of the *Monthly Labor Review*, the March 1982 issue was the first to contain revised data. In late 1982, BLS is scheduled to publish a data book with 176 tables containing nearly 15,000 data series on a revised basis. In the meantime, many series of both actual and seasonally adjusted data may be obtained from the BLS upon request. Table 1 provides labor force, employment, and unemployment estimates both before and after revision for the 1970–81 period.

While all data series were subject to revision, the underlying population adjustments caused significant changes to only those series that measured levels or counts. Labor force series which are expressed in terms of percentages—such as the unemployment rate, the participation rate, and the employment-population ratio—were largely unaffected by the revision process. This is because the population adjustments generally had the same proportionate effect on the numerator and the denominator used to derive the percentage. Small changes occurred because of rounding differences and where



**Table 1. Employment status of the noninstitutional population using 1970 and 1980 census based population estimates, 1970-81**

Year	Civilian labor force		Employed		Unemployed		Unemployment rate	
	1970 based	1980 based	1970 based	1980 based	1970 based	1980 based	1970 based	1980 based
1970	82,715	82,771	78,627	78,678	4,088	4,093	4.9	4.9
1971	84,113	84,382	79,120	79,367	4,993	5,016	5.9	5.9
1972	86,542	87,034	81,702	82,153	4,840	4,882	5.6	5.6
1973	88,714	89,429	84,409	85,064	4,304	4,365	4.9	4.9
1974	91,011	91,949	85,935	86,794	5,076	5,156	5.6	5.6
1975	92,613	93,775	84,783	85,846	7,830	7,929	8.5	8.5
1976	94,773	96,158	87,485	88,752	7,288	7,406	7.7	7.7
1977	97,401	99,009	90,546	92,017	6,855	6,991	7.0	7.1
1978	100,420	102,251	94,373	96,048	6,047	6,202	6.0	6.1
1979	102,908	104,962	96,945	98,824	5,963	6,137	5.8	5.8
1980	104,719	106,940	97,270	99,303	7,448	7,637	7.1	7.1
1981	106,393	108,670	98,313	100,397	8,080	8,273	7.6	7.6

changes in the demographic composition of a group affected larger aggregates.

### Revised labor force growth

Compared with the data as originally published, the revised data indicate, of course, a faster pace of labor force growth over the past decade. According to originally published data, the labor force grew by 24 million, or 29 percent, during the 1970-81 period; as revised, the increase was 26 million, or 31 percent. (See table 2.) In terms of employment levels, the comparable rates of growth were 25 percent prior to revision and 28 percent afterwards.

The adjustment was not evenly distributed among the various demographic groups. The 1970-81 labor force growth for men was revised upward by more than 10 percent for every age group through 44 years, but the revised labor force levels were actually lower for men 45 to 54 years of age. Women showed smaller increases until the older age categories, where there were very large changes for 55- to 64-year-olds (31 percent) and those 65 and over (18 percent). In general, the share of workers accounted for by persons under 35 years of age increased with the revised data.

Because of the adjustment methodology, these revised growth patterns are a direct result of the patterns of la-

bor force revisions. Labor force estimates for 1981 are, on average, 2.1 percent higher using the 1980 census-based population estimates. About 70 percent of the 2.3 million increase occurred among persons 20 to 34 years of age, whose "corrected" labor force size was 3.7 percent higher than originally estimated. (See table 3.)

Under the revised system, the number of black workers was 2.6 percent higher in 1981 and the age distribution of the incremental increase was even more skewed toward those under age 35. Unlike the situation for whites, for whom the increments for men and women were about the same, the overall increase in the black labor force was higher for women. Furthermore, the age patterns by sex are quite different. The upward revisions in the black male labor force occurred entirely among persons under 45 years of age. For black women, the gains were spread more widely throughout the age spectrum. This is based upon the fact that, according to the 1980 census findings, the population of black men under age 45, as brought forward from the 1970 census, had been underestimated; black women had also been underestimated but to a lesser degree than these black men. The large differences in the population estimates of black men under age 45 are apparently the result of substantial improvements in the completeness of coverage for this group in the 1980 census. Among black women, the improvements in census coverage in 1980 were more evenly distributed across the various age groups.<sup>5</sup>

The effect of the revision in CPS data was particularly sharp for persons of Hispanic origin.<sup>6</sup> The overall increase in their population estimate was 3.8 percent, about twice the adjustment for whites. The labor force adjustment was not very different for men and women of Hispanic origin, and there was no particular pattern to the adjustments by age. The largest increase occurred among those 20 to 34 years of age, but increases for persons 55 years and older were also larger than average. Within the Hispanic population, adjustments were largest for persons of Cuban origin and smallest for persons of Puerto Rican origin.

**Table 2. Civilian labor force growth, by age and sex, between 1970 and 1981 using 1970 and 1980 census based population estimates**

[Numbers in thousands]

Age	Total			Men			Women		
	1970 base	1980 base	Percent change	1970 base	1980 base	Percent change	1970 base	1980 base	Percent change
Total, 16 years and over	23,678	25,899	9.4	9,438	10,746	13.9	14,240	15,153	6.4
16 to 19 years	1,601	1,739	8.6	682	769	12.8	919	970	5.5
20 to 24 years	4,961	5,502	10.9	2,611	2,931	12.3	2,350	2,571	9.4
25 to 34 years	12,297	13,356	8.6	5,508	6,152	11.7	6,789	7,204	6.1
35 to 44 years	4,538	4,774	5.2	1,486	1,697	14.2	3,052	3,077	0.8
45 to 54 years	37	21	—	501	—549	—9.6	538	569	5.8
55 to 64 years	457	686	—	—34	44	—	491	642	30.8
65 years and over	—212	—180	15.1	—314	—299	4.8	102	120	17.6

**Table 3. Civilian noninstitutional population and civilian labor force by age, sex, race, and Hispanic origin, using 1970 and 1980 census based population estimates, 1981 annual averages**

[Numbers in thousands]

Characteristic	Total			Men			Women		
	1970 base	1980 base	Net difference	1970 base	1980 base	Net difference	1970 base	1980 base	Net difference
<b>All persons</b>									
Population, 16 years and over	166,436	170,130	3,694	78,769	80,511	1,742	87,667	89,618	1,951
16 to 19 years	15,905	16,214	309	7,920	8,092	172	7,984	8,121	137
20 to 24 years	20,081	20,820	739	9,717	10,116	399	10,365	10,705	340
25 to 34 years	36,434	37,777	1,343	17,717	18,427	710	18,717	19,350	633
35 to 44 years	26,021	26,291	270	12,527	12,758	231	13,493	13,533	40
45 to 54 years	22,412	22,422	10	10,848	10,797	-51	11,563	11,625	62
55 to 64 years	21,204	21,756	552	10,013	10,151	138	11,191	11,605	414
65 years and over	24,380	24,850	470	10,027	10,170	143	14,353	14,680	327
Labor force, 16 years and over	106,393	108,670	2,277	60,633	61,974	1,341	45,760	46,696	936
16 to 19 years	8,848	8,988	140	4,688	4,777	89	4,160	4,211	51
20 to 24 years	15,543	16,099	556	8,320	8,648	328	7,224	7,451	227
25 to 34 years	29,306	30,392	1,086	16,819	17,479	660	12,487	12,912	425
35 to 44 years	20,969	21,211	242	11,950	12,166	216	9,019	9,045	26
45 to 54 years	16,985	16,970	-15	9,916	9,868	-48	7,069	7,101	32
55 to 64 years	11,734	11,969	235	7,090	7,170	80	4,644	4,799	155
65 years and over	3,008	3,042	34	1,850	1,866	16	1,158	1,176	18
<b>White</b>									
Population, 16 years and over	145,379	147,908	2,529	69,311	70,480	1,169	76,068	77,428	1,360
16 to 19 years	13,347	13,516	169	6,676	6,764	88	6,671	6,752	81
20 to 24 years	17,137	17,609	472	8,399	8,644	245	8,737	8,965	228
25 to 34 years	31,473	32,367	894	15,524	16,005	481	15,949	16,362	413
35 to 44 years	22,732	22,778	46	11,089	11,171	82	11,643	11,606	-37
45 to 54 years	19,661	19,666	5	9,587	9,560	-27	10,074	10,106	32
55 to 64 years	19,032	19,485	453	9,021	9,139	118	10,010	10,346	336
65 years and over	21,998	22,487	489	9,015	9,195	180	12,983	13,292	309
Labor force, 16 years and over	93,586	95,052	1,466	54,027	54,895	868	39,559	40,157	598
16 to 19 years	7,881	7,962	81	4,174	4,224	50	3,707	3,739	32
20 to 24 years	13,549	13,926	377	7,304	7,521	217	6,245	6,406	161
25 to 34 years	25,470	26,208	738	14,881	15,340	459	10,589	10,868	279
35 to 44 years	18,390	18,445	55	10,661	10,740	79	7,730	7,704	-26
45 to 54 years	15,008	14,993	-15	8,865	8,836	-29	6,143	6,157	14
55 to 64 years	10,577	10,764	187	6,463	6,530	67	4,114	4,235	121
65 years and over	2,711	2,753	42	1,680	1,704	24	1,031	1,049	18
<b>Black</b>									
Population, 16 years and over	17,808	18,219	411	7,977	8,117	140	9,831	10,102	271
16 to 19 years	2,227	2,288	61	1,078	1,110	32	1,149	1,178	29
20 to 24 years	2,499	2,642	143	1,108	1,189	81	1,391	1,453	62
25 to 34 years	4,073	4,290	217	1,800	1,914	114	2,272	2,376	104
35 to 44 years	2,755	2,758	3	1,213	1,223	10	1,542	1,534	-8
45 to 54 years	2,308	2,260	-48	1,068	1,003	-65	1,240	1,257	17
55 to 64 years	1,887	1,913	26	860	844	-16	1,028	1,069	41
65 years and over	2,060	2,069	9	851	834	-17	1,209	1,234	25
Labor force, 16 years and over	10,810	11,086	276	5,559	5,684	125	5,251	5,401	150
16 to 19 years	834	862	28	444	462	18	389	400	11
20 to 24 years	1,724	1,828	104	876	941	65	847	888	41
25 to 34 years	3,189	3,365	176	1,601	1,702	101	1,588	1,663	75
35 to 44 years	2,158	2,164	6	1,083	1,093	10	1,075	1,071	-4
45 to 54 years	1,651	1,608	-43	882	829	-53	769	779	10
55 to 64 years	1,000	1,009	9	535	524	-11	465	485	20
65 years and over	254	249	-5	138	134	-4	117	115	-2
<b>Hispanic origin</b>									
Population, 16 years and over	8,970	9,310	340	4,341	4,511	170	4,629	4,798	169
16 to 19 years	1,139	1,176	37	578	597	19	561	579	18
20 to 24 years	1,410	1,478	68	709	743	34	702	735	33
25 to 34 years	2,412	2,527	115	1,168	1,228	60	1,244	1,299	55
35 to 44 years	1,562	1,597	35	737	758	21	826	839	13
45 to 54 years	1,127	1,149	22	537	546	9	590	603	13
55 to 64 years	740	774	34	352	364	12	388	411	23
65 years and over	580	608	28	282	275	-7	317	333	16
Labor force, 16 years and over	5,750	5,972	222	3,505	3,644	139	2,245	2,328	83
16 to 19 years	527	545	18	312	323	11	215	222	7
20 to 24 years	1,048	1,100	52	630	662	32	418	439	21
25 to 34 years	1,794	1,884	90	1,098	1,155	57	696	729	33
35 to 44 years	1,147	1,175	28	684	704	20	463	471	8
45 to 54 years	796	812	16	486	495	9	310	317	7
55 to 64 years	372	387	15	247	255	8	125	132	7

Data for *all* published race and ethnic groups are available only since 1973. During the 1973–81 period, the fastest labor force growth was registered for Hispanics, whose population grew dramatically over the period. Based on revised data, the labor force increase was 63 percent during the 8-year period; prior to revision, the growth was estimated to be 60 percent. Despite the sharp increase, the Hispanic share of the total

labor force only moved from 4 to 5.5 percent over the period, using either revised or unrevised data.

The black labor force grew faster than the white, but not nearly as fast as the Hispanic labor force. Revisions raised black labor force growth from 22 to 23 percent between 1973 and 1981. Over the same period, white labor force growth had been 19 percent prior to revision and 20 percent subsequently. □

— FOOTNOTES —

<sup>1</sup> The most comprehensive discussion of the estimation procedure is included in *The Current Population Survey: Design and Methodology*, Technical Paper 40 (Bureau of the Census, 1977), ch. 5. A summary description is included in the Explanatory Notes of each issue of *Employment and Earnings*, published monthly by the Bureau of Labor Statistics.

<sup>2</sup> For an explanation of the procedures used following the 1970 census, see Gary M. Shapiro and Marvin M. Thompson, "Revisions in Current Population Survey," *Employment and Earnings*, February 1972, pp. 6–9.

<sup>3</sup> For a more technical description of the procedures in this adjustment process, see Kenneth D. Buckley, Jennifer Marks, and Ronald J. Statt, "Revisions in the Current Population Survey Beginning in Janu-

ary 1982," *Employment and Earnings*, February 1982, pp. 7–15.

<sup>4</sup> For the first 1980 census coverage study, see Jeffrey S. Passel, Jacob S. Siegel, and J. Gregory Robinson, "Coverage of the National Population in the 1980 Census by Age, Sex, and Race: Preliminary Estimates by Demographic Analysis," *Current Population Reports, Series P-23*, No. 115 (Bureau of the Census, March 1982).

<sup>5</sup> *Ibid.*

<sup>6</sup> It should be noted that the estimates of the Hispanic origin population are not based on independently developed controls specifically for this group. Rather, they arise from the weighting process as a result of individual responses to a question on ethnic origin and the age-sex-race estimates.



# Family Budgets



## Final report on family budgets: cost increases slowed, autumn 1981

Rising personal income taxes, social security deductions, transportation, and homeowner costs contributed to the increases in the three hypothetical budgets for a four-person family. In autumn 1981, the United States urban average budget costs were \$15,323 at the lower level, \$25,407 at the intermediate level, and \$38,060 at the higher level (table 1). From autumn 1980 to autumn 1981, the lower budget rose 9.1 percent, the intermediate, 9.8 percent, and the higher, 10.6 percent (table 2). The increases in 1981 were approximately 3 percentage points less than those in 1980, reflecting smaller increases in food and personal income taxes.

This report is the final release of the urban four-person family budget data. The expenditure data on which the budgets are based are now 20 years old and continuation of the program would require a revision of concepts, more current expenditure data, and extensive collection of price data, for which funding was not available. Therefore, the program was eliminated in compliance with the recent overall budget reduction.

**Consumption costs.** Consumption costs rose by 7.3 percent at the lower level, and 7.5 percent at both the intermediate and higher levels between autumn 1980 and

**Table 2. Percent change in four-person family budgets, autumn 1980 to autumn 1981**

Component	Lower	Intermediate	Higher
Total budget	9.1	9.8	10.6
Total consumption less shelter	7.2	7.1	7.1
Total consumption	7.3	7.5	7.5
Food	5.2	4.9	4.9
Housing	8.0	8.6	8.7
Shelter <sup>1</sup>	7.9	8.8	8.7
Renter costs	7.9	7.9	7.9
Homeowner costs <sup>2</sup>	—	8.9	8.8
Housefurnishings and operations	8.2	8.2	8.1
Transportation	13.0	12.1	11.8
Clothing	3.3	3.2	3.1
Personal care	7.7	7.9	7.6
Medical care	10.6	10.7	10.7
Other family consumption	7.9	7.8	7.8
Other items	6.5	6.7	6.7
Social security	17.6	19.3	23.9
Personal income taxes	19.4	17.5	17.9

<sup>1</sup> Includes only rental housing in the lower budget.

<sup>2</sup> On the assumption that the home was purchased 6 years ago, these costs reflect changes in purchase prices and mortgage interest rates from 1974 to 1975 and changes in property taxes, insurance, fuels and utilities, and repairs and maintenance from 1980 to 1981.

autumn 1981. Among consumption components, transportation costs showed the largest increases at all three levels. Transportation costs also rose sharply in the two previous years from autumn 1978 to autumn 1979 and from autumn 1979 to autumn 1980. Medical care costs also showed large increases from 1980 to 1981.

**Personal income taxes.** The budgets include estimated 1981 Federal, State, and local tax payments. The large increases in taxes, approximately 19 percent at the lower level and 18 percent at both the intermediate and higher levels, are a result of increasing consumption costs and "bracket creep" under the Federal progressive tax system and that of many States. Although tax increases were quite large, they were approximately 10 percentage points less than in 1980 at the lower level and approximately 7 percentage points less at both the intermediate and higher levels. This was because of more moderate price increases for consumption items and the small, initial reduction in Federal income tax rates in 1981. While the percentage tax increase was highest for the lower budget, the effect of the increases was more pronounced at the intermediate and higher

**Table 1. Annual budgets for a four-person family at three levels of living, urban United States, autumn 1981**

Component	Lower	Intermediate	Higher
Total budget	\$15,323	\$25,407	\$38,060
Total family consumption	12,069	18,240	25,008
Food	4,545	5,843	7,366
Housing	2,817	5,546	8,423
Transportation	1,311	2,372	3,075
Clothing	937	1,333	1,947
Personal care	379	508	719
Medical care	1,436	1,443	1,505
Other family consumption	644	1,196	1,972
Other items	621	1,021	1,718
Social security and disability	1,036	1,703	1,993
Personal income taxes	1,596	4,443	9,340

NOTE: Because of rounding, sums of individual items may not equal totals.

level because taxes constitute a proportionally larger share of these budgets.

*Social security deductions.* While Federal income tax increases were lower, social security deductions were higher in 1981. The employee payroll deduction rate was increased from 6.13 percent to 6.65 percent, and the earnings ceiling on contributions was raised from \$25,900 to \$29,700. As a result, deductions rose 18 percent at the lower level, 19 percent at the intermediate level, and 24 percent at the higher level.

*Housing.* Housing increased by 8.0 percent from autumn 1980 to autumn 1981 in the lower budget which includes only renter costs. Both renter and homeowner costs are included in the intermediate and higher budgets and these costs rose by 8.6 and 8.7 percent, respectively. For the homeowner component, large increases in fuel and utilities were offset somewhat by modest increases in mortgage interest costs.

*Description of the budgets.* The family budgets represent the costs of three hypothetical lists of goods and ser-

**Table 3. Indexes of comparative costs based on an intermediate budget for a four-person family,<sup>1</sup> autumn 1981**

[U.S. urban average costs = 100]

Area	Total budget	Cost of family consumption											Personal income taxes	
		Total consumption	Food		Housing			Transportation <sup>5</sup>		Clothing	Personal care	Medical care <sup>6</sup>		Other family consumption <sup>7</sup>
			Total	Food at home	Total <sup>2</sup>	Renter <sup>3</sup>	Homeowner <sup>4</sup>	Total	Auto-mobile owners					
Urban United States . . . . .	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Metropolitan areas <sup>8</sup> . . . . .	102	102	101	100	102	104	103	100	102	100	102	103	103	104
Nonmetropolitan areas <sup>9</sup> . . . . .	91	93	94	98	91	82	87	98	94	98	93	88	85	84
<b>Northeast:</b>														
Boston, Mass. . . . .	115	112	101	103	127	119	137	117	132	109	100	91	111	131
Buffalo, N.Y. . . . .	104	101	101	103	99	93	100	106	101	120	96	80	102	120
New York-Northeastern N.J. . . . .	116	109	113	110	121	110	131	91	103	89	102	100	109	148
Philadelphia, Pa.-N.J. . . . .	105	102	112	107	101	86	106	98	111	71	90	106	102	115
Pittsburgh, Pa. . . . .	97	97	103	103	89	83	87	105	104	95	96	91	101	97
Nonmetropolitan areas <sup>9</sup> . . . . .	102	101	99	102	109	90	116	105	100	105	88	87	86	105
<b>North Central:</b>														
Chicago, Ill.-Northwestern Ind. . . . .	100	102	99	100	101	105	103	105	118	90	98	109	117	92
Cincinnati, Ohio-Ky.-Ind. . . . .	100	100	102	103	97	81	101	97	93	121	92	96	98	101
Cleveland, Ohio . . . . .	101	102	100	98	100	84	107	99	98	110	120	100	106	97
Detroit, Mich. . . . .	99	99	101	101	101	93	106	96	95	90	106	101	97	99
Kansas City, Mo.-Kans. . . . .	97	98	98	99	89	88	86	104	99	107	119	99	102	92
Milwaukee, Wis. . . . .	106	102	97	95	106	99	111	102	97	114	106	97	103	122
Minneapolis-St. Paul, Minn. . . . .	102	97	96	95	96	103	95	99	94	102	108	87	104	121
St. Louis, Mo.-Ill. . . . .	96	98	104	105	90	86	88	103	103	95	106	91	96	91
Nonmetropolitan areas <sup>9</sup> . . . . .	91	93	93	97	92	96	88	96	91	107	98	83	88	83
<b>South:</b>														
Atlanta, Ga. . . . .	92	93	96	95	82	82	76	97	93	112	99	90	101	85
Baltimore, Md. . . . .	99	97	95	92	99	112	89	97	96	97	97	93	102	108
Dallas, Tex. . . . .	89	95	95	92	86	99	82	103	98	93	99	113	96	65
Houston, Tex. . . . .	93	98	100	96	87	86	84	99	94	113	117	117	95	70
Washington, D.C.-Md.-Va. . . . .	108	103	102	103	105	117	103	99	98	102	111	102	110	127
Nonmetropolitan areas <sup>9</sup> . . . . .	86	89	93	97	83	68	75	97	93	87	90	89	83	71
<b>West:</b>														
Denver, Colo. . . . .	98	99	94	93	97	90	93	102	97	129	99	92	101	92
Los Angeles-Long Beach, Calif. . . . .	98	100	98	95	98	125	94	104	103	94	100	130	89	89
San Diego, Calif. . . . .	98	99	95	91	98	105	100	101	96	96	98	122	102	87
San Francisco-Oakland, Calif. . . . .	107	107	101	100	109	153	101	107	107	110	118	116	102	105
Seattle-Everett, Wash. . . . .	102	106	101	99	109	140	102	103	98	112	120	113	109	83
Honolulu, Hawaii . . . . .	126	118	131	137	117	146	112	102	97	107	116	110	115	162
Nonmetropolitan areas <sup>9</sup> . . . . .	96	95	94	97	92	95	86	95	91	115	104	95	87	100
Anchorage, Alaska . . . . .	126	127	113	116	142	189	122	124	119	116	137	160	100	124

<sup>1</sup> The family consists of an employed husband age 38, a wife not employed outside the home, an 8-year-old girl, and a 13-year-old boy.

<sup>2</sup> Housing includes shelter, housefurnishings, and household operations.

<sup>3</sup> Renter costs include average contract rent plus the cost of required amounts of heating fuel, gas, electricity, water, specified equipment, and insurance on household contents.

<sup>4</sup> Homeowner costs include interest and principal payments plus taxes, insurance on house and contents, water, refuse disposal, heating fuel, gas, electricity, specified equipment, and home repairs and maintenance cost.

<sup>5</sup> The average costs of automobile owners and nonowners in the intermediate budget were weighted by the following proportions of families: Boston, New York, Chicago, and Philadelphia 80 percent for owners, 20 percent for nonowners; Baltimore, Cleveland, Detroit, Los Angeles, Pittsburgh, San Francisco, St. Louis, and Washington, D.C., with populations of 1.4 million or more in 1960, 95 percent for automobile owners and 5 percent for nonowners; all other areas,

100 percent for automobile owners.

<sup>6</sup> In total medical care, the average costs of medical insurance were weighted by the following proportions: 30 percent for families paying full cost of insurance; 26 percent for families paying half costs; 44 percent for families covered by noncontributory insurance plans (paid by employer).

<sup>7</sup> Other family consumption includes average costs for reading, recreation, tobacco products, alcoholic beverages, education, and miscellaneous expenditures.

<sup>8</sup> As defined in 1960-61. For a detailed description of these and previous geographical boundaries, see the 1967 edition of *Standard Metropolitan Statistical Areas*, prepared by the Office of Management and Budget.

<sup>9</sup> Places with population of 2,500 to 50,000; data for some previously shown are no longer available.

vices that were specified in the mid-1960's to portray three relative standards of living—described as lower, intermediate, and higher. These budgets are for a precisely defined urban family of four: a 38-year-old husband employed full time, a wife not employed outside the home, a boy age 13, and a girl age 8. Average inventories of clothing, housefurnishings, major durables, and other equipment are included for each budget level. The budgets pertain only to an urban family with these specified characteristics; no budgets are available for

rural families. Also, the budgets are not intended to represent a minimum level of adequate income or a subsistence level of living, nor do they indicate how families do or should spend their money.

The 1981 consumption budgets were estimated by applying price changes for individual areas from autumn 1980 to autumn 1981, as reported in the Consumer Price Index for Urban Wage Earners and Clerical Workers, to the appropriate autumn 1980 budget costs for each main class of goods and services. □

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### Is the compressed workweek too compressed?

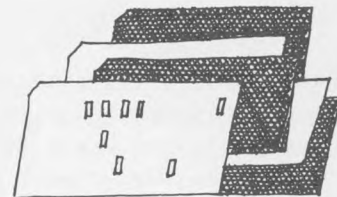
The compressed workweek, usually involving 4 working days with Friday or Monday off, is something of a misnomer in that it also means an elongated workday of 10 hours. There has been more experience with this concept in the United States; European workers, on the other hand, have shown little interest.

The compressed workweek was developed in the United States in the late 1960's, and has been tried mainly by smaller, nonunion employers. Acceptance has not been overwhelming, having leveled off at about 2 percent of the labor force, according to the Bureau of Labor Statistics. The failure rate of the compressed workweek is quite high, in sharp contrast to flexitime experiments. Many companies seem to have tried it; yet every survey shows a high percentage soon reverting to the 5-day week.

—“Innovations in Working  
Patterns,” *Transatlantic  
Perspectives*, January 1981,  
p. 29.

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## Native Americans in the labor force: hunting for an accurate measure

JUDITH KLEINFELD AND JOHN A. KRUSE

The concepts used nationally to assess labor force participation are considered to be inappropriate for Native American population groups. The fundamental issue concerns the measurement of unemployment. The Current Population Survey (CPS) defines an unemployed person as someone who has no employment, is available for work, and has engaged in some specific jobseeking activity within the past 4 weeks. As the American Indian Policy Review Commission points out, in many Indian reservations and isolated Native villages, few jobs are available.<sup>1</sup> In these small communities the informal communications network provides excellent information on new employment opportunities. Many Indian and Eskimo adults do not actively seek work in the conventional sense because they are well aware that no work is available. To exclude these individuals from the labor force results in a serious underestimation of Native American unemployment and the available labor pool. Moreover, this problem is not merely a technical issue of measurement. Federal and State funds are allocated to regions on the basis of such employment statistics.

While the knowledge that no jobs exist may cause significant members of Native Americans not to be counted as members of the labor force, there is also evidence to suggest that many Native Americans in fact drop out of the labor force intermittently in order to meet community and family obligations, or to pursue other activities such as hunting and fishing. For example, Harland Padfield and John van Willigen carefully studied the activity patterns of a sample of 300 Papago men.<sup>2</sup> They found that 15 percent were "voluntarily idle" in midsummer.

Attitude surveys also suggest substantial variability in Native Americans' work schedule preferences. Accord-

ing to some surveys, the majority of Indians and Eskimos prefer long-term jobs, suggesting that it is teachers and employers who incorrectly overestimate preferences for seasonal work.<sup>3</sup> However, these studies, as well as other research, suggest considerable variability in preferences for year-round and part-year wage work, not only among different Native American population groups but also among individuals in the same group.<sup>4</sup> Therefore, the measurement problems associated with unemployment among Native Americans are not limited to the discouraged worker effect; they also stem from real desires not to work for wages during part of the year.

To overcome these problems, agencies and researchers concerned with Native American populations have used a variety of alternative concepts and measurement approaches to assess unemployment. The Bureau of Indian Affairs, for example, considers any Native adult who does not hold a wage job to be "unemployed." Agency personnel roughly estimate unemployment in some rural Native communities and reservations to be as high as 50 to 80 percent. The American Indian Policy Review Commission, suspecting that census figures underestimate and Bureau of Indian Affairs figures overestimate Native American unemployment, suggested that the 1980 census questions on unemployment should be adapted to the situation of American Indians.<sup>5</sup> The Commission recommended that Indians be asked, "When job opportunities occur, do you seek them?"

The 1980 Census Supplementary Questionnaire for Indians, however, did not follow this recommendation. The question on unemployment asks, "Of the weeks not worked in 1979, how many weeks was this person actively looking for work or on layoff from a job?" Previous questions ask how many weeks the person worked in 1979 and the main reason the person worked fewer than 50 weeks. However, respondents have no socially acceptable way of indicating that they prefer a lifestyle combining intermittent participation in the wage economy with non-wage activities, such as subsistence hunting and fishing. Such a response would be placed in the category "did not want work," which has negative connotations, particularly for men without obvious home responsibilities.

Without information on the size of the intermittent worker effect, statistics on Indian and Eskimo employ-

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ment patterns are difficult to interpret. For example, Benjamin Taylor and Dennis O'Connor, in a study of five Indian reservations in the Southwest, point out that "seasonal or irregular work characterizes a significant part of reservation labor, ranging from 27 percent of the working-age Zaguna tribe to 55 percent of the Fort Apaches over 16 years of age."<sup>6</sup> However, it is not clear to what extent these patterns are the result of personal preference and to what extent they are caused by lack of jobs and requisite skills.

### Alaskan research

This paper discusses three Alaskan studies concerned with measuring unemployment in Native American groups. These studies suggest the importance of both a "discouraged worker" and an "intermittent worker" effect in understanding Native American employment patterns. Standard national definitions of unemployment substantially underestimate the proportion of Natives who want work and are available for work. However, our research also suggests that average labor force participation rates, at least among men, may remain substantially below national norms even when high-paying jobs at a variety of skill levels are available.

The first study was conducted in January 1977.<sup>7</sup> The Alaska Legislature, believing that official employment statistics seriously understate unemployment in rural Native communities, directed the State Department of Labor to survey "real" unemployment in the Lower Yukon-Kuskokwim Region. Income levels in the Eskimo communities in this isolated area are among the lowest in Alaska, and job opportunities are extremely limited. Of available jobs, 44 percent are in government. However, the region also has a strong noncash economy based on subsistence fishing and hunting. In addition, commercial fishing, trapping, and crafts are important sources of cash income, although no statistics are available on employment in these occupations.

Bilingual Eskimos interviewed 86 percent of the working-age adult population (1,412 respondents) in nine villages. They used a one-page form patterned on the CPS. As in the CPS, one set of questions classified individuals as "unemployed" if they were not working and had "been looking for work during the past four weeks." However, the villagers were also asked about desire for work. "Does the person want a regular job now, either full or part-time?" Under the conventional CPS definition, the unemployment rate in January 1977 was 24 percent. Under the broader definition, it was 48.8 percent.

While national surveys also yield higher jobless rates when "discouraged workers" are included, these results support the view that unemployment among Natives is seriously underestimated. However, the specific survey question used has some limitations.

First, there is the problem of respondents presenting themselves to an interviewer in a favorable light. Village Eskimos in remote communities are well aware of the majority culture's work ethic, whether or not they personally subscribe to it. Without an obviously acceptable reason, such as child care responsibilities or poor health, they might have been reluctant to tell the interviewer that they did not want to work at the time of the survey.

Second, the question does not cover desired duration of employment. In another household survey, which included some of the same communities, most of the 344 respondents indicated that they preferred to work only certain months of the year. Those who wanted part-year work generally did not want to be employed in the spring or fall, seasons of intense subsistence activity.<sup>8</sup> Indeed, some Eskimos may view wage work as a secondary activity, a means to supplement hunting and fishing. Thus, asking whether the individual wants a "regular" job may miss a critical cultural difference in labor force behavior.

### North Slope boom

In the second study, funded by the National Science Foundation, we examined the response of the Inupiat to the new high paying job opportunities on the North Slope in 1977.<sup>9</sup> A previous study of Native employment directly associated with the trans-Alaska pipeline project found that many Natives had worked for only 8 weeks or less despite the high pay.<sup>10</sup> During informal interviews, Native respondents cited work camps located away from home, the heavy 10-hour, 7-day workweek, bigotry against Natives by white coworkers, and alleged poor use of Native workers by the companies, as disincentives to longer employment tenure.<sup>11</sup>

On the North Slope, however, oil and gas development created a situation which eliminated or modified many of these perceived barriers to long-term employment. The jobs resulted not so much from direct oilfield activities at Prudhoe Bay as from the formation of an Inupiat government, the North Slope Borough, in 1972. The borough, encompassing eight Inupiat villages and a population of about 4,000, levied property taxes on the Prudhoe Bay oil complex. Revenues grew from less than \$1 million in 1973 to about \$57 million in 1977. The borough transformed these tax revenues into jobs adapted to contemporary Inupiat lifestyles. It launched a \$511 million capital improvements program, which resulted in large numbers of skilled and unskilled construction jobs. Borough government and school district operations also employed large numbers of white-collar workers. By 1977, the borough alone employed about 800 workers in administration, education, and construction.

The government established a strong local hire pro-



gram and was willing to absorb substantial cost overruns to employ local Inupiat. To minimize conflicts between wage work and subsistence, the borough granted leaves of absence for subsistence activities and was tolerant of absenteeism. It paid high wages, with construction pay matching the wage scales established during the building of the trans-Alaska pipeline. The average wage of Inupiat adults in 1977 was almost \$500 per week, and about 25 percent received paychecks of \$800 or more. Yet, borough jobs did not require workers to leave home, give up subsistence activities, cope with bigotry, or deal with an uncomfortable, non-Native environment.

The borough did not succeed in making jobs available to all Inupiat adults in each of the eight villages during the entire year. However, in certain situations, such as in Barrow (the large regional center), jobs were readily available to anyone who wanted wage work during the summer construction season.

The North Slope study examined the question—under these unusually favorable labor market conditions did the labor force participation rate of Inupiat men and women approach national norms? Or did special cultural factors result in lower labor force participation despite the availability of good jobs and the presence of loosely structured work rules?

Inupiat interviewers conducted a household survey in Barrow and five smaller communities in late 1977. We had randomly selected one adult from each village household and one adult from a 50-percent sample of Barrow households. The final sample consisted of 290 persons, 75 percent of the adults contacted, and represented 21 percent of the adult population. In our labor force analysis, we excluded persons age 16 to 18 and 55 and older so that cultural differences in school attendance and retirement ages would not affect comparisons with national labor force patterns.

Those interviewed were asked for a work history from October 1976 to September 1977. Persons who did not hold any paying job during the year were asked whether there were special reasons that prevented them from working. To measure monthly unemployment the survey asked, "Were there months between October 1976 and September 1977 when you wanted a job and didn't have one? (If yes) What months were they?" This measure of unemployment was, of course, a broad definition, which counted a person as "unemployed" if he or she stated a desire for wage work regardless of specific jobseeking activity.

In analyzing the data, it quickly became apparent that many Inupiat did not say they wanted wage work during all the months they did not work. Some were nonwage earners, whose family responsibilities or health problems prevented them from taking employment. However, many were intermittent workers who worked

at wage jobs part of the year. In addition, when asked about work schedule preferences, slightly more than half of both men and women said they wanted some form of part-year work.

This preference for part-year work was even stronger among North Slope Inupiat high school students, particularly male students.<sup>12</sup> In this small survey, our question on work preferences contained a socially acceptable alternative to year-round wage work ("After you have finished your schooling, do you want a year-round job or to work only part of the year so you can hunt and fish a lot, or don't you want a job?"). None of the students stated they didn't want a wage job at all. However, of the 75 male students, 69 percent preferred a part-year job compared to 41 percent of the 99 female students.

When we measured annual average labor force participation,<sup>13</sup> Inupiat adult women approached national norms, particularly the young women. However, Inupiat male labor force participation at all ages was far below national norms.

The major reason for the lower male labor force participation was that most men were blue-collar workers. When particular construction projects ended in their villages, they were laid off. Substantial layoffs occurred in the winter of 1976–77, when the borough cut back on its construction program because of financing difficulties. However, intensive construction work resumed in the summer of 1977. This increase in job opportunities led to a dramatic increase in male labor force participation, which rose from a low of 47 percent in November 1976 to a high of 74 percent in September 1977.

Yet, even when good job opportunities were abundant, Inupiat male labor force participation remained well below national norms. In Barrow, for example, labor force participation of Inupiat men age 18–55 peaked at only 76 percent in the summer of 1977. Of the 24 percent who were not in the labor force, just 10 percent were nonwage earners and most of these had health problems. The remainder were intermittent workers who chose not to work during the month.

In short, the North Slope study suggests that the major factor influencing Native American labor force participation is indeed the availability of good jobs. Yet, even under highly favorable circumstances, cultural preferences result in labor force participation rates below national norms, at least among men.

Although our North Slope research results suggested that the number of intermittent workers is significant, we could not precisely measure the number of such workers. We had asked retrospectively what months individuals were without work but wanted it. However, people may have forgotten specific months. We attempted to remedy this problem in a subsequent study by including a question which asked explicitly



whether individuals did not want work in particular months.

### Regional surveys

In 1979, we cooperated with several Federal and State agencies to conduct a broad survey of recreation, employment, and other community issues in randomly sampled households in the Interior, Southcentral, and Southeast regions of Alaska. Each regional survey included the urban center, surrounding small Native and other communities, and rural Native villages. The Native sample consisted of 335 respondents representing Eskimo, Aleut, Athabascan, and Tlingit cultural groups.<sup>14</sup>

The survey questions concerning employment were essentially the same as in the North Slope study. However, in addition to asking each respondent which months during the previous year "did you want a job but did not have one," respondents were also asked, "Which, if any, months between April 1978 and March 1979 did you decide not to work?" Thus, the decision to withdraw temporarily from the labor force was measured directly rather than being inferred as a residual category.

The results show that rural Natives specifically did not want to work during an average of 1.4 months of the year. The particular months specified varied by region. In the Interior, peak withdrawal occurred in August (17 percent); in Southcentral, the peak was in October (9 percent); and in Southeast, it was January through March (8 percent). However, even with these explicit answers, there remained a large residual of Natives who were not working at wage jobs and who stated neither that they wanted work nor that they did not want work in a particular month. This residual ranged from 12 percent in the Interior to 8 percent in Southcentral Alaska. If we assume this group would take work if jobs were available, 29 percent in Interior, 18 percent in Southcentral, and 24 percent in Southeast were unemployed. If we assume this group was not interested in wage work, although reluctant to say so, unemployment rates would drop to 17 percent in the Interior, 10 percent in Southcentral, and 13 percent in Southeast. The use of these series of questions to estimate annual average unemployment results in a bracket around the "true" proportion of Native American unemployment. Whichever estimate is used, it is obvious that serious levels of unemployment exist in these regions.

Thus, even by providing a means for respondents to differentiate between unemployment and temporary withdrawal from the work force, our estimate of unemployment remains imprecise. However, in these Native American population groups the nature of unemployment itself is imprecise. Some adults shift in and out of

wage work depending on job availability, immediate need for cash, and what other options exist at the time. It is, of course, possible to develop a series of questions which unambiguously assigns adults to a labor force category each month. Indeed, in an exploratory study, we attempted to ask Native respondents about their activities in the wage and nonwage sectors and whether they wanted employment on a month-by-month basis. This measurement approach, however, worked badly. Native adults resented and resisted having their activities categorized in these ways. Such a survey approach was perceived as too intrusive. It made too obvious the number of months adults were not engaged in some "productive" activity by majority culture definitions.

### Conclusions

Taken together, these studies confirm that the standard definition of unemployment results in a serious underestimation of the number of Native Americans who want wage work. The availability of local employment opportunities, or the lack of them, are well known and largely determine whether individuals actively look for work. At the same time, these studies suggest that significant numbers of Native Americans chose to work intermittently in the wage economy, although the proportion of such worker is likely to vary among cultural groups. Both the "discouraged worker" effect and the "intermittent worker" effect makes it quite difficult to measure Native American labor force participation.

We can offer no simple solution to the problem of how to measure unemployment in Native American population groups heavily involved in a nonwage as well as a cash economy. Two general points emerge from our analyses:

- Questions designed to measure unemployment among transitional Native groups should present a choice between wage work and socially prestigious alternatives in the local cultural situation. Native Americans are aware of the majority culture work ethic and can be reluctant to indicate that they are not employed and do not want wage work.
- Studies of Native American labor force patterns should recognize the possibility of preferences for part-year versus year-round work (in addition to part-time versus full-time jobs) and should include questions to assess during how much of the year and at which times individuals want wage work.

The specific measurement approach we have developed (asking adults which months they were employed, which months they wanted work, and which months they did not want work) results in a range, rather than a single estimate, of unemployment. About 10 percent of Native adults who are not working in particular months do not place themselves in the alternative work-

do not want work categories. This ambiguity, however, may reflect the actual vagueness of unemployment among individuals who maintain a lifestyle combining economic activity in both the modern and traditional

sectors in the context of extended families who provide mutual economic support. It is perhaps unrealistic to expect that precise answers to questions on unemployment can be found in this cultural context. □

— FOOTNOTES —

<sup>1</sup> Mary Ellen Ayres, "Federal Indian policy and labor statistics—a review essay," *Monthly Labor Review*, April 1978, pp. 22–27.

<sup>2</sup> Harland Padfield and John van Willigen, "Work and income patterns in a transitional population: the Papago of Arizona," *Human Organization*, March 1969.

<sup>3</sup> Derek G. Smith, *Occupational Preferences of Northern Students* (Ottawa, Canada: Northern Economic Development Branch, 1974); and *Native People's Perceptions of Factors Associated with Job Acceptance and Retention* (Ottawa: Department of Indian Affairs and Northern Development, Northern Affairs Branch, 1974).

<sup>4</sup> Note the differences in preferences for year-round work expressed in a survey of diverse Alaska Native population groups in Alaska Department of Transportation and Public Facilities, *Western and Arctic Alaska Transportation Study*, August 1980.

<sup>5</sup> "Federal Indian policy . . .," p. 25.

<sup>6</sup> Benjamin J. Taylor and Dennis J. O'Connor, *Indian Manpower Resources in the Southwest: A Pilot Study* (Arizona State University, 1969), p. 354.

<sup>7</sup> Rod Brown, Jeff Hadland, Scott Hannigan, and Stanley D. Burrows, *Lower Yukon-Kuskokwim Region Labor Market Analysis* (Alaska

Department of Labor, 1981).

<sup>8</sup> *Western and Arctic Alaska Transportation Study*.

<sup>9</sup> Judith Kleinfeld, Jack Kruse, and Robert Travis, *Different Paths of Inupiat Men and Women in the Wage Economy* (University of Alaska: Institute of Social and Economic Research, 1981).

<sup>10</sup> Larry L. Naylor and Lawrence A. Gooding, *Alaska Native Hire on the Trans-Alaska Oil Pipeline Project* (University of Alaska: Institute of Social and Economic Research, 1978).

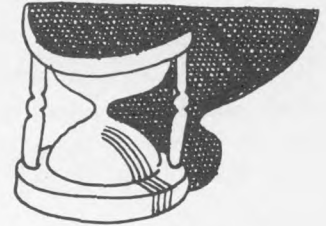
<sup>11</sup> *Ibid.*

<sup>12</sup> Judith Kleinfeld and Jack Kruse, *High School: Views of North Slope Borough Students* (University of Alaska: Institute of Social and Economic Research, 1977).

<sup>13</sup> We treated a respondent as being in the labor force in a given month if he or she held a job for 2 weeks or more during the month or wanted wage work during the month. Those who did not work at all during the year or did not mention that they wanted work during a month they were not working were treated as out of the labor force for that month.

<sup>14</sup> Alaska Public Survey, unpublished results (University of Alaska, Institute of Social and Economic Research, 1981).

# Major Agreements Expiring Next Month



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

Employer and location	Industry	Labor organization <sup>1</sup>	Number of workers
Alabama Dry Dock and Shipbuilding Co. (Mobile, Ala.)	Transportation equipment	Marine and Shipbuilding Workers	1,200
American Airlines, Ground Service (Interstate) <sup>2</sup>	Air transportation	Transport Workers	12,450
American Standard, Inc., Wabco Construction Equipment (Peoria, Ill.)	Machinery	Boilermakers	1,000
Associated General Contractors of America, Inc., Building Construction Agreement (Alabama)	Construction	Bricklayers; Carpenters; Laborers; Iron Workers; Engineers; Teamsters (Ind.)	8,000
Bowman Transportation, Inc. (Interstate)	Trucking	Steelworkers	2,100
Bucyrus-Erie Co. (Indiana, Pennsylvania, and Wisconsin)	Machinery	Steelworkers	2,000
Cluett, Peabody and Co., Inc., Arrow Co. Division (Interstate)	Apparel	Clothing and Textile Workers	4,600
Eagle Electric Manufacturing Co., Inc. and Eagle Plastics Corp. (New York)	Electrical products	Auto Workers (Ind.)	1,500
Flexsteel Industries, Inc. (Iowa, Pennsylvania, and Texas)	Furniture	Upholsterers	1,000
Gates Rubber Co. (Denver, Colo.)	Rubber	Rubber Workers	2,650
Goodyear Aerospace Corp. (Akron, Ohio)	Transportation equipment	Auto Workers (Ind.)	1,300
Illinois Food Retailers Association, Independent Food Stores	Retail trade	Food and Commercial Workers	4,350
Knitgoods Agreement (Ohio) <sup>3</sup>	Textile	Ladies's Garment Workers	1,050
New York Telephone Company	Communication	Telephone Traffic Union (New York) (Ind.)	8,300
Pittsburgh Forgings Co., Greenville Steel Car Co. (Pennsylvania)	Transportation equipment	Auto Workers (Ind.)	1,000
Publix Shirt Corp. (Interstate)	Apparel	Clothing and Textile Workers	1,000
Sun Harvest, Inc. (California)	Agricultural products	Farm Workers	1,350
Textron, Inc., Fafnir Bearing Division (New Britain, Conn.)	Machinery	Auto Workers (Ind.)	3,200
3M Company, Minnesota Mining and Manufacturing Co. Division (St. Paul, Minn.)	Stone, clay, and glass products	Oil, Chemical and Atomic Workers	1,850
	Government activity	Labor organization <sup>1</sup>	
California: Los Angeles County Building Trades and Skilled Craftsmen	Multidepartment	Los Angeles County Building and Construction Trades Council	1,350
Pennsylvania: Philadelphia Board of Education	Education	Teachers	18,000
Washington: Seattle Police Department	Public safety	Seattle Police Officers Guild (Ind.)	1,050

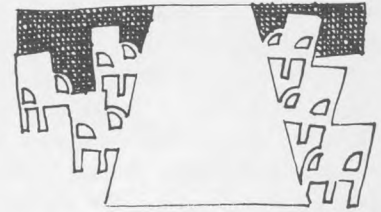
<sup>1</sup> Affiliated with AFL-CIO except where noted as independent (Ind.).

<sup>2</sup> Information is from newspaper reports.

<sup>3</sup> Industry area (group of companies signing same contract).



# Developments in Industrial Relations



## Goodrich pact sets pattern for industry

B.F. Goodrich Co. and the Rubber Workers negotiated a 3-year contract that set a pattern for settlements at Goodyear Tire & Rubber Co. and Firestone Tire & Rubber Co. The terms also affected employees of Uniroyal, Inc., who had earlier agreed to accept the same provisions as in the pattern-setting settlement, modified to the extent necessary to reduce the cost by \$18.3 million a year. (See *Monthly Labor Review*, March 1982, p. 47.)

The Goodrich contract did not provide for any specified wage increases, but the employees will continue to receive quarterly automatic cost-of-living pay adjustments calculated at 1 cent an hour for each 0.26-point movement in the Consumer Price Index. The union said the formula would yield about \$2.44 in wage increases during the contract term, assuming a 7-percent annual rise in the CPI.

Benefit improvements included a \$1.50-increase in the pension rate, bringing it to \$16.50 a month for each year of credited service; a \$60-a-week increase in the sickness and accident benefit, bringing it to \$185; and a 6-month increase in the 24-month period during which laid off employees retain their life and health insurance.

The contract calls for establishment of a medical surveillance program to attain early detection of job-related health problems. The program will be financed by a company payment of 2 cents an hour.

An Early Action Committee will be established to help avert plant closings. The parties also agreed that the Rubber Workers' president will consult with the company president on plant closings and other problems. The agreement applied to 6,700 Goodrich employees at five plants.

About 2,000 workers at the company's industrial products plant in Akron, Ohio accepted a smaller package in return for company assurance that the operation will continue for at least 3 more years. Goodrich also

agreed to establish a profit-sharing plan for the workers.

The Akron employees will receive the same benefit improvements as those at the other plants but their pay was cut 27 cents an hour immediately, and will be cut an additional 27 cents in the second and third years if the facility continues to operate at a loss. Also they will not receive any cost-of-living pay adjustments during the entire term, regardless of operating results. Goodrich said that the plant, which once employed 11,000 people, has been losing \$1 million a month for the last 2 years.

The Goodyear accord did not provide for a medical surveillance program. The Goodyear settlement covered 16,000 workers at 13 locations and the Firestone settlement covered 10,500 workers at 10 plants.

## Harvester accord features profit-sharing plan

International Harvester Co.'s efforts to return to profitability were enhanced when the Auto Workers agreed to a new contract that a company official said, bears a "family resemblance" to the concessions negotiated by General Motors Corp. and Ford Motor Co. (See *Monthly Labor Review*, May 1982, p. 59.)

The Harvester accord, like the two automobile agreements, did not provide for any specified wage increases over its 29-month term, called for 18-month deferrals of each of the first three quarterly cost-of-living adjustments that would have been effective in 1982, and eliminated some paid personal holidays.

The profit-sharing plan adopted at Harvester differed from that in the auto agreements. Union vice president Stephen Yokich said that under Harvester's plan, workers will receive part of every dollar of profit earned by the company during the fiscal years beginning November 1 of 1982 and 1983. (At Ford and GM, workers participate only if profits exceed specified levels.) However, there were no indications that there would be a profit to share. Company chairman and chief executive officer Archie McCardell, who resigned shortly after the settlement, predicted a loss of more than \$500 million for the current fiscal year. Harvester lost a total of \$790 million during the 2 preceding years. If Harvester shows a profit, and the earnings exceed \$300 million in two succes-

"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.

sive quarters, the agreement is subject to reopening on economic issues.

Other terms of the settlement called for Harvester to infuse \$6 million into the Supplemental Unemployment Benefit plan; for adoption of a plan to assure employment opportunities, job security, and greater worker involvement in corporate decisions; and for stronger employee protections on potential plant closings and contracting out of work.

According to Yokich, Harvester's management promised union bargainers that the company would become a model of good labor relations and would strive to "absolutely set the standard (in the industry) for goodwill" with its workers. Some industry observers have attributed Harvester's financial problems to the bitter 1979 confrontation between the union and company, which culminated in a 6-month strike, and to adverse economic conditions that also hit other manufacturers of farm and construction equipment and trucks.

The new pact supersedes the balance of the contract scheduled to expire September 30, 1982. About 20,000 active employees at plants in nine states are covered; 10,000 others from the bargaining unit were on layoff. Overall company employment was less than 65,000, compared with 93,000 in 1979, when the previous contract was negotiated.

### American Motors, UAW concession accord

Wage concession bargaining continued in the automobile industry, as American Motors Corp. and the Auto Workers negotiated a new contract that featured an Employee Investment Plan, under which the 14,000 workers will lend the company about \$110 million by deferring normal wage and benefit provisions. Raymond Majerus, head of the union's American Motors Department, said the loan will provide the company with money needed to develop "a new line of high quality autos." He expects American Motors workers to recoup their losses before the expiration date of the contract, unlike workers at General Motors Corp. and Ford Motor Co. (For an account of GM and Ford concessions, see *Monthly Labor Review*, May 1982, pp. 59-60 and April 1982, p. 62.)

The money will be accumulated by "banking," paid time off and by deferring pay increases:

- The effective date of 3 percent pay increases that would normally have been effective in September of 1982 and 1983 were deferred until January 1985 (a 3-percent increase that would normally have been effective in September 1984 was eliminated);
- The six quarterly automatic cost-of-living adjustments that would have normally been effective in March, June, September, and December of 1982 and

in March and June of 1983 will be deferred to December 3, 1984 (however, if the total calculated amounts of these adjustments exceed \$1.20 an hour, the excess will be paid on the normal quarterly adjustment date).

- Employees will "bank" 21 days of pay until 1985 by giving up 5 days of holiday or vacation pay in 1982, 8 days in 1983, and 8 days in 1984.
- The effective dates of certain benefits will be delayed for new employees.

The amount that the workers lose by deferring wage increases and "banking" will be repaid, with 10 percent compound interest, beginning in 1985 and concluding not later than 1989, even if the company is operating at a loss.

For repayment purposes, American Motors will allocate an amount equal to either 25 percent of its automotive profits (during the preceding year) or all profit in excess of 4 percent of sales, whichever is greater. If there is no profit, or if the profit is too small for repayment purposes, the union can opt for a formula calling for the company to repay \$100 for each of the first 200,000 vehicles and \$150 for each additional vehicle produced in the United States and Canada in a year, in addition to 10 percent of company profits.

In return for the concessions, the company agreed to keep the plants open until the September 1985 termination date of the contract, except in the "gravest economic circumstances." The plants are in Toledo, Ohio, and Milwaukee and Kenosha, Wisc. Also, it pledged to conduct all employment cutbacks—except those resulting from reduced sales—through attrition; notify the union 60 days before any major "outsourcing" (contracting out) decisions; apply wage and benefit cost-saving measures to nonunion employees and reduce the number of supervisors; adopt a company-financed legal services plan; and reopen the agreement if more than 300,000 AMC and Renault vehicles are produced or imported in any 6 consecutive months.

The new contract supersedes the balance of an agreement scheduled to expire in September 1983. Currently, Chrysler Corp. is the only "Big Four" automaker left to settle with the UAW in 1982.

### Amtrak agreements deviate from pattern

In the rail passenger service industry, Amtrak reached agreements with six unions for 10,000 employees and bargaining was continuing with nine other unions for 7,000 other workers. Union officials said that the accords were similar to the pattern settlements negotiated by 10 rail unions in 1981 (see *Monthly Labor Review*, January 1982, p. 24) except for several provisions that were included in the Amtrak agreements be-

cause of congressional mandates for increased efficiency. According to an Amtrak official, the deviations from the pattern included somewhat smaller pay increases, changes in work rules, reductions in overhead, and changes intended to improve "on time performances." The unions involved in the settlements were the Maintenance of Way Employees; Railway and Airline Clerks; Electrical Workers (IBEW); Boilermakers and Blacksmiths; Machinists; and the Transport Workers and Railway Carmen, who bargain jointly.

### High court finds two schools guilty of job bias

In a case involving two public school systems, the Supreme Court ruled that a 1972 law banning discrimination in federally financed educational programs also applies to school employment practices. The issue arose when the former Department of Health, Education and Welfare attempted to withhold funds from the schools, located in North Haven and Trumbull, Connecticut, to force them to comply with the 1972 law banning discrimination in education. Initially, a Federal judge had held that the law did not apply, but an appeals court backed the Federal agency's position, leading the schools to appeal to the Supreme Court.

Writing for the 6-member majority, Justice Harry Blackmun said that while the law does apply to school employment discrimination, the fund cutoff must be limited to the particular program or part of a program actually receiving the aid. This means that the lower court must determine if the funds were so diffused throughout the two school systems that the cutoff should apply to the entire systems.

### Company ordered to pay value of concessions

A Federal district judge ruled that the Singer Co. must pay damages to Local 461 of the International Union of Electrical Workers if it closes its Elizabeth, N.J., plant. The local had agreed to labor cost concessions in 1981 in return for a pledge that the facility would be kept open. (See *Monthly Labor Review*, May 1982, p. 61, for the closing announcement.) Judge Herbert J. Stern found that the contract did not contain a promise that the sewing machine plant would be kept open, and that Singer, therefore, has the right to close the plant. However, he ruled that the company was liable for the approximately \$2 million value of the concessions to date.

### A&P wins concessions in local bargaining

The Great Atlantic and Pacific Tea Co. was successful in its new strategy of seeking labor-cost concessions in local bargaining, as workers in the Philadelphia area

agreed to contract changes that will result in the reopening of "a large number" of stores. A&P had closed about 75 stores in the area during the preceding 12 months. The company adopted the local bargaining strategy after the United Food and Commercial Workers rejected its proposals for companywide concessions. (See *Monthly Labor Review*, June 1982, p. 64.) A&P indicated that it would form a subsidiary, Super Fresh Food Centers, Inc., to operate the reopened stores. Company chairman James A. Wood said the subsidiary would operate under a "unique collective bargaining agreement" that would include "incentives and investment programs" for the union members.

### Apartment house workers settle

In New York City, 30,000 employees of 3,500 apartment buildings were covered by a settlement between the Service Employees and the Realty Advisory Board. Wage terms included an immediate raise of \$24 a week, a \$21-increase in the second year, and \$20 in the final year. The cost-of-living adjustment formula was revised to provide for pay increases of 4 cents an hour (formerly 3) for each percentage point rise above 8.5 percent in the Consumer Price Index for New York, N.Y.—Northeastern, N.J.

Benefit provisions included an 11th paid holiday—with individual employees given the choice of selecting Good Friday, Yom Kippur, or the birthday of Dr. Martin Luther King Jr.; and full pay (instead of 70 percent) for unused sick leave.

### Insurance companies offer early retirement

Three major insurance companies offered special early retirement inducements to 3,600 employees to help reduce operating costs in the face of a slowdown in sales resulting from increased competition and the economic recession. Two of the companies—Metropolitan Life Insurance Co. and Continental Corp.—indicated that the retirement inducements were an alternative to possible layoffs.

At Metropolitan, the offer applied to 500 workers at its New York City and San Francisco regional headquarters. The workers, most of them in their fifties, were offered payments of up to 1.5 years of salary as an inducement to early retirement. The company also reported that it eliminated 9,000 sales agent jobs through attrition during the last 10 years.

At Continental, 900 of 1,400 eligible employees had already accepted the offer, which included lump-sum payments up to 6 months' pay plus special pension supplements continuing to age 62.

Prudential Insurance Co.'s offer to 1,700 workers included cash payments of up to a year of salary. About



300 to 400 workers are expected to accept the offer. The company said that early retirement would relieve "surplus staffing" and also open promotions to more women and members of minority groups.

### **Workweek reduced for State employees**

Idaho Governor John Evans ordered a 20-percent reduction in the workweek and pay of more than 3,000 State employees to help balance the budget for the fiscal year that ended June 30. The cut lasted 7 weeks and applied only to workers paid from the State's general fund; about 10,000 other workers were not affected. The balance of the \$12 million shortfall was to be made up by deferring purchases, restricting travel, and a hiring freeze. The deficit resulted from reduced tax collections.

### **UFW, Teamsters again settle jurisdictional dispute**

Renewal of jurisdictional disputes between the United Farm Workers and the Teamsters over organizing agricultural workers in California and other Western States was averted when a peace treaty, scheduled to expire in March, was extended for 1 year. The original 5-year treaty, signed in 1977, ended a struggle between the unions that began about 10 years earlier. (See *Monthly Labor Review*, May 1977, pp. 57-58). Under the agreement, the Farm Workers organize workers engaged in growing agricultural products and the Teamsters organize workers engaged in processing, preserving, and transporting farm products.

Prior to announcement of the agreement extension, Farm Workers' President Cesar Chavez had blamed the Teamsters for his union's financial and operating difficulties. A Teamsters' official said that if his union stayed out of farm labor, "it will give the lie to those who say we Teamsters are to blame for the weakening or the end of the UFW."

### **State employees get raise, minus 2 weeks of pay**

About 165,000 employees of New York State were covered by 3-year agreements that provided similar overall gains in wages and benefits. All of the contracts provided for adoption of delays in paydays that were expected to save the State \$88 million this fiscal year.

One of the settlements involved 107,000 administrative, clerical, and blue-collar employees represented by the Civil Service Employees Association. It provided for

a 9-percent pay increase on April 1, 1982, and for 5 percent increases on April 1 and September 1 of 1983 and 1984. These employees previously averaged \$11,395 a year. To help minimize the immediate cost of this accord, which also called for benefit improvements, the union agreed to a 2-week lag in payrolls. Under this procedure, paychecks will be delayed 1 additional day in each biweekly pay period, resulting in a cumulative delay of 10 workdays. At retirement, workers will be paid for the 10 days at the pay rates they are then receiving.

In a change sought by the union, the parties agreed to end a performance evaluation system which tied workers' pay to managements' assessment of their work. Instead, the parties agreed to return to the prior system, under which all workers in a particular grade will receive the same increase, if their individual performance is at least satisfactory.

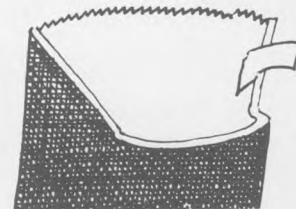
The second settlement, covering 47,000 professional, scientific, and technical workers, provided for a 9-percent salary increase effective April 1, 1982, and for 8 percent increases on each of the next two anniversaries. This settlement, negotiated by the Public Employees Federation, also provided that workers hired after March 31, 1982, accrue 10 days of sick leave and 3 days of personal leave a year, while those already on the payroll will continue to accrue 13 days of sick leave and 5 days of personal leave.

The final settlement, with Council 82 of the State, County and Municipal Employees, provided for essentially the same provisions as those won by the Civil Service Employees Association. One difference was that the withholding of 2 weeks of pay will be accomplished by paying employees for 9½ days (instead of 10 days) for 20 consecutive pay periods.

### **Ship pilots get pay increase**

The 39 pilots who maneuver ships on the lower Columbia River will earn about \$90,000 a year (an 11-percent increase) as a result of a decision by the Oregon Board of Maritime Pilots. The pilots earnings now are calculated at 6.2 cents per registered ton and \$9.35 per draft foot, rising by 10 percent each in February 1983. In addition, they will receive a surcharge of \$100 for each 50 feet of ship length above 699 feet. The pilots handled an average of 133 ships in 1980. Similar increases were being considered for other ship pilots in the area. □

# Book Reviews



## Social policies for the aging

*The Elderly and the Future Economy.* By Lawrence Olsen, Christopher Caton, and Martin Duffy, with contributions by Michael Shannon and Robert Tannenwald. Lexington, Mass., D. C. Heath and Co., Lexington Books, 1981. 143 pp., bibliography. \$19.95.

This book was prepared by Lawrence Olsen, Christopher Caton, and Martin Duffy, all members of the staff of Data Resources, Inc. (DRI), to supplement the work of the Technical Committee on the Economy of the recent 1981 White House Conference on Aging. Using forecasting techniques based on two simulation models, the authors attempt to assess the general macroeconomic outlook for the period 1980 through 2005, how various age groups in the population will fare during this time period, and the effect on both the income position and status of both elderly and nonelderly individuals and families if four policy options, or a mix thereof, were to be enacted and put into operation over the next 25 years or so.

The four policy options selected for analysis were (1) increased labor force participation of "elderly" workers (age 65 and over) and "nonelderly" workers (age 55-64); (2) a national income guarantee program for the elderly; (3) an increase in personal saving rates by the nonelderly beginning in 1981, and (4) "investment-oriented" corporate tax cuts, also beginning in 1981. No detailed rationale is provided for the selection of these options, only one of which is an income transfer proposal.

After introductory and review of the literature chapters, chapter 3 outlines the DRI baseline simulation model of the economy through 2005. It forecasts slower rates of increase for both the GNP and consumption growth than experienced over the past two decades, only a slow moderation of inflation, and a slowing of the real-income growth of the elderly, at least when compared to the past decade or so. While the real income of the elderly as a group is projected to show some gains, the baseline model forecasts that significant numbers of the elderly population will have low incomes well into the 21st century. A welcome highlight

of chapter 3 is the explanation and discussion of the two models, the DRI Macroeconomic Model and the DRI Demographic-Economic Model of the Elderly. The latter was used to project trends in elderly and nonelderly income by various age groups (under age 55, 55-61, 62-64, 65-71, and 72 and over), by family status and income level. The authors are to be commended for the complete income distribution tables for each of these age groups, discussed in both the text and the appendices material.

The next four chapters cover the aforementioned policy options and their macroeconomic effects as well as their effects on income and its distribution between nonelderly and elderly individuals and families. Chapter 4 assesses the effect of increased labor force participation by older people, and both the macroeconomic and income status of the elderly show some general improvement under this option, although the very oldest and the poorest benefit little. Chapter 5 examines the effects of guaranteeing the elderly an adequate level of income beginning in 1981. Interestingly, the minimum standard for income adequacy was the Bureau of Labor Statistics' "Intermediate Budget Level for a Retired Couple in 1979 (\$8,562)," and indexed annually thereafter. While the initial annual cost of such an income guarantee is high, some \$18 billion the first year, it would have only minimal effects on the economy as a whole, and, of course, prove to be a highly effective mechanism for assuring income adequacy to elderly families and individuals in greatest economic need.

Chapters 6 and 7 discuss options that, in some ways, have either already been implemented or are among the objectives of the Reagan Administration. Chapter 6 analyzes the effects of a personal saving-rate increase by nonelderly workers of about 2-percent higher than the saving rate variable built into the DRI Macroeconomic Model. The personal savings option would lead, according to DRI's analyses, to an appreciable growth of the real gross national product, especially from the period 1986 on. However, gains for the elderly are projected as being slow under this option; not until the year 2000 would the average real income of the elderly population rise above its baseline amount. In chapter 7, investment-oriented corporate tax cuts are analyzed. While

economic growth substantially increases under this option, DRI points out that in the absence of new transfer initiatives, the elderly benefit less from the economic improvements that would result from this option than younger age groups. And, DRI emphasizes that this would be especially true for the poorest and the oldest among the older population.

The final chapter compares the various options with each other and with the baseline macroeconomic model. The authors argue for some mix of the various options discussed, although they point out that the greatest gains for the elderly would take place under either an increase in the labor force participation rates of the elderly and near elderly and, of course, the income guarantee option pegged to the BLS Intermediate Budget Level. It is a carefully written and analytical discussion that should aid policymakers at the national level, and those attempting to influence them, with a more sophisticated understanding of these options, their specific policy implications, and their effect on the economy as a whole.

Appendix A should also be mentioned. It includes the various assumptions used in the development of DRI's Macroeconomic simulation, including assumptions in such areas as labor force growth, employment and unemployment growth and rates, energy and energy policy, fiscal policy, consumption expenditures, housing, business investment, State and local spending, and productivity.

If one can assume that there is a fair degree of reliability in the basic DRI Macroeconomic Models and their Demographic-Economic Model, then this book may break some new ground insofar as social policy in the broad field of aging is concerned. The book should be particularly attractive to those working in the field of public retirement income programs, as legislators or policy analysts, including those analysts now working in various organizations attempting to influence national retirement income policy.

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### Another look at labor market theory

*Labor Economics: The Emerging Synthesis.* By Robert M. Fearn. Cambridge, Mass., Winthrop Publishers, 1981. 278 pp. \$14.50.

Robert Fearn, it appears, is determined to make economic labor market theory come alive. This book is among the new order of "analytical" labor economics texts emphasizing the applicability of neoclassical eco-

nomics theory and techniques in the analysis of contemporary labor market issues. Where other authors have failed, Fearn succeeds in (1) identifying the most pressing of today's labor problems and (2) presenting a cogent review of the most important literature bearing on the issues. Indeed, it is in the literature review of each issue that Fearn's book is generally at its best. Early in the work, however, it becomes clear that Fearn disregards his arsenal of knowledge and technique and becomes distracted on mundane side issues.

Fearn covers issues ranging from the economics of women's liberation to the traditional chapter on the distribution of income. His introduction includes an excellent discussion of the changing nature and emphasis of labor economic study. It is here that the topical approach is explained and justified. A telling omission, however, is any indication of the theoretical and quantitative sophistication assumed of the book's readers. This omission returns to haunt the work in many chapters, for it becomes apparent that Fearn's vacillation on the level of analysis stems from either uncertainty regarding the nature of his audience or a futile attempt to serve the purposes of all.

There are several excellent chapters in the book, representing Fearn's ability to identify a meaningful problem and synthesize available literature on the subject. Chapter 8, "The Demand for Human Capital," is a subject traditionally covered in most labor texts. Fearn's contribution to the issue is most enlightening in his presentation of ". . . practical lessons for career choosers, guidance counselors, and others." "The Economics of Unions" chapter is superb as a review of the recent literature. Unfortunately, the treatment of unionism as a consumer good, a monopoly influence, and a cheap screening device, suffers from unnecessary attempts to blend mathematical rigor into the analysis. The discussion of unionism is highlighted, nonetheless, by an empirical investigation of the determinants of union membership and union wage effects. An exceptional chapter, "Economics of Women's Liberation," presents a lucid explanation of female labor force participation influences and skillfully separates the economic from noneconomic forces.

Fearn's book makes a substantial contribution to the labor economics literature, particularly in presenting concepts, theories, and literature reviews in an interesting topical framework. This achievement is marred, however, by extended presentations of mathematical model specifications. If the author considers such elaborations to be necessary, they would more appropriately be presented as chapter appendices.

As many authors are prone to do, Fearn occasionally gets carried away with digressions that detract from the major components of this analysis. Such is the case in the first chapter, "Labor Markets and Labor Force At-



tachment," where the discussion of "communards" and communal living is stretched over 13 pages in the following sections: "Indifference Curve Analysis and Communal Distribution; A Small Commune, or Tea for Two; Communes and 'Copping' or 'Opting Out'; and Communes, Households and Labor Force Attachment." A similar redundancy shows up in the presentation of President Nixon's Family Assistance Plan (FAP) in the chapter on "Welfare Programs and Work Incentives." While Fearn presents a straightforward treatment of many of the major issues surrounding income maintenance programs, in place of his diversion to mathematical elucidation of the FAP model could have been a simple algebraic formulation demonstrating that the principal objectives of U.S. welfare policy are mutually inconsistent.

*Labor Economics: An Emerging Synthesis* should be read by students of labor economics (and teachers) interested in an up-to-date analysis of current labor problems. While I argue at some points with Fearn's presentation, I find the book generally to be free of major errors of analysis and interpretation.

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### Foreign policy: ways and means

*Solvency—The Price of Survival: An Essay on American Foreign Policy.* By James Chace. New York, Random House, Inc., 1981. 115 pp. \$9.95.

In a clear, accessible, even personable style, James Chace, the managing editor of *Foreign Affairs*, addresses the conduct of foreign relations and economic policy with broad, vigorous strokes. At the same time, he illuminates the subtle and generally unexamined interstices between these two fields with a clarity not too short of brilliance. After reading this book, we can understand that a \$1.5 trillion unfunded liability in the Social Security system may keep a strategic window of vulnerability open that much wider or that today's high rate of unemployment could mean that a U.S. Army division will have to go 1 more year without updating its equipment. These are some of the hard choices that must be made when competing commitments meet the reality of too scarce resources.

Tension between wants and means is the foundation of Chace's discussion of foreign policy. His analysis can be reduced, with admitted oversimplification, to a variety of accounting problems. On the debit side are the national security commitments, the international politi-

cal debts, the promises made to others in conducting foreign policy, and the huge domestic commitments America has made to its own people. On the credit side, there are the promises and commitments returned to the United States, the Nation's standing military power, and the fecundity of the economy. In such an accounting framework, Chace quotes Walter Lippmann:

... the level may vary at which a solvent balance is struck. If its expenditures are safely within its assured means, a family is solvent if it is poor, is well-to-do, or is rich. The same principle holds true of nations. The statesman of a strong country may balance its commitments at a high level or at a low. But whether he is conducting the affairs of Germany, which has had dynamic ambitions, or the affairs of Switzerland, which seeks to hold what it already has, or the United States, he must bring his means and ends into balance. If he does not, he will follow a course that leads to disaster.

James Chace argues that we are well along such a course. We have spent too much—Chace is especially mindful of Vietnam—and we are building too little.

The analysis of the economy and why it is not producing enough is less assured than Chace's commentary on foreign affairs. His economics rely heavily on the oldtime religion that holds its meetings in the middle of the road that runs past the Wall in lower Manhattan: The government has spent too much and taxed too little; the authorities have printed too much money to make up the difference; and we have all gotten too lazy and complacent in our labor. The theory is arguable, but the implications are clear—the United States is no longer so overwhelmingly dominant an economy that it can more or less demand, and generally get, its own political and economic terms on all issues. The United States must now choose between its "vital interests" and "secondary goals" and, in many ways, must learn to define these concepts in terms of the limited means available.

*Solvency* is a provocative and disturbing book. Words like "retrenchment" and "withdrawal" and even "isolation" can whisper through one's thoughts. Simple logical extension of Chace's theme of bringing means and ends into balance leads to thoughts of digging into a new, nuclear Fortress America. But I think Chace would agree that policy can be made to cope with the solvency crisis without drawing back from our basic commitment as the principal country among the free nations of the world. I would like to add that the parameters of that exercise may not ultimately be set in Washington's foreign policy councils, but on the boardroom tables and shop floors of America's production machine.

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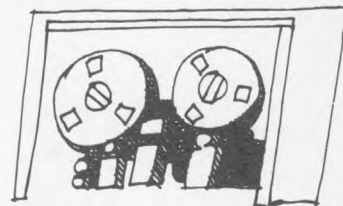
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# Current Labor Statistics



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## NOTES ON CURRENT LABOR STATISTICS

This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics. A brief introduction to each group of tables provides definitions, notes on the data, sources, and other material usually found in footnotes.

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

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

Seasonally adjusted labor force data in tables 2-7 were revised in the March 1982 issue of the *Review* to reflect experience through 1981. The original estimates also were revised to 1970 to reflect 1980 census population controls.

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

Annual revision of the seasonally adjusted payroll data in tables 11, 14, and 16 begins with the August 1980 issue using the X-11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in tables 30 and 31 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from quarter to quarter are

published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All Items CPI. Only seasonally adjusted percent changes are available for this series.

**Adjustments for price changes.** Some data are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of \$3 and a current price index number of 150, where 1967 = 100, the hourly rate expressed in 1967 dollars is \$2 ( $\$3/150 \times 100 = \$2$ ). The resulting values are described as "real," "constant," or "1967" dollars.

**Availability of information.** Data that supplement the tables in this section are published by the Bureau of Labor Statistics in a variety of sources. Press releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule given below. The *BLS Handbook of Labor Statistics*, Bulletin 2070, provides more detailed data and greater historical coverage for most of the statistical series presented in the *Monthly Labor Review*. More information from the household and establishment surveys is provided in *Employment and Earnings*, a monthly publication of the Bureau. Historically, comparable information from the establishment survey is published in two comprehensive data books—*Employment and Earnings, United States* and *Employment and Earnings, States and Areas*, and their annual supplements. More detailed information on wages and other aspects of collective bargaining appears in the monthly periodical, *Current Wage Developments*. More detailed price information is published each month in the periodicals, the *CPI Detailed Report* and *Producer Prices and Price Indexes*.

### Symbols

p = preliminary. To improve the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.

r = revised. Generally, this revision reflects the availability of later data but may also reflect other adjustments.

n.e.c. = not elsewhere classified.

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

Series	Release date	Period covered	Release date	Period covered	MLR table number
Employment situation .....	July 2	June	August 6	July	1-11
Producer Price Index .....	July 16	June	August 13	July	23-27
Consumer Price Index .....	July 23	June	August 24	July	19-22
Real earnings .....	July 23	June	August 24	July	12-17
Productivity and costs:					
Nonfarm business and manufacturing .....	July 29	2nd quarter	.....	.....	28-31
Nonfinancial corporations .....	.....	.....	August 26	2nd quarter	28-31
Employment Cost Index .....	.....	.....	August 19	2nd quarter	32-34



## EMPLOYMENT DATA FROM THE HOUSEHOLD SURVEY

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

### Definitions

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

**Unemployed persons** are those who did not work during the survey week, but were available for work except for temporary illness and had looked for jobs within the preceding 4 weeks. Persons who did not look for work because they were on layoff or waiting to start new jobs within the next 30 days are also counted among the unemployed. The **unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **civilian labor force** consists of all employed or unemployed persons in the civilian noninstitutional population; the **total labor force** includes military personnel. Persons **not in the labor force** are

those not classified as employed or unemployed; this group includes persons retired, those engaged in their own housework, those not working while attending school, those unable to work because of long-term illness, those discouraged from seeking work because of personal or job market factors, and those who are voluntarily idle. The **noninstitutional population** comprises all persons 16 years of age and older who are not inmates of penal or mental institutions, sanitariums, or homes for the aged, infirm, or needy.

**Full-time workers** are those employed at least 35 hours a week; **part-time workers** are those who work fewer hours. Workers on part-time schedules for economic reasons (such as slack work, terminating or starting a job during the week, material shortages, or inability to find full-time work) are among those counted as being on full-time status, under the assumption that they would be working full time if conditions permitted. The survey classifies unemployed persons in full-time or part-time status by their reported preferences for full-time or part-time work.

### Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the preceding years. These adjustments affect the comparability of historical data presented in table 1. A description of these adjustments and their effect on the various data series appear in the Explanatory Notes of *Employment and Earnings*.

Data in tables 2-7 are seasonally adjusted, based on the seasonal experience through December 1981.

Year	Total non-institutional population	Total labor force		Civilian labor force					Not in labor force	
		Number	Percent of population	Total	Employed			Unemployed		
					Total	Agriculture	Nonagri-cultural industries	Number		Percent of labor force
1950	106,645	63,858	59.9	62,208	58,918	7,160	51,758	3,288	5.3	42,787
1955	112,732	68,072	60.4	65,023	62,170	6,450	55,722	2,852	4.4	44,660
1960	119,759	72,142	60.2	69,628	65,778	5,458	60,318	3,852	5.5	47,617
1964	127,224	75,830	59.6	73,091	69,305	4,523	64,782	3,786	5.2	51,394
1965	129,236	77,178	59.7	74,455	71,088	4,361	66,726	3,366	4.5	52,058
1966	131,180	78,893	60.1	75,770	72,895	3,979	68,915	2,875	3.8	52,288
1967	133,319	80,793	60.6	77,347	74,372	3,844	70,527	2,975	3.8	52,527
1968	135,562	82,272	60.7	78,737	75,920	3,817	72,103	2,817	3.6	53,291
1969	137,841	84,240	61.1	80,734	77,902	3,606	74,296	2,832	3.5	53,602
1970	140,272	85,959	61.3	82,771	78,678	3,463	75,215	4,093	4.9	54,315
1971	143,033	87,198	61.0	84,382	79,367	3,394	75,972	5,016	5.9	55,834
1972	146,574	89,484	61.1	87,034	82,153	3,484	78,669	4,882	5.6	57,091
1973	149,423	91,756	61.4	89,429	85,064	3,470	81,594	4,365	4.9	57,667
1974	152,349	94,179	61.8	91,949	86,794	3,515	83,279	5,156	5.6	58,171
1975	155,333	95,955	61.8	93,775	85,846	3,408	82,438	7,929	8.5	59,377
1976	158,294	98,302	62.1	96,158	88,752	3,331	85,421	7,406	7.7	59,991
1977	161,166	101,142	62.8	99,009	92,017	3,283	88,734	6,991	7.1	60,025
1978	164,027	104,368	63.6	102,251	96,048	3,387	92,661	6,202	6.1	59,659
1979	166,951	107,050	64.1	104,962	98,824	3,347	95,477	6,137	5.8	59,900
1980	169,848	109,042	64.2	106,940	99,303	3,364	95,938	7,637	7.1	60,806
1981	172,272	110,812	64.3	108,670	100,397	3,368	97,030	8,273	7.6	61,460

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**2. Employment status by sex, age, and race, seasonally adjusted**

[Numbers in thousands]

Employment status	Annual average		1981								1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
<b>TOTAL</b>															
Total noninstitutional population <sup>1</sup>	169,848	172,272	171,956	172,172	172,385	172,559	172,758	172,966	173,155	173,330	173,495	173,657	173,843	174,020	174,201
Total labor force	109,042	110,812	111,420	110,565	110,827	110,978	110,659	111,170	111,430	111,348	111,038	111,333	111,521	111,824	112,841
Civilian noninstitutional population <sup>1</sup>	167,745	170,130	169,829	170,042	170,246	170,399	170,593	170,809	170,996	171,166	171,335	171,489	171,667	171,844	172,026
Civilian labor force	106,940	108,670	109,293	108,434	108,688	108,818	108,494	109,012	109,272	109,184	108,879	109,165	109,346	109,648	110,666
Employed	99,303	100,397	101,045	100,430	100,864	100,840	100,258	100,343	100,172	99,613	99,581	99,590	99,492	99,340	100,117
Agriculture	3,364	3,368	3,405	3,348	3,342	3,404	3,358	3,378	3,372	3,209	3,411	3,373	3,349	3,309	3,488
Nonagricultural industries	95,938	97,030	97,640	97,082	97,522	97,436	96,900	96,965	96,800	96,404	96,170	96,217	96,144	96,032	96,629
Unemployed	7,637	8,273	8,248	8,004	7,824	7,978	8,236	8,669	9,100	9,571	9,298	9,575	9,854	10,307	10,549
Unemployment rate	7.1	7.6	7.5	7.4	7.2	7.3	7.6	8.0	8.3	8.8	8.5	8.8	9.0	9.4	9.5
Not in labor force	60,806	61,460	60,536	61,608	61,558	61,581	62,099	61,797	61,724	61,982	62,456	62,324	62,321	62,197	61,360
<b>Men, 20 years and over</b>															
Civilian noninstitutional population <sup>1</sup>	71,138	72,419	72,251	72,359	72,472	72,559	72,670	72,795	72,921	73,020	73,120	73,209	73,287	73,392	73,499
Civilian labor force	56,455	57,197	57,479	57,094	57,172	57,250	57,262	57,355	57,459	57,665	57,368	57,448	57,554	57,730	58,164
Employed	53,101	53,582	53,884	53,597	53,874	53,791	53,693	53,504	53,354	53,122	53,047	53,097	53,006	52,988	53,260
Agriculture	2,396	2,384	2,390	2,379	2,383	2,422	2,383	2,413	2,382	2,311	2,390	2,386	2,377	2,382	2,464
Nonagricultural industries	50,706	51,199	51,494	51,218	51,491	51,369	51,310	51,091	50,972	50,811	50,657	50,711	50,629	50,606	50,796
Unemployed	3,353	3,615	3,595	3,497	3,298	3,459	3,569	3,851	4,105	4,543	4,322	4,351	4,548	4,742	4,904
Unemployment rate	5.9	6.3	6.3	6.1	5.8	6.0	6.2	6.7	7.1	7.9	7.5	7.6	7.9	8.2	8.4
Not in labor force	14,683	15,222	14,772	15,265	15,300	15,309	15,408	15,440	15,462	15,355	15,752	15,761	15,733	15,662	15,335
<b>Women, 20 years and over</b>															
Civilian noninstitutional population <sup>1</sup>	80,065	81,497	81,308	81,434	81,561	81,671	81,792	81,920	82,038	82,151	82,260	82,367	82,478	82,591	82,707
Civilian labor force	41,106	42,485	42,608	42,581	42,682	42,666	42,344	42,831	42,987	42,888	42,868	43,031	43,243	43,301	43,683
Employed	38,492	39,590	39,737	39,757	39,810	39,841	39,426	39,814	39,878	39,713	39,764	39,744	39,807	39,715	40,075
Agriculture	584	604	605	585	590	609	608	596	635	572	649	628	636	601	634
Nonagricultural industries	37,907	38,986	39,132	39,172	39,220	39,232	38,818	39,218	39,243	39,141	39,115	39,116	39,172	39,114	39,441
Unemployed	2,615	2,895	2,871	2,824	2,872	2,825	2,918	3,017	3,109	3,175	3,104	3,286	3,435	3,586	3,608
Unemployment rate	6.4	6.8	6.7	6.6	6.7	6.6	6.9	7.0	7.2	7.4	7.2	7.6	7.9	8.3	8.3
Not in labor force	38,959	39,012	38,700	38,853	38,879	39,005	39,448	39,089	39,051	39,263	39,392	39,336	39,235	39,290	39,024
<b>Both sexes, 16 to 19 years</b>															
Civilian noninstitutional population <sup>1</sup>	16,543	16,214	16,270	16,249	16,213	16,169	16,131	16,093	16,037	15,995	15,955	15,913	15,902	15,861	15,820
Civilian labor force	9,378	9,988	9,206	8,759	8,834	8,902	8,888	8,826	8,826	8,631	8,643	8,686	8,549	8,616	8,819
Employed	7,710	7,225	7,424	7,076	7,180	7,208	7,139	7,025	6,940	6,778	6,771	6,748	6,679	6,637	6,782
Agriculture	385	380	410	384	369	373	367	369	355	326	373	359	336	326	390
Nonagricultural industries	7,325	6,845	7,014	6,692	6,811	6,835	6,772	6,656	6,585	6,452	6,398	6,389	6,343	6,311	6,392
Unemployed	1,669	1,763	1,782	1,683	1,654	1,694	1,749	1,801	1,886	1,853	1,872	1,938	1,870	1,979	2,037
Unemployment rate	17.8	19.6	19.4	19.2	18.7	19.0	19.7	20.4	21.4	21.5	21.7	22.3	21.9	23.0	23.1
Not in labor force	7,165	7,226	7,064	7,490	7,379	7,267	7,243	7,267	7,211	7,364	7,312	7,227	7,353	7,245	7,001
<b>White</b>															
Civilian noninstitutional population <sup>1</sup>	146,122	147,908	147,670	147,804	147,976	148,144	148,370	148,562	148,631	148,755	148,842	148,855	149,132	149,249	149,250
Civilian labor force	93,600	95,052	95,666	94,887	95,126	95,163	94,884	95,365	95,535	95,329	95,120	95,333	95,508	96,015	96,641
Employed	87,715	88,709	89,237	88,799	89,170	89,221	88,628	88,734	88,498	88,010	87,955	87,990	87,956	87,988	88,450
Unemployed	5,884	6,343	6,429	6,088	5,956	5,942	6,256	6,631	7,037	7,319	7,165	7,344	7,552	8,026	8,191
Unemployment rate	6.3	6.7	6.7	6.4	6.3	6.2	6.6	7.0	7.4	7.7	7.5	7.7	7.9	8.4	8.5
Not in labor force	52,522	52,856	52,004	52,917	52,850	52,981	53,486	53,197	53,096	53,426	53,722	53,522	53,624	53,234	52,609
<b>Black</b>															
Civilian noninstitutional population <sup>1</sup>	17,824	18,219	18,170	18,206	18,239	18,266	18,297	18,333	18,362	18,392	18,423	18,450	18,480	18,511	18,542
Civilian labor force	10,865	11,086	11,126	11,033	10,971	11,069	11,134	11,188	11,207	11,226	11,188	11,205	11,217	11,170	11,335
Employed	9,313	9,355	9,460	9,310	9,338	9,267	9,319	9,313	9,321	9,279	9,314	9,265	9,197	9,111	9,216
Unemployed	1,553	1,731	1,666	1,723	1,633	1,802	1,815	1,875	1,886	1,947	1,874	1,939	2,020	2,058	2,120
Unemployment rate	14.3	15.6	15.0	15.6	14.9	16.3	16.3	16.8	16.8	17.3	16.8	17.3	18.0	18.4	18.7
Not in labor force	6,959	7,133	7,044	7,173	7,268	7,197	7,163	7,145	7,155	7,166	7,235	7,245	7,263	7,341	7,207

<sup>1</sup>As in table 1, population figures are not seasonally adjusted.

c = corrected.

### 3. Selected employment indicators, seasonally adjusted

[Numbers in thousands]

Selected categories	Annual average		1981								1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
<b>CHARACTERISTIC</b>															
Total employed, 16 years and over .....	99,303	100,397	101,045	100,430	100,864	100,840	100,258	100,343	100,172	99,613	99,581	99,590	99,492	99,340	100,117
Men .....	57,186	57,397	57,793	57,279	57,640	57,551	57,471	57,266	57,051	56,725	56,629	56,658	56,472	56,401	56,820
Women .....	42,117	43,000	43,252	43,151	43,224	43,289	42,787	43,077	43,121	42,888	42,962	42,932	43,020	42,940	43,297
Married men, spouse present .....	39,004	38,882	39,120	38,930	38,961	38,961	38,855	38,746	38,553	38,342	38,234	38,255	38,181	38,142	38,312
Married women, spouse present .....	23,532	23,915	24,192	24,106	24,159	24,043	23,626	23,874	23,820	23,691	23,744	23,727	23,900	23,831	24,213
<b>OCCUPATION</b>															
White-collar workers .....	51,882	52,949	53,016	52,957	52,907	53,141	52,908	53,199	53,086	53,084	52,836	52,841	52,763	53,177	53,705
Professional and technical .....	15,968	16,420	16,093	16,410	16,364	16,621	16,598	16,681	16,657	16,774	16,803	16,612	16,659	16,844	16,818
Managers and administrators, except farm .....	11,138	11,540	11,488	11,411	11,578	11,460	11,533	11,616	11,461	11,424	11,091	11,253	11,311	11,501	11,541
Salesworkers .....	6,303	6,425	6,562	6,513	6,373	6,490	6,441	6,400	6,418	6,450	6,520	6,544	6,637	6,603	6,587
Clerical workers .....	18,473	18,564	18,873	18,623	18,592	18,570	18,336	18,502	18,550	18,436	18,423	18,432	18,155	18,229	18,759
Blue-collar workers .....	31,452	31,261	31,796	31,538	31,580	31,611	31,266	30,953	30,683	30,344	30,203	30,309	30,416	29,924	29,926
Craft and kindred workers .....	12,787	12,662	12,911	12,749	12,787	12,724	12,514	12,446	12,411	12,446	12,370	12,454	12,511	12,492	12,316
Operatives, except transport .....	10,565	10,540	10,716	10,703	10,719	10,658	10,524	10,410	10,220	10,169	9,966	9,955	9,860	9,688	9,585
Transport equipment operatives .....	3,531	3,476	3,466	3,493	3,526	3,530	3,506	3,580	3,438	3,368	3,415	3,503	3,397	3,400	3,419
Nonfarm laborers .....	4,567	4,583	4,703	4,593	4,548	4,699	4,722	4,517	4,614	4,361	4,451	4,397	4,648	4,343	4,607
Service workers .....	13,228	13,438	13,470	13,214	13,526	13,282	13,391	13,525	13,670	13,639	13,709	13,612	13,526	13,555	13,738
Farmworkers .....	2,741	2,749	2,748	2,710	2,727	2,753	2,743	2,770	2,802	2,660	2,817	2,787	2,710	2,623	2,731
<b>MAJOR INDUSTRY AND CLASS OF WORKER</b>															
Agriculture:															
Wage and salary workers .....	1,425	1,464	1,499	1,437	1,495	1,501	1,461	1,502	1,436	1,352	1,377	1,426	1,416	1,423	1,541
Self-employed workers .....	1,642	1,638	1,654	1,664	1,593	1,638	1,643	1,631	1,641	1,602	1,674	1,596	1,644	1,664	1,698
Unpaid family workers .....	297	266	235	263	244	256	256	261	321	228	380	359	277	270	236
Nonagricultural industries:															
Wage and salary workers .....	88,525	89,543	90,402	89,508	89,971	89,995	89,376	89,460	89,238	88,991	88,759	88,586	88,526	88,322	89,051
Government .....	15,912	15,689	15,776	15,707	15,637	15,526	15,475	15,491	15,397	15,585	15,578	15,527	15,492	15,453	15,422
Private industries .....	72,612	73,853	74,626	73,801	74,334	74,469	73,901	73,969	73,841	73,406	73,181	73,059	73,034	72,869	73,629
Private households .....	1,192	1,208	1,192	1,177	1,216	1,259	1,102	1,162	1,204	1,291	1,248	1,161	1,225	1,192	1,202
Other industries .....	71,420	72,645	73,434	72,624	73,118	73,210	72,799	72,807	72,637	72,115	71,932	71,898	71,809	71,677	72,427
Self-employed workers .....	7,000	7,097	6,966	7,128	7,071	7,103	7,217	7,152	7,141	7,057	6,971	7,055	7,126	7,264	7,269
Unpaid family workers .....	413	390	356	376	389	387	399	451	425	410	410	408	434	413	382
<b>PERSONS AT WORK<sup>1</sup></b>															
Nonagricultural industries .....	90,209	91,377	91,745	91,500	92,532	91,569	90,878	91,384	91,323	90,922	90,125	90,892	90,548	90,596	91,282
Full-time schedules .....	73,590	74,339	74,871	74,693	75,620	74,467	73,794	73,886	73,915	73,360	72,803	73,028	72,649	72,335	73,036
Part time for economic reasons .....	4,064	4,499	4,264	4,033	4,374	4,350	4,656	5,009	5,026	5,288	5,071	5,563	5,717	5,834	5,763
Usually work full time .....	1,714	1,738	1,657	1,465	1,680	1,729	1,759	2,006	1,945	2,121	1,783	2,193	2,237	2,223	2,211
Usually work part time .....	2,350	2,761	2,607	2,568	2,694	2,621	2,897	3,003	3,081	3,167	3,287	3,370	3,480	3,611	3,552
Part time for noneconomic reasons .....	12,555	12,539	12,610	12,774	12,538	12,752	12,428	12,489	12,382	12,274	12,251	12,300	12,183	12,427	12,483

<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.



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

[Unemployment rates]

Selected categories	Annual average		1981									1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
<b>CHARACTERISTIC</b>																
Total, 16 years and over .....	7.1	7.6	7.5	7.4	7.2	7.3	7.6	8.0	8.3	8.8	8.5	8.8	9.0	9.4	9.5	
Men, 20 years and over .....	5.9	6.3	6.3	6.1	5.8	6.0	6.2	6.7	7.1	7.9	7.5	7.6	7.9	8.2	8.4	
Women, 20 years and over .....	6.4	6.8	6.7	6.6	6.7	6.6	6.9	7.0	7.2	7.4	7.2	7.6	7.9	8.3	8.3	
Both sexes, 16 to 19 years .....	17.8	19.6	19.4	19.2	18.7	19.0	19.7	20.4	21.4	21.5	21.7	22.3	21.9	23.0	23.1	
White, total .....	6.3	6.7	6.7	6.4	6.3	6.2	6.6	7.0	7.4	7.7	7.5	7.7	7.9	8.4	8.5	
Men, 20 years and over .....	5.3	5.6	5.6	5.3	5.0	5.2	5.5	5.9	6.4	6.9	6.6	6.7	7.0	7.3	7.5	
Women, 20 years and over .....	5.6	5.9	5.9	5.7	5.8	5.5	5.9	6.1	6.3	6.4	6.3	6.6	6.9	7.2	7.3	
Both sexes, 16 to 19 years .....	15.5	17.3	17.5	16.8	16.4	16.1	17.2	17.7	19.0	19.0	19.6	20.0	19.0	20.8	20.3	
Black, total .....	14.3	15.6	15.0	15.6	14.9	16.3	16.3	16.8	16.8	17.3	16.8	17.3	18.0	18.4	18.7	
Men, 20 years and over .....	12.4	13.5	13.0	13.7	12.7	13.6	14.5	14.7	15.5	16.5	16.3	16.0	16.0	16.9	17.0	
Women, 20 years and over .....	11.9	13.4	13.1	13.3	13.1	13.8	14.0	13.9	13.6	14.1	13.3	14.5	15.4	15.6	15.3	
Both sexes, 16 to 19 years .....	38.5	41.4	36.9	40.9	40.0	49.0	40.8	45.6	44.1	42.2	41.2	42.3	46.0	48.1	49.8	
Married men, spouse present .....	4.2	4.3	4.0	4.2	3.9	4.0	4.4	4.8	5.2	5.7	5.3	5.3	5.5	6.0	6.1	
Married women, spouse present .....	5.8	6.0	5.8	5.7	5.7	5.5	6.0	6.1	6.5	6.6	6.2	7.0	7.1	7.8	7.4	
Women who maintain families .....	9.2	10.4	10.4	10.7	11.2	10.1	10.7	10.6	10.8	10.5	10.4	10.2	10.6	11.5	11.8	
Full-time workers .....	6.9	7.3	7.1	7.1	6.8	6.9	7.3	7.7	8.1	8.7	8.4	8.5	8.9	9.2	9.2	
Part-time workers .....	8.8	9.4	9.6	9.2	9.3	9.6	9.6	9.5	10.2	9.2	9.6	10.8	10.0	10.9	10.5	
Unemployed 15 weeks and over .....	1.7	2.1	2.0	2.2	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.5	2.7	2.7	3.0	
Labor force time lost <sup>1</sup> .....	7.9	8.5	8.6	7.9	7.9	7.9	8.5	9.1	9.5	10.1	10.0	9.8	10.4	10.4	11.1	
<b>OCCUPATION</b>																
White-collar workers .....	3.7	4.0	4.0	3.9	4.0	3.9	4.1	4.1	4.2	4.5	4.2	4.6	4.8	4.9	4.8	
Professional and technical .....	2.5	2.8	2.8	2.8	2.8	2.5	2.8	2.6	2.7	3.4	2.9	3.1	3.2	3.2	3.3	
Managers and administrators, except farm .....	2.4	2.7	2.6	2.7	2.6	2.7	2.7	2.8	3.0	3.1	2.7	3.1	3.0	3.3	3.5	
Salesworkers .....	4.4	4.6	4.6	4.3	4.9	4.7	5.0	4.9	5.0	4.9	4.5	4.8	5.8	5.6	5.2	
Clerical workers .....	5.3	5.7	5.6	5.4	5.7	5.7	5.8	6.0	6.0	6.2	6.3	6.7	6.9	7.2	6.8	
Blue-collar workers .....	10.0	10.3	9.9	9.8	9.5	9.5	10.2	10.9	11.8	12.7	12.5	12.5	12.9	13.7	13.5	
Craft and kindred workers .....	6.6	7.5	7.2	7.1	6.9	7.0	7.7	8.3	8.5	9.3	9.0	8.4	9.1	9.6	9.4	
Operatives, except transport .....	12.2	12.2	11.8	11.1	11.1	11.1	11.6	12.8	14.1	15.5	15.4	15.4	15.9	16.9	16.5	
Transport equipment operatives .....	8.8	8.7	8.2	8.1	7.3	8.0	8.7	8.0	10.4	10.5	10.2	10.3	10.4	10.7	11.8	
Nonfarm laborers .....	14.6	14.7	13.5	14.7	14.4	13.2	14.6	15.6	16.0	16.9	16.9	17.9	17.9	19.2	18.3	
Service workers .....	7.9	8.9	9.4	8.9	8.0	8.9	9.0	9.3	9.7	9.6	9.2	9.8	10.2	11.1	11.3	
Farmworkers .....	4.6	5.3	5.2	6.2	4.8	5.4	4.0	6.2	6.2	6.4	6.9	4.9	5.4	5.8	8.3	
<b>INDUSTRY</b>																
Nonagricultural private wage and salary workers <sup>2</sup> .....	7.4	7.7	7.7	7.4	7.2	7.3	7.7	8.1	8.4	9.1	8.8	9.0	9.5	9.9	9.9	
Construction .....	14.1	15.6	15.7	16.1	15.2	16.2	16.3	17.6	17.8	18.1	18.7	18.1	17.9	19.4	18.8	
Manufacturing .....	8.5	8.3	7.8	7.4	7.3	7.0	7.9	8.6	9.4	11.0	10.4	10.6	10.8	11.3	11.6	
Durable goods .....	8.9	8.2	7.4	7.1	7.1	6.5	7.7	8.6	9.5	11.8	11.0	11.3	10.8	11.9	12.2	
Non-durable goods .....	7.9	8.4	8.6	7.9	7.6	7.9	8.3	8.6	9.3	9.6	9.5	9.5	10.8	10.5	10.7	
Transportation and public utilities .....	4.9	5.2	5.7	4.9	4.1	4.8	4.2	4.8	5.5	6.0	6.4	5.9	5.6	7.0	6.5	
Wholesale and retail trade .....	7.4	8.1	8.3	7.7	7.9	7.9	8.5	8.4	8.6	8.9	8.7	9.0	10.3	10.1	10.6	
Finance and service industries .....	5.3	5.9	5.8	5.8	5.7	5.7	6.0	6.2	6.1	6.4	5.9	6.5	6.9	7.0	6.9	
Government workers .....	4.1	4.7	4.7	4.6	4.6	4.5	4.7	4.7	5.2	5.0	4.8	5.2	4.9	5.3	5.0	
Agricultural wage and salary workers .....	11.0	12.1	11.0	13.3	10.7	12.0	11.0	13.4	14.1	14.8	16.2	12.8	14.0	14.6	18.2	

<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.

<sup>2</sup> Includes mining, not shown separately.

### 5. Unemployment rates, by sex and age, seasonally adjusted

Sex and age	Annual average		1981									1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
Total, 16 years and over	7.1	7.6	7.5	7.4	7.2	7.3	7.6	8.0	8.3	8.8	8.5	8.8	9.0	9.4	9.5	
16 to 19 years	17.8	19.6	19.4	19.2	18.7	19.0	19.7	20.4	21.4	21.5	21.7	22.3	21.9	23.0	23.1	
16 to 17 years	20.0	21.4	21.3	22.6	19.8	20.8	21.4	21.5	22.6	21.9	21.9	22.7	22.7	24.6	25.3	
18 to 19 years	16.2	18.4	17.7	17.5	17.8	17.6	18.5	20.0	20.5	21.2	21.3	22.0	21.3	21.9	21.3	
20 to 24 years	11.5	12.3	12.6	12.1	11.5	12.1	12.3	12.7	13.0	13.5	13.5	14.1	14.2	14.7	14.3	
25 years and over	5.1	5.4	5.2	5.3	5.2	5.2	5.4	5.7	6.0	6.5	6.3	6.4	6.8	7.0	7.1	
25 to 54 years	5.5	5.8	5.6	5.6	5.5	5.5	5.8	6.2	6.5	6.9	6.7	6.8	7.3	7.4	7.7	
55 years and over	3.3	3.6	3.4	3.5	3.5	3.5	3.8	3.8	3.8	4.1	4.2	4.3	4.6	5.0	4.8	
Men, 16 years and over	6.9	7.4	7.3	7.2	6.7	7.1	7.3	7.7	8.3	9.0	8.6	8.7	9.0	9.4	9.6	
16 to 19 years	18.3	20.1	20.0	20.0	18.8	19.8	19.9	20.1	21.8	22.3	22.1	22.5	23.5	24.4	24.0	
16 to 17 years	20.4	22.0	22.3	24.0	19.9	21.5	21.5	21.1	22.7	22.6	23.0	23.0	24.3	24.7	26.3	
18 to 19 years	16.7	18.8	18.0	18.2	17.9	18.3	18.7	19.3	21.0	22.2	21.4	22.1	22.9	24.3	21.9	
20 to 24 years	12.5	13.2	13.8	12.9	11.6	12.9	13.1	13.8	14.4	14.8	14.9	15.4	15.7	16.0	15.5	
25 years and over	4.8	5.1	4.7	5.0	4.7	4.9	5.0	5.5	5.8	6.5	6.3	6.3	6.6	6.9	6.9	
25 to 54 years	5.1	5.5	5.1	5.2	5.0	5.2	5.5	5.9	6.3	6.9	6.7	6.7	7.1	7.2	7.5	
55 years and over	3.3	3.5	3.4	3.4	3.4	3.4	3.5	3.7	3.7	4.4	4.3	4.2	4.8	5.1	4.7	
Women, 16 years and over	7.4	7.9	7.8	7.7	7.8	7.7	8.0	8.2	8.4	8.5	8.4	8.9	9.0	9.4	9.5	
16 to 19 years	17.2	19.0	18.7	18.4	18.6	18.2	19.5	20.7	20.9	20.5	21.2	22.1	20.1	21.3	22.1	
16 to 17 years	19.6	20.7	20.2	21.1	19.7	20.0	21.2	21.9	22.5	21.1	20.6	22.5	20.8	24.5	24.1	
18 to 19 years	15.6	17.9	17.4	16.8	17.7	16.9	18.3	20.6	19.9	20.0	21.1	21.9	19.6	19.4	20.6	
20 to 24 years	10.4	11.2	11.2	11.2	11.3	11.1	11.4	11.5	11.3	12.0	11.9	12.7	12.6	13.3	12.9	
25 years and over	5.5	5.9	5.8	5.7	5.8	5.6	6.0	6.1	6.4	6.4	6.3	6.5	7.0	7.2	7.4	
25 to 54 years	6.0	6.3	6.4	6.1	6.1	6.0	6.3	6.5	6.8	6.9	6.7	7.0	7.6	7.7	8.0	
55 years and over	3.2	3.8	3.4	3.5	3.7	3.7	4.3	4.0	3.8	3.7	4.1	4.3	4.3	4.8	5.0	

### 6. Unemployed persons, by reason for unemployment, seasonally adjusted

[Numbers in thousands]

Reason for unemployment	1981									1982				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
<b>NUMBER OF UNEMPLOYED</b>														
Lost last job	4,032	4,173	3,867	4,106	4,426	4,573	4,905	5,343	5,205	5,153	5,622	5,906	5,901	
On layoff	1,357	1,302	1,225	1,276	1,452	1,631	1,826	2,042	1,860	1,740	1,828	1,946	1,969	
Other job losers	2,675	2,871	2,642	2,830	2,974	2,942	3,079	3,301	3,345	3,413	3,794	3,959	3,932	
Left last job	1,004	896	926	879	921	976	916	923	835	964	885	937	874	
Reentered labor force	2,106	2,039	2,078	2,034	2,058	2,178	2,339	2,244	2,079	2,277	2,249	2,365	2,438	
Seeking first job	956	973	940	971	977	1,002	996	1,021	1,055	1,100	1,044	1,081	1,154	
<b>PERCENT DISTRIBUTION</b>														
Total unemployed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Job losers	49.8	51.6	49.5	51.4	52.8	52.4	53.6	56.1	56.7	54.3	57.4	57.4	56.9	
On layoff	16.8	16.1	15.7	16.0	17.3	18.7	19.9	21.4	20.3	18.3	18.7	18.9	19.0	
Other job losers	33.0	35.5	33.8	35.4	35.5	33.7	33.6	34.6	36.5	35.9	38.7	38.5	37.9	
Job leavers	12.4	11.1	11.9	11.0	11.0	11.2	10.0	9.7	9.1	10.2	9.0	9.1	8.4	
Reentrants	26.0	25.2	26.6	25.5	24.6	25.0	25.5	23.5	22.7	24.0	22.9	23.0	23.5	
New entrants	11.8	12.0	12.0	12.2	11.7	11.5	10.9	10.7	11.5	11.6	10.7	10.5	11.1	
<b>UNEMPLOYED AS A PERCENT OF THE CIVILIAN LABOR FORCE</b>														
Job losers	3.7	3.8	3.6	3.8	4.1	4.2	4.5	4.9	4.8	4.7	5.1	5.4	5.3	
On layoff	.9	.8	.9	.8	.8	.9	.8	.8	.8	.9	.8	.9	.8	
Other job losers	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	1.9	2.1	2.1	2.2	2.2	
Job leavers	.9	.9	.9	.9	.9	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	

### 7. Duration of unemployment, seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1981									1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
Less than 5 weeks	3,295	3,449	3,378	3,303	3,323	3,326	3,529	3,707	3,852	4,037	3,852	3,789	3,825	3,958	3,874	
5 to 14 weeks	2,470	2,539	2,606	2,423	2,312	2,469	2,585	2,686	2,882	3,016	3,068	3,052	3,078	3,304	3,320	
15 weeks and over	1,871	2,285	2,231	2,363	2,170	2,217	2,248	2,292	2,364	2,372	2,399	2,724	2,954	3,015	3,286	
15 to 26 weeks	1,052	1,122	1,061	1,227	1,096	1,078	1,146	1,166	1,229	1,189	1,210	1,445	1,605	1,508	1,634	
27 weeks and over	820	1,162	1,170	1,136	1,074	1,139	1,102	1,126	1,135	1,183	1,190	1,278	1,349	1,507	1,652	
Average (mean) duration, in weeks	11.9	13.7	13.3	14.3	14.1	14.3	13.7	13.6	13.1	12.8	13.5	14.1	13.9	14.2	14.6	

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

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by 177,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

### Definitions

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

**Production workers** in manufacturing include blue-collar worker supervisors and all nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12-17 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in transportation and public utilities; in wholesale and retail trade; in finance, insurance, and real estate; and in services industries. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

**Earnings** are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special

payments. **Real earnings** are earnings adjusted to eliminate the effects of price change, using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). The **Hourly Earnings Index** is calculated from average hourly earnings data adjusted to exclude the effects of two types of changes that are unrelated to underlying wage-rate developments: fluctuations in overtime premiums in manufacturing (the only sector for which overtime data are available) and the effects of changes and seasonal factors in the proportion of workers in high-wage and low-wage industries.

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

### Notes on the data

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

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9-20. See also *BLS Handbook of Methods for Surveys and Studies*, Bulletin 1910 (Bureau of Labor Statistics, 1976).



## 8. Employment by industry, selected years, 1950-81

[Nonagricultural payroll data, in thousands]

Year	Total	Mining	Construction	Manufacturing	Transportation and public utilities	Wholesale and retail trade	Wholesale trade	Retail trade	Finance, insurance, and real estate	Services	Government		
											Total	Federal	State and local
1950	45,197	901	2,364	15,241	4,034	9,386	2,635	6,751	1,888	5,357	6,026	1,928	4,098
1955	50,641	792	2,839	16,882	4,141	10,535	2,926	7,610	2,298	6,240	6,914	2,187	4,727
1960 <sup>1</sup>	54,189	712	2,926	16,796	4,004	11,391	3,143	8,248	2,629	7,378	8,353	2,270	6,083
1964	58,283	634	3,097	17,274	3,951	12,160	3,337	8,823	2,911	8,660	9,596	2,348	7,248
1965	60,765	632	3,232	18,062	4,036	12,716	3,466	9,250	2,977	9,036	10,074	2,378	7,696
1966	63,901	627	3,317	19,214	4,158	13,245	3,597	9,648	3,058	9,498	10,784	2,564	8,220
1967	65,803	613	3,248	19,447	4,268	13,606	3,689	9,917	3,185	10,045	11,391	2,719	8,672
1968	67,897	606	3,350	19,781	4,318	14,099	3,779	10,320	3,337	10,567	11,839	2,737	9,102
1969	70,384	619	3,575	20,167	4,442	14,705	3,907	10,798	3,512	11,169	12,195	2,758	9,437
1970	70,880	623	3,588	19,367	4,515	15,040	3,993	11,047	3,645	11,548	12,554	2,731	9,823
1971	71,214	609	3,704	18,623	4,476	15,352	4,001	11,351	3,772	11,797	12,881	2,696	10,185
1972	73,675	628	3,889	19,151	4,541	15,949	4,113	11,836	3,908	12,276	13,334	2,684	10,649
1973	76,790	642	4,097	20,154	4,656	16,607	4,277	12,329	4,046	12,857	13,732	2,663	11,068
1974	78,265	697	4,020	20,077	4,725	16,987	4,433	12,554	4,148	13,441	14,170	2,724	11,446
1975	76,945	752	3,525	18,323	4,542	17,060	4,415	12,645	4,165	13,892	14,686	2,748	11,937
1976	79,382	779	3,576	18,997	4,582	17,755	4,546	13,209	4,271	14,551	14,871	2,733	12,138
1977	82,471	813	3,851	19,682	4,713	18,516	4,708	13,808	4,467	15,303	15,127	2,727	12,399
1978	86,697	851	4,229	20,505	4,923	19,542	4,969	14,573	4,724	16,252	15,672	2,753	12,919
1979	89,823	958	4,463	21,040	5,136	20,192	5,204	14,989	4,975	17,112	15,947	2,773	13,147
1980 <sup>r</sup>	90,406	1,027	4,346	20,285	5,146	20,310	5,275	15,035	5,160	17,890	16,241	2,866	13,375
1981 <sup>r</sup>	91,105	1,132	4,176	20,173	5,157	20,551	5,359	15,192	5,301	18,592	16,024	2,772	13,253

<sup>1</sup>Data include Alaska and Hawaii beginning in 1959.

r= revised.

## 9. Employment by State

[Nonagricultural payroll data, in thousands]

State	Apr. 1981	Mar. 1982	Apr. 1982 <sup>P</sup>	State	Apr. 1981	Mar. 1982	Apr. 1982 <sup>P</sup>
Alabama	1,346.3	1,332.6	1,337.5	Montana	281.0	288.5	290.7
Alaska	171.0	176.8	180.5	Nebraska	623.8	609.7	611.4
Arizona	1,045.6	1,050.1	1,048.7	Nevada	408.2	412.9	414.4
Arkansas	746.0	722.0	726.0	New Hampshire	387.3	386.8	389.0
California	9,991.8	10,034.7	10,020.2	New Jersey	3,072.4	3,037.6	3,046.6
Colorado	1,273.0	1,284.5	1,288.1	New Mexico	475.0	472.7	474.9
Connecticut	1,439.4	1,413.9	1,417.7	New York	7,259.0	7,229.3	7,248.0
Delaware	259.1	253.7	256.0	North Carolina	2,395.4	2,343.1	2,352.8
District of Columbia	612.2	600.9	602.0	North Dakota	244.9	245.5	247.6
Florida	3,735.4	3,828.9	3,809.9	Ohio	4,326.0	4,192.5	4,220.2
Georgia	2,191.2	2,159.7	2,164.2	Oklahoma	1,186.5	1,213.8	1,216.9
Hawaii	406.7	403.1	403.1	Oregon	1,021.7	971.3	970.7
Idaho	326.5	314.6	315.7	Pennsylvania	4,731.5	4,577.9	4,589.1
Illinois	4,720.9	4,618.3	4,624.6	Rhode Island	400.0	386.9	387.2
Indiana	2,122.7	2,025.9	2,032.5	South Carolina	1,204.6	1,180.8	1,189.1
Iowa	1,106.7	1,044.8	1,059.4	South Dakota	235.5	229.5	231.5
Kansas	934.7	939.8	939.8	Tennessee	1,751.5	1,720.0	1,720.8
Kentucky	1,196.6	1,164.7	1,167.7	Texas	6,086.8	6,298.1	6,307.5
Louisiana	1,614.0	1,630.6	1,628.3	Utah	550.7	560.3	560.6
Maine	412.0	398.9	403.0	Vermont	200.2	200.3	197.2
Maryland	1,723.1	1,663.7	1,683.5	Virginia	2,146.2	2,144.8	2,155.0
Massachusetts	2,669.2	2,606.3	2,625.1	Washington	1,605.6	1,550.7	1,553.3
Michigan	3,389.4	3,223.8	3,205.3	West Virginia	585.0	609.5	606.6
Minnesota	1,760.3	1,711.0	1,724.8	Wisconsin	1,908.8	1,857.0	1,856.2
Mississippi	824.5	809.4	808.6	Wyoming	209.9	210.7	213.3
Missouri	1,978.4	1,940.6	1,958.9	Virgin Islands	37.9	36.6	35.9

**10. Employment by industry division and major manufacturing group**

[Nonagricultural payroll data, in thousands]

Industry division and group	Annual average		1981								1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. <sup>P</sup>	May <sup>P</sup>
<b>TOTAL</b> .....	90,406	91,105	91,432	92,056	91,107	91,087	91,620	91,884	91,765	91,437	89,269	89,413	89,679	89,897	90,259
<b>MINING</b> .....	1,027	1,132	986	1,159	1,184	1,200	1,201	1,196	1,203	1,200	1,183	1,180	1,178	1,171	1,159
<b>CONSTRUCTION</b> .....	4,346	4,176	4,235	4,350	4,415	4,431	4,366	4,340	4,221	4,009	3,576	3,559	3,631	3,750	3,907
<b>MANUFACTURING</b> .....	20,285	20,173	20,262	20,445	20,246	20,370	20,499	20,271	20,025	19,705	19,353	19,299	19,207	19,059	19,049
Production workers .....	14,214	14,021	14,141	14,267	14,043	14,153	14,304	14,079	13,834	13,515	13,200	13,168	13,093	12,961	12,966
<b>Durable goods</b> .....	12,187	12,117	12,220	12,317	12,179	12,164	12,272	12,144	11,979	11,762	11,557	11,503	11,454	11,341	11,323
Production workers .....	8,442	8,301	8,426	8,486	8,330	8,302	8,423	8,297	8,135	7,922	7,739	7,705	7,664	7,561	7,549
Lumber and wood products .....	690.5	668.7	692.6	699.4	696.9	691.2	680.9	654.5	629.1	606.4	587.1	592.9	592.0	602.2	614.1
Furniture and fixtures .....	465.8	467.3	469.5	470.9	462.3	470.6	474.9	473.9	467.4	461.9	454.2	450.8	446.3	443.9	440.7
Stone, clay, and glass products .....	662.1	638.2	647.9	658.2	654.2	656.3	652.0	639.8	628.5	606.9	576.0	571.5	574.2	580.2	587.8
Primary metal industries .....	1,142.2	1,121.1	1,140.0	1,148.1	1,128.4	1,132.6	1,131.7	1,102.2	1,081.0	1,051.5	1,034.9	1,018.4	1,004.4	977.9	960.6
Fabricated metal products .....	1,613.1	1,592.4	1,605.6	1,616.6	1,593.6	1,599.9	1,615.8	1,591.8	1,570.4	1,539.3	1,508.7	1,500.3	1,491.3	1,474.5	1,464.3
Machinery, except electrical .....	2,494.0	2,507.0	2,501.3	2,524.9	2,512.2	2,507.1	2,536.2	2,525.1	2,510.0	2,494.7	2,464.8	2,458.5	2,428.8	2,383.3	2,360.6
Electric and electronic equipment .....	2,090.6	2,092.2	2,093.1	2,109.5	2,096.0	2,102.5	2,120.0	2,113.3	2,086.8	2,061.4	2,056.6	2,045.2	2,034.2	2,030.0	2,030.8
Transportation equipment .....	1,899.7	1,892.6	1,936.8	1,942.6	1,897.0	1,850.8	1,904.5	1,888.9	1,857.0	1,806.3	1,766.0	1,758.5	1,776.2	1,749.1	1,765.6
Instruments and related products .....	711.3	726.8	723.8	732.3	731.2	735.8	732.6	729.6	727.6	726.5	719.0	715.3	713.8	711.3	711.4
Miscellaneous manufacturing .....	418.0	410.7	409.3	414.9	407.5	417.0	423.8	425.0	421.5	406.8	389.8	391.3	392.3	388.9	386.7
<b>Nondurable goods</b> .....	8,098	8,056	8,042	8,128	8,067	8,206	8,227	8,127	8,046	7,943	7,796	7,796	7,753	7,718	7,726
Production workers .....	5,772	5,721	5,715	5,781	5,713	5,851	5,881	5,782	5,699	5,593	5,461	5,463	5,429	5,400	5,417
Food and kindred products .....	1,708.0	1,674.3	1,638.4	1,663.9	1,703.0	1,759.6	1,763.2	1,719.4	1,680.8	1,649.1	1,605.0	1,604.7	1,597.9	1,578.6	1,603.0
Tobacco manufactures .....	68.9	69.8	64.2	65.5	65.3	73.8	75.7	75.0	73.1	71.7	70.5	67.5	64.2	61.9	60.9
Textile mill products .....	847.7	822.5	827.6	834.1	819.6	829.7	831.9	816.4	809.1	798.2	777.6	776.6	760.0	771.8	754.4
Apparel and other textile products .....	1,263.5	1,244.0	1,256.6	1,271.8	1,218.2	1,260.3	1,270.5	1,257.9	1,243.5	1,210.5	1,175.8	1,194.4	1,184.5	1,168.4	1,169.1
Paper and allied products .....	692.8	687.8	689.0	696.5	691.8	695.5	697.1	686.4	681.1	676.0	669.3	665.8	665.1	663.1	660.7
Printing and publishing .....	1,252.1	1,265.8	1,259.9	1,264.0	1,264.0	1,265.9	1,270.0	1,274.5	1,279.4	1,286.3	1,273.8	1,276.9	1,279.1	1,274.9	1,270.8
Chemicals and allied products .....	1,107.4	1,107.3	1,110.1	1,121.6	1,116.7	1,112.0	1,110.1	1,104.4	1,100.1	1,096.9	1,089.0	1,087.5	1,087.1	1,081.2	1,079.1
Petroleum and coal products .....	197.9	215.6	217.5	220.0	221.1	220.7	218.0	216.8	215.9	212.5	204.7	203.2	203.7	203.3	208.5
Rubber and miscellaneous plastics products .....	726.8	736.1	741.1	750.9	738.8	749.2	752.9	740.0	730.5	718.3	710.8	706.5	699.8	701.5	702.3
Leather and leather products .....	232.9	233.0	237.2	240.1	228.4	239.1	237.4	235.8	232.4	223.5	219.0	212.5	211.6	213.4	217.0
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	5,146	5,157	5,151	5,199	5,181	5,180	5,227	5,208	5,188	5,157	5,065	5,051	5,049	5,053	5,059
<b>WHOLESALE AND RETAIL TRADE</b> .....	20,310	20,551	20,520	20,671	20,600	20,664	20,731	20,731	20,883	21,170	20,417	20,258	20,306	20,445	20,603
<b>WHOLESALE TRADE</b> .....	5,275	5,359	5,351	5,397	5,391	5,402	5,388	5,400	5,398	5,372	5,314	5,303	5,309	5,304	5,314
<b>RETAIL TRADE</b> .....	15,035	15,192	15,169	15,274	15,209	15,262	15,343	15,331	15,485	15,798	15,103	14,955	14,997	15,141	15,289
<b>FINANCE, INSURANCE, AND REAL ESTATE</b> .....	5,160	5,301	5,296	5,353	5,376	5,374	5,327	5,314	5,308	5,313	5,290	5,285	5,304	5,312	5,327
<b>SERVICES</b> .....	17,890	18,592	18,594	18,711	18,771	18,771	18,740	18,824	18,800	18,775	18,523	18,696	18,828	18,962	18,996
<b>GOVERNMENT</b> .....	16,241	16,024	16,388	16,168	15,334	15,097	15,529	16,000	16,137	16,108	15,862	16,085	16,176	16,145	16,159
Federal .....	2,866	2,772	2,782	2,825	2,833	2,803	2,735	2,737	2,729	2,729	2,717	2,723	2,725	2,730	2,733
State and local .....	13,375	13,253	13,606	13,343	12,501	12,294	12,794	13,263	13,408	13,379	13,145	13,362	13,451	13,415	13,426

NOTE: In accordance with usual practice, BLS has revised establishment survey data to reflect a new benchmark and updated seasonal adjustment factors. Because of these revisions, establishment data in

this table may differ from data published earlier. See technical note, page 70.

### 11. Employment by industry division and major manufacturing group, seasonally adjusted

[Nonagricultural payroll data, in thousands]

Industry division and group	1981								1982				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. P	May P
<b>TOTAL</b> .....	91,131	91,286	91,396	91,322	91,363	91,224	90,996	90,642	90,460	90,459	90,304	89,993	89,969
<b>MINING</b> .....	985	1,137	1,164	1,180	1,192	1,195	1,202	1,206	1,201	1,203	1,197	1,182	1,158
<b>CONSTRUCTION</b> .....	4,223	4,185	4,175	4,146	4,124	4,101	4,071	4,026	3,966	3,974	3,934	3,890	3,899
<b>MANUFACTURING</b> .....	20,332	20,334	20,379	20,311	20,267	20,097	19,903	19,676	19,517	19,454	19,319	19,154	19,120
Production workers .....	14,190	14,177	14,212	14,136	14,087	13,915	13,717	13,488	13,341	13,290	13,179	13,031	13,014
<b>Durable goods</b> .....	12,237	12,246	12,266	12,228	12,184	12,059	11,901	11,724	11,622	11,575	11,490	11,360	11,341
Production workers .....	8,428	8,427	8,439	8,389	8,345	8,218	8,061	7,885	7,793	7,759	7,685	7,564	7,553
Lumber and wood products .....	694	685	683	671	661	643	628	615	607	611	607	614	615
Furniture and fixtures .....	473	474	476	475	473	469	462	457	452	449	446	443	444
Stone, clay, and glass products .....	646	644	644	643	638	629	620	610	596	596	590	584	586
Primary metal industries .....	1,137	1,137	1,132	1,134	1,125	1,104	1,082	1,053	1,038	1,024	1,007	977	958
Fabricated metal products .....	1,613	1,611	1,617	1,610	1,604	1,577	1,553	1,529	1,515	1,505	1,496	1,479	1,472
Machinery, except electrical .....	2,506	2,516	2,527	2,532	2,539	2,532	2,511	2,486	2,459	2,446	2,419	2,376	2,365
Electric and electronic equipment .....	2,101	2,104	2,112	2,116	2,113	2,101	2,077	2,049	2,055	2,048	2,038	2,036	2,039
Transportation equipment .....	1,930	1,938	1,925	1,901	1,884	1,861	1,830	1,791	1,777	1,778	1,774	1,747	1,760
Instruments and related products .....	726	726	731	734	734	731	727	725	720	718	716	713	714
Miscellaneous manufacturing .....	411	411	419	412	413	412	411	409	403	400	397	391	388
<b>Nondurable goods</b> .....	8,095	8,088	8,113	8,083	8,083	8,038	8,002	7,952	7,895	7,879	7,829	7,794	7,779
Production workers .....	5,762	5,750	5,773	5,747	5,742	5,697	5,656	5,603	5,548	5,531	5,494	5,467	5,461
Food and kindred products .....	1,689	1,673	1,678	1,659	1,658	1,662	1,664	1,661	1,657	1,663	1,658	1,643	1,653
Tobacco manufactures .....	70	71	70	70	69	69	69	68	69	68	68	67	67
Textile mill products .....	828	830	835	829	827	814	804	794	780	777	760	774	755
Apparel and other textile products .....	1,250	1,251	1,255	1,253	1,253	1,243	1,235	1,222	1,201	1,201	1,186	1,166	1,162
Paper and allied products .....	690	690	691	691	695	685	681	677	674	670	668	664	662
Printing and publishing .....	1,262	1,263	1,268	1,271	1,274	1,276	1,276	1,276	1,275	1,276	1,278	1,275	1,273
Chemicals and allied products .....	1,109	1,111	1,110	1,107	1,110	1,107	1,103	1,100	1,095	1,093	1,088	1,082	1,078
Petroleum and coal products .....	217	217	217	216	216	215	215	214	210	208	207	205	208
Rubber and miscellaneous plastics products .....	745	747	750	752	746	734	725	716	712	708	703	704	706
Leather and leather products .....	235	235	239	235	235	233	230	224	222	215	213	214	215
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	5,158	5,162	5,168	5,168	5,181	5,162	5,150	5,128	5,125	5,115	5,100	5,089	5,064
<b>WHOLESALE AND RETAIL TRADE</b> .....	20,543	20,590	20,620	20,650	20,660	20,654	20,623	20,524	20,630	20,670	20,655	20,583	20,629
<b>WHOLESALE TRADE</b> .....	5,361	5,366	5,375	5,387	5,383	5,380	5,375	5,357	5,346	5,343	5,336	5,320	5,325
<b>RETAIL TRADE</b> .....	15,182	15,224	15,245	15,263	15,277	15,274	15,248	15,167	15,284	15,327	15,319	15,263	15,304
<b>FINANCE, INSURANCE, AND REAL ESTATE</b> .....	5,295	5,302	5,311	5,319	5,328	5,325	5,324	5,331	5,326	5,326	5,336	5,328	5,327
<b>SERVICES</b> .....	18,517	18,556	18,615	18,654	18,707	18,773	18,815	18,834	18,831	18,867	18,904	18,924	18,920
<b>GOVERNMENT</b> .....	16,078	16,020	15,964	15,894	15,904	15,917	15,908	15,917	15,864	15,850	15,859	15,843	15,852
Federal .....	2,776	2,777	2,775	2,769	2,764	2,757	2,749	2,756	2,741	2,737	2,736	2,730	2,728
State and local .....	13,302	13,243	13,189	13,125	13,140	13,160	13,159	13,161	13,123	13,113	13,123	13,113	13,124

NOTE: In accordance with usual practice, BLS has revised establishment survey data to reflect a new benchmark and updated seasonal adjustment factors. Because of these revisions, establishment data in

this table may differ from data published earlier. See technical note, page 70.



**12. Hours and earnings, by industry division, selected years, 1950-81**

[Gross averages, production or nonsupervisory workers on nonagricultural payrolls]

Year	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings
	Total private			Mining			Construction			Manufacturing		
1950	\$53.13	39.8	\$1.335	\$67.16	37.9	\$1.772	\$69.68	37.4	\$1.863	\$58.32	40.5	\$1.440
1955	67.72	39.6	1.71	89.54	40.7	2.20	90.90	37.1	2.45	75.30	40.7	1.85
1960 <sup>1</sup>	80.67	38.6	2.09	105.04	40.4	2.60	112.67	36.7	3.07	89.72	39.7	2.26
1964	91.33	38.7	2.36	117.74	41.9	2.81	132.06	37.2	3.55	102.97	40.7	2.53
1965	95.45	38.8	2.46	123.52	42.3	2.92	138.38	37.4	3.70	107.53	41.2	2.61
1966	98.82	38.6	2.56	130.24	42.7	3.05	146.26	37.6	3.89	112.19	41.4	2.71
1967	101.84	38.0	2.68	135.89	42.6	3.19	154.95	37.7	4.11	114.49	40.6	2.82
1968	107.73	37.8	2.85	142.71	42.6	3.35	164.49	37.3	4.41	122.51	40.7	3.01
1969	114.61	37.7	3.04	154.80	43.0	3.60	181.54	37.9	4.79	129.51	40.6	3.19
1970	119.83	37.1	3.23	164.40	42.7	3.85	195.45	37.3	5.24	133.33	39.8	3.35
1971	127.31	36.9	3.45	172.14	42.4	4.06	211.67	37.2	5.69	142.44	39.9	3.57
1972	136.90	37.0	3.70	189.14	42.6	4.44	221.19	36.5	6.06	154.71	40.5	3.82
1973	145.39	36.9	3.94	201.40	42.4	4.75	235.89	36.8	6.41	166.46	40.7	4.09
1974	154.76	36.5	4.24	219.14	41.9	5.23	249.25	36.6	6.81	176.80	40.0	4.42
1975	163.53	36.1	4.53	249.31	41.9	5.95	266.08	36.4	7.31	190.79	39.5	4.83
1976	175.45	36.1	4.86	273.90	42.4	6.46	283.73	36.8	7.71	209.32	40.1	5.22
1977	189.00	36.0	5.25	301.20	43.4	6.94	295.65	36.5	8.10	228.90	40.3	5.68
1978	203.70	35.8	5.69	332.88	43.4	7.67	318.69	36.8	8.66	249.27	40.4	6.17
1979	219.91	35.7	6.16	365.07	43.0	8.49	342.99	37.0	9.27	269.34	40.2	6.70
1980 <sup>r</sup>	235.10	35.3	6.66	397.06	43.3	9.17	367.78	37.0	9.94	288.62	39.7	7.27
1981 <sup>r</sup>	255.20	35.2	7.25	439.19	43.7	10.05	398.52	36.9	10.80	318.00	39.8	7.99
	Transportation and public utilities			Wholesale and retail trade			Finance, insurance, and real estate			Services		
1950				\$44.55	40.5	\$1.100	\$50.52	37.7	\$1.340			
1955				55.16	39.4	1.40	63.92	37.6	1.70			
1960 <sup>1</sup>				66.01	38.6	1.71	75.14	37.2	2.02			
1964	\$118.78	41.1	\$2.89	74.66	37.9	1.97	85.79	37.3	2.30	\$70.03	36.1	\$1.94
1965	125.14	41.3	3.03	76.91	37.7	2.04	88.91	37.2	2.39	73.60	35.9	2.05
1966	128.13	41.2	3.11	79.39	37.1	2.14	92.13	37.3	2.47	77.04	35.5	2.17
1967	130.82	40.5	3.23	82.35	36.6	2.25	95.72	37.1	2.58	80.38	35.1	2.29
1968	138.85	40.6	3.42	87.00	36.1	2.41	101.75	37.0	2.75	83.97	34.7	2.42
1969	147.74	40.7	3.63	91.39	35.7	2.56	108.70	37.1	2.93	90.57	34.7	2.61
1970	155.93	40.5	3.85	96.02	35.3	2.72	112.67	36.7	3.07	96.66	34.4	2.81
1971	168.82	40.1	4.21	101.09	35.1	2.88	117.85	36.6	3.22	103.06	33.9	3.04
1972	187.86	40.4	4.65	106.45	34.9	3.05	122.98	36.6	3.36	110.85	33.9	3.27
1973	203.31	40.5	5.02	111.76	34.6	3.23	129.20	36.6	3.53	117.29	33.8	3.47
1974	217.48	40.2	5.41	119.02	34.2	3.48	137.61	36.5	3.77	126.00	33.6	3.75
1975	233.44	39.7	5.88	126.45	33.9	3.73	148.19	36.5	4.06	134.67	33.5	4.02
1976	256.71	39.8	6.45	133.79	33.7	3.97	155.43	36.4	4.27	143.52	33.3	4.31
1977	278.90	39.9	6.99	142.52	33.3	4.28	165.26	36.4	4.54	153.45	33.0	4.65
1978	302.80	40.0	7.57	153.64	32.9	4.67	178.00	36.4	4.89	163.67	32.8	4.99
1979	325.58	39.9	8.16	164.96	32.6	5.06	190.77	36.2	5.27	175.27	32.7	5.36
1980 <sup>r</sup>	351.25	39.6	8.87	176.46	32.2	5.48	209.60	36.2	5.79	190.71	32.6	5.85
1981 <sup>r</sup>	382.18	39.4	9.70	190.95	32.2	5.93	229.05	36.3	6.31	208.97	32.6	6.41

<sup>1</sup> Data include Alaska and Hawaii beginning in 1959.

r = revised.

### 13. Weekly hours, by industry division and major manufacturing group

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1981								1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. <sup>P</sup>	May <sup>P</sup>
<b>TOTAL PRIVATE</b> .....	35.3	35.2	35.2	35.4	35.6	35.6	35.1	35.2	35.1	35.2	33.9	34.8	34.7	34.6	34.9
<b>MINING</b> .....	43.3	43.7	43.9	42.3	43.6	44.2	43.9	44.5	44.4	44.8	42.9	43.6	43.8	42.7	42.5
<b>CONSTRUCTION</b> .....	37.0	36.9	37.0	37.2	37.8	37.4	35.8	37.6	37.1	37.1	33.3	35.9	37.0	36.5	37.5
<b>MANUFACTURING</b> .....	39.7	39.8	40.1	40.2	39.6	39.9	39.5	39.7	39.7	39.9	37.1	39.2	39.1	38.7	39.0
Overtime hours .....	2.8	2.8	2.9	3.0	2.8	3.0	2.9	2.8	2.6	2.6	2.2	2.3	2.3	2.1	2.3
<b>Durable goods</b> .....	40.1	40.2	40.6	40.6	40.0	40.2	39.8	40.1	40.1	40.4	37.7	39.7	39.6	39.2	39.5
Overtime hours .....	2.8	2.8	3.0	3.0	2.8	2.9	2.8	2.7	2.5	2.6	2.1	2.2	2.2	2.0	2.2
Lumber and wood products .....	38.5	38.7	39.6	39.5	38.7	39.0	37.9	38.2	37.7	38.1	33.7	37.5	37.6	37.3	37.9
Furniture and fixtures .....	38.1	38.4	38.5	38.9	37.8	38.6	37.7	38.6	38.1	38.9	32.5	37.4	37.6	37.1	37.1
Stone, clay, and glass products .....	40.8	40.6	41.1	41.2	40.8	41.0	40.6	40.5	40.5	40.1	37.4	39.2	39.8	40.0	40.4
Primary metal industries .....	40.1	40.5	40.9	40.9	40.3	40.3	40.8	39.7	39.7	39.6	38.4	39.6	39.0	38.8	38.6
Fabricated metal products .....	40.4	40.3	40.7	40.8	39.9	40.3	39.7	40.2	40.1	40.5	37.8	39.4	39.6	39.0	39.3
Machinery except electrical .....	41.0	40.9	41.2	41.1	40.5	40.7	40.4	40.7	41.0	41.6	39.2	40.7	40.4	39.8	39.9
Electric and electronic equipment .....	39.8	39.9	40.1	40.2	39.7	40.0	39.7	39.9	39.8	40.4	38.1	39.8	39.5	39.0	39.3
Transportation equipment .....	40.6	40.9	41.6	41.4	40.8	40.6	39.9	41.0	40.8	41.4	38.4	40.4	40.4	40.5	41.3
Instruments and related products .....	40.5	40.4	40.3	40.4	39.9	40.4	40.4	40.4	40.8	40.7	38.6	40.0	40.1	39.5	40.3
Miscellaneous manufacturing .....	38.7	38.8	38.9	39.0	38.5	38.9	38.7	39.3	39.5	39.1	36.6	38.4	38.7	38.1	38.1
<b>Nondurable goods</b> .....	39.0	39.1	39.4	39.5	39.1	39.4	39.1	39.1	39.1	39.2	36.2	38.6	38.3	38.0	38.3
Overtime hours .....	2.8	2.8	2.9	2.9	2.8	3.0	3.1	2.9	2.8	2.7	2.4	2.5	2.4	2.3	2.4
Food and kindred products .....	39.7	39.7	39.7	39.7	39.6	39.9	39.8	39.5	39.8	40.4	38.7	39.7	39.0	38.8	39.3
Tobacco manufactures .....	38.1	38.8	38.7	38.5	38.6	40.7	40.2	39.4	38.8	38.1	36.1	38.3	37.3	36.5	36.8
Textile mill products .....	40.1	39.6	40.2	40.4	39.6	39.9	38.9	39.4	39.2	38.6	31.2	38.1	37.7	37.3	37.8
Apparel and other textile products .....	35.4	35.7	36.0	36.3	36.0	36.3	35.2	35.8	35.8	35.5	30.0	35.2	35.1	34.4	34.9
Paper and allied products .....	42.2	42.5	42.5	42.7	42.4	42.4	43.2	42.4	42.3	42.7	41.3	42.0	41.7	41.8	41.5
Printing and publishing .....	37.1	37.3	37.3	37.2	37.2	37.5	37.4	37.2	37.3	37.9	36.4	37.1	37.1	36.8	36.7
Chemicals and allied products .....	41.5	41.6	41.5	41.6	41.5	41.4	42.2	41.5	41.6	41.8	40.8	41.1	40.7	40.7	41.0
Petroleum and coal products .....	41.8	43.2	43.6	43.5	43.7	43.0	44.4	43.1	43.1	42.6	43.2	42.2	42.4	42.6	42.5
Rubber and miscellaneous plastics products .....	40.0	40.3	40.8	40.9	39.9	40.4	39.7	40.2	39.9	40.1	37.8	39.9	39.7	39.5	39.9
Leather and leather products .....	36.7	36.8	37.4	38.1	36.5	36.9	36.0	36.7	36.6	36.4	33.3	35.3	35.6	35.1	35.5
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	39.6	39.4	39.3	39.7	39.7	39.5	39.2	39.1	39.2	39.3	38.5	39.2	39.0	39.0	39.1
<b>WHOLESALE AND RETAIL TRADE</b> .....	32.2	32.2	32.0	32.4	32.8	32.8	32.2	32.0	31.9	32.3	31.1	31.6	31.6	31.7	31.9
<b>WHOLESALE TRADE</b> .....	38.5	38.6	38.5	38.6	38.8	38.7	38.5	38.6	38.6	38.7	37.8	38.2	38.3	38.2	38.5
<b>RETAIL TRADE</b> .....	30.2	30.1	29.9	30.3	30.9	30.9	30.2	29.8	29.8	30.3	29.0	29.4	29.4	29.6	29.9
<b>FINANCE, INSURANCE, AND REAL ESTATE</b> .....	36.2	36.3	36.1	36.1	36.3	36.4	36.0	36.2	36.2	36.2	36.2	36.2	36.3	36.2	36.5
<b>SERVICES</b> .....	32.6	32.6	32.5	32.7	33.1	32.9	32.4	32.5	32.5	32.6	32.3	32.5	32.5	32.5	32.5

NOTE: In accordance with usual practice, BLS has revised establishment survey data to reflect a new benchmark and updated seasonal adjustment factors. Because of these revisions, establishment data in

this table may differ from data published earlier. See technical note, page 70.

**14. Weekly hours, by industry division and major manufacturing group, seasonally adjusted**

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	1981								1982				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. <sup>P</sup>	May <sup>P</sup>
<b>TOTAL PRIVATE</b> .....	35.4	35.2	35.3	35.2	35.0	35.1	35.1	35.0	34.4	35.0	34.9	34.9	35.0
<b>MANUFACTURING</b> .....	40.2	40.1	40.0	39.9	39.4	39.5	39.3	39.1	37.6	39.4	39.0	39.0	39.1
Overtime hours .....	3.1	3.0	3.0	3.0	2.7	2.7	2.5	2.4	2.3	2.4	2.3	2.4	2.4
<b>Durable goods</b> .....	40.7	40.5	40.5	40.4	39.7	40.0	39.7	39.5	38.2	39.8	39.5	39.5	39.6
Overtime hours .....	3.1	3.0	3.0	3.0	2.7	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.3
Lumber and wood products .....	39.6	38.9	38.7	38.4	37.6	37.8	37.7	37.7	35.0	37.9	37.6	37.6	37.9
Furniture and fixtures .....	38.8	38.8	38.6	38.4	37.4	38.0	37.6	37.9	33.6	37.7	37.3	37.4	37.4
Stone, clay, and glass products .....	40.9	40.7	40.8	40.7	40.3	40.1	40.1	39.7	38.6	40.1	40.0	40.1	40.2
Primary metal industries .....	41.1	40.9	40.7	40.8	40.6	40.0	39.6	39.2	38.3	39.4	38.8	38.6	38.8
Fabricated metal products .....	40.8	40.6	40.5	40.4	39.6	40.0	39.7	39.5	38.1	39.7	39.5	39.4	39.4
Machinery, except electrical .....	41.4	41.1	41.2	41.1	40.3	40.8	40.7	40.4	39.3	40.7	40.2	40.1	40.0
Electric and electronic equipment .....	40.3	40.2	40.4	40.3	39.7	39.8	39.4	39.5	38.3	39.8	39.4	39.3	39.5
Transportation equipment .....	41.6	41.4	41.2	41.2	40.1	40.6	40.4	39.7	39.0	40.5	40.4	41.1	41.3
Instruments and related products .....	40.4	40.4	40.5	40.6	40.4	40.3	40.2	39.9	39.0	39.9	39.9	39.9	40.4
Miscellaneous manufacturing .....	39.1	39.0	39.0	38.9	38.4	38.9	39.0	38.5	37.3	38.6	38.6	38.4	38.3
<b>Nondurable goods</b> .....	39.4	39.4	39.2	39.2	38.9	38.9	38.7	38.6	36.8	38.9	38.5	38.4	38.4
Overtime hours .....	3.0	2.9	2.9	2.9	2.8	2.8	2.7	2.6	2.5	2.6	2.5	2.6	2.5
Food and kindred products .....	39.7	39.7	39.5	39.4	39.3	39.5	39.5	39.8	39.1	40.2	39.5	39.4	39.3
Textile mill products .....	40.2	40.1	40.1	39.8	38.8	39.0	38.7	37.8	32.3	38.3	37.6	37.8	37.8
Apparel and other textile products .....	35.9	35.9	35.8	35.9	35.2	35.5	35.5	35.1	31.4	35.5	35.0	34.7	34.8
Paper and allied products .....	42.8	42.7	42.7	42.5	43.0	42.4	42.0	41.8	41.3	42.3	41.8	42.1	41.8
Printing and publishing .....	37.4	37.4	37.3	37.3	37.1	37.1	37.1	37.1	36.9	37.4	37.1	37.1	36.8
Chemicals and allied products .....	41.6	41.7	41.7	41.7	42.2	41.5	41.2	41.3	41.0	41.2	40.7	40.7	41.2
Petroleum and coal products .....	43.8	43.4	43.1	42.9	43.1	42.2	42.5	42.7	44.3	43.5	43.5	42.6	42.7
Rubber and miscellaneous plastics products .....	41.1	40.9	40.5	40.5	39.7	39.9	39.6	39.4	37.9	40.0	39.6	39.8	40.1
Leather and leather products .....	37.0	37.1	36.4	36.7	36.2	36.7	36.5	36.1	34.1	35.6	35.8	35.5	35.1
<b>WHOLESALE AND RETAIL TRADE</b> .....	32.2	32.1	32.2	32.2	32.1	32.0	32.1	32.0	31.7	32.0	31.9	31.8	32.1
<b>WHOLESALE TRADE</b> .....	38.6	38.5	38.6	38.6	38.5	38.4	38.5	38.4	38.1	38.5	38.4	38.3	38.6
<b>RETAIL TRADE</b> .....	30.2	30.0	30.1	30.1	30.1	29.9	30.0	29.9	29.7	29.9	29.8	29.8	30.1
<b>SERVICES</b> .....	32.7	32.5	32.6	32.5	32.5	32.6	32.6	32.6	32.5	32.6	32.6	32.7	32.7

NOTE: The industry divisions of mining; construction; tobacco manufactures (a major manufacturing group, nondurable goods); transportation and public utilities; and finance, insurance, and real estate are no longer shown. This is because the seasonal component in these is small relative to the trend-cycle, or irregular components, or both, and consequently cannot be precisely separated.

NOTE: In accordance with usual practice, BLS has revised establishment survey data to reflect a new benchmark and updated seasonal adjustment factors. Because of these revisions, establishment data in this table may differ from data published earlier. See technical note, page 70.



### 15. Hourly earnings, by industry division and major manufacturing group

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1981								1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. P	May P
<b>TOTAL PRIVATE</b> .....	\$6.66	\$7.25	\$7.17	\$7.20	\$7.24	\$7.30	\$7.40	\$7.42	\$7.47	\$7.45	\$7.55	\$7.54	\$7.55	\$7.57	\$7.61
<b>MINING</b> .....	9.17	10.05	9.68	9.93	10.09	10.12	10.27	10.25	10.39	10.41	10.65	10.62	10.62	10.65	10.71
<b>CONSTRUCTION</b> .....	9.94	10.80	10.57	10.64	10.79	10.92	11.07	11.65	11.18	11.26	11.59	11.32	11.33	11.28	11.38
<b>MANUFACTURING</b> .....	7.27	7.99	7.92	7.97	8.02	8.03	8.16	8.16	8.20	8.27	8.42	8.34	8.37	8.41	8.45
<b>Durable goods</b> .....	7.75	8.53	8.47	8.54	8.57	8.59	8.70	8.73	8.77	8.83	8.92	8.89	8.91	8.93	9.01
Lumber and wood products .....	6.55	7.00	6.92	7.09	7.15	7.13	7.16	7.10	7.16	7.16	7.38	7.27	7.28	7.25	7.36
Furniture and fixtures .....	5.49	5.91	5.84	5.90	5.92	5.99	6.01	6.06	6.05	6.12	6.28	6.19	6.21	6.22	6.25
Stone, clay, and glass products .....	7.50	8.27	8.20	8.31	8.40	8.41	8.53	8.50	8.54	8.56	8.70	8.62	8.65	8.72	8.77
Primary metal industries .....	9.77	10.81	10.68	10.75	10.78	10.99	11.22	10.97	11.10	11.08	11.23	11.20	11.15	11.23	11.28
Fabricated metal products .....	7.45	8.20	8.16	8.23	8.21	8.26	8.33	8.39	8.42	8.53	8.55	8.57	8.64	8.69	8.76
<b>Machinery, except electrical</b> .....	8.00	8.81	8.73	8.79	8.83	8.84	8.96	9.04	9.08	9.18	9.19	9.20	9.18	9.19	9.24
<b>Electric and electronic equipment</b> .....	6.94	7.62	7.51	7.56	7.65	7.73	7.75	7.80	7.83	7.90	7.98	7.96	8.01	8.03	8.08
<b>Transportation equipment</b> .....	9.35	10.39	10.33	10.45	10.44	10.37	10.49	10.74	10.74	10.76	10.79	10.82	10.89	10.88	11.02
<b>Instruments and related products</b> .....	6.80	7.43	7.30	7.33	7.43	7.55	7.59	7.60	7.68	7.81	7.93	7.94	8.00	8.08	8.17
<b>Miscellaneous manufacturing</b> .....	5.46	5.96	5.92	5.92	5.97	5.96	6.05	6.05	6.11	6.19	6.27	6.29	6.32	6.36	6.40
<b>Nondurable goods</b> .....	6.55	7.18	7.10	7.13	7.22	7.23	7.36	7.33	7.38	7.44	7.67	7.54	7.57	7.65	7.64
Food and kindred products .....	6.85	7.43	7.41	7.41	7.45	7.48	7.56	7.51	7.61	7.67	7.82	7.74	7.79	7.90	7.88
Tobacco manufactures .....	7.74	8.88	9.06	9.35	9.46	8.70	8.76	8.67	9.04	8.96	9.21	9.56	9.72	10.00	9.87
Textile mill products .....	5.07	5.52	5.40	5.41	5.50	5.65	5.69	5.72	5.73	5.72	5.76	5.76	5.76	5.79	5.77
Apparel and other textile products .....	4.56	4.96	4.96	4.97	4.92	4.96	5.04	5.05	5.04	5.04	5.18	5.13	5.15	5.18	5.15
Paper and allied products .....	7.84	8.60	8.42	8.54	8.73	8.67	8.95	8.82	8.89	8.96	9.06	8.99	9.03	9.12	9.17
Printing and publishing .....	7.53	8.18	8.08	8.11	8.20	8.25	8.37	8.40	8.42	8.48	8.58	8.56	8.59	8.60	8.64
Chemicals and allied products .....	8.30	9.12	8.90	9.07	9.16	9.19	9.38	9.37	9.42	9.53	9.68	9.68	9.71	9.79	9.77
Petroleum and coal products .....	10.10	11.38	11.30	11.31	11.43	11.32	11.55	11.47	11.58	11.59	11.91	12.29	12.32	12.50	12.44
Rubber and miscellaneous plastics products .....	6.52	7.16	7.13	7.14	7.18	7.23	7.29	7.30	7.31	7.38	7.51	7.49	7.45	7.53	7.53
Leather and leather products .....	4.58	4.99	4.96	4.98	4.97	4.97	5.09	5.09	5.11	5.15	5.19	5.22	5.24	5.31	5.29
<b>TRANSPORTATION AND PUBLIC UTILITIES</b> .....	8.87	9.70	9.57	9.61	9.67	9.87	9.95	9.94	10.05	10.06	10.10	10.13	10.07	10.11	10.14
<b>WHOLESALE AND RETAIL TRADE</b> .....	5.48	5.93	5.89	5.88	5.91	5.94	6.04	6.01	6.04	6.02	6.17	6.16	6.16	6.18	6.19
<b>WHOLESALE TRADE</b> .....	6.96	7.57	7.49	7.49	7.58	7.65	7.70	7.73	7.79	7.81	7.94	7.94	7.93	7.96	8.01
<b>RETAIL TRADE</b> .....	4.88	5.25	5.22	5.22	5.24	5.25	5.37	5.29	5.32	5.31	5.43	5.42	5.43	5.44	5.46
<b>FINANCE, INSURANCE, AND REAL ESTATE</b> .....	5.79	6.31	6.25	6.25	6.28	6.38	6.39	6.43	6.52	6.47	6.56	6.62	6.59	6.63	6.74
<b>SERVICES</b> .....	5.85	6.41	6.34	6.33	6.34	6.41	6.52	6.58	6.67	6.66	6.79	6.79	6.77	6.81	6.84

NOTE: In accordance with usual practice, BLS has revised establishment survey data to reflect a new benchmark and updated seasonal adjustment factors. Because of these revisions, establishment data in

this table may differ from data published earlier. See technical note, page 70.

### 16. Hourly Earnings Index for production or nonsupervisory workers on private nonagricultural payrolls, by industry division

[Seasonally adjusted data: 1977=100]

Industry	1981												1982		Apr. 1982 to May 1982	May 1981 to May 1982 <sup>1</sup>
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. P	May P			
<b>TOTAL PRIVATE (in current dollars)</b> .....	137.6	138.4	139.1	140.5	141.4	142.0	143.0	143.5	144.9	145.0	145.4	146.2	147.4	.8	7.1	
Mining <sup>2</sup> .....	145.8	147.4	149.0	149.5	151.7	151.4	153.4	153.4	156.2	156.0	156.0	156.5	157.6	.7	8.1	
Construction .....	129.9	130.9	132.2	132.8	133.5	134.7	135.7	136.6	139.9	137.9	138.1	138.3	139.0	.5	7.0	
Manufacturing .....	140.6	141.5	142.4	143.5	144.7	145.4	146.4	146.9	148.9	149.1	149.9	150.7	151.6	.6	7.8	
Transportation and public utilities .....	138.7	139.6	139.0	141.6	141.5	142.3	143.5	144.3	145.5	146.0	146.3	146.3	147.5	.8	6.4	
Wholesale and retail trade .....	137.2	137.6	138.4	139.7	141.0	140.5	141.3	141.7	142.1	142.5	142.8	143.7	144.8	.8	5.6	
Finance, insurance, and real estate .....	136.8	137.1	137.8	140.1	140.4	141.4	142.6	142.0	143.1	143.3	143.8	144.7	147.5	2.0	7.8	
Services .....	135.9	136.7	137.4	139.2	139.7	140.9	142.2	142.6	143.4	143.7	143.9	145.2	146.5	.9	7.8	
<b>TOTAL PRIVATE (in constant dollars)</b> .....	93.0	92.9	92.2	92.5	92.1	92.1	92.3	92.3	92.9	92.8	93.3	93.7	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	

<sup>1</sup> Over-the-year percent change before seasonal adjustment.

<sup>2</sup> This series is not seasonally adjusted because the seasonal component is small relative to the trend-cycle, irregular components, or both, and consequently cannot be separated with sufficient precision.

<sup>3</sup> Not available.

NOTE: In accordance with usual practice, BLS has revised establishment survey data to reflect a new benchmark and updated seasonal adjustment factors. Because of these revisions, establishment data in this table may differ from data published earlier. See technical note, page 70.

**17. Weekly earnings, by industry division and major manufacturing group**

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1981								1982				
	1980	1981	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. <sup>P</sup>	May <sup>P</sup>
<b>TOTAL PRIVATE:</b>															
Current dollars	\$235.10	\$255.20	\$252.38	\$254.88	\$257.74	\$259.88	\$259.74	\$261.18	\$262.20	\$262.24	\$255.95	\$262.39	\$261.99	\$261.92	\$265.59
Constant (1977) dollars	172.74	170.13	170.18	170.49	170.35	170.64	168.88	169.49	169.71	169.30	164.70	168.31	168.37	167.58	( <sup>1</sup> )
<b>MINING</b>	397.06	439.19	424.95	420.04	439.92	447.30	450.85	456.13	461.32	466.37	456.89	463.03	465.16	454.76	\$455.18
<b>CONSTRUCTION</b>	367.78	398.52	391.09	395.81	407.86	408.41	396.31	419.62	414.78	417.75	385.95	406.39	419.21	411.72	426.75
<b>MANUFACTURING</b>															
Current dollars	288.62	318.00	317.59	320.39	317.59	320.40	322.32	323.95	325.54	329.97	312.38	326.93	327.27	325.47	329.55
Constant (1977) dollars	212.06	212.00	214.15	214.31	209.91	210.37	209.57	210.22	210.71	213.02	201.02	209.70	210.33	208.23	( <sup>1</sup> )
<b>Durable goods</b>	310.78	342.91	343.88	346.72	342.80	345.32	346.26	350.07	351.68	356.73	336.28	352.93	352.84	350.06	\$355.90
Lumber and wood products	252.18	270.90	274.03	280.06	276.71	278.07	271.36	271.22	269.93	272.80	248.71	272.63	273.73	270.43	278.94
Furniture and fixtures	209.17	226.94	224.84	229.51	223.78	231.21	226.58	233.92	230.51	238.07	204.10	231.51	233.50	230.76	231.88
Stone, clay, and glass products	306.00	335.76	337.02	342.37	342.72	344.81	346.32	344.25	345.87	343.26	325.38	337.90	344.27	348.80	354.31
Primary metal industries	391.78	437.81	436.81	439.68	434.43	442.90	457.78	435.51	440.67	438.77	431.23	443.52	434.85	435.72	435.41
Fabricated metal products	300.98	330.46	332.11	335.78	327.58	332.88	330.70	337.28	337.64	345.47	323.19	337.66	342.14	338.91	344.27
Machinery except electrical	328.00	360.33	359.68	361.27	357.62	359.79	361.98	367.93	372.28	381.89	360.25	374.44	370.87	365.76	368.68
Electric and electronic equipment	276.21	304.04	301.15	303.91	303.71	309.20	307.68	311.22	311.63	319.16	304.04	316.81	316.40	313.17	317.54
Transportation equipment	379.61	424.95	429.73	432.63	425.95	421.02	418.55	440.34	438.19	445.46	414.34	437.13	439.96	440.64	455.13
Instruments and related products	275.40	300.17	294.19	296.13	296.46	305.02	306.64	307.04	313.34	317.87	306.10	317.60	320.80	319.16	329.25
Miscellaneous manufacturing	211.30	231.25	230.29	230.88	229.85	231.84	234.14	237.77	241.35	242.03	229.48	241.54	244.58	242.32	243.84
<b>Nondurable goods</b>	255.45	280.74	279.74	281.64	282.30	284.86	287.78	286.60	288.56	291.65	277.65	291.04	289.93	290.70	292.61
Food and kindred products	271.95	294.97	294.18	294.18	295.02	298.45	300.89	296.65	302.88	309.87	302.63	307.28	303.81	306.52	309.68
Tobacco manufactures	294.89	344.54	350.62	359.98	365.16	354.09	352.15	341.60	350.75	341.38	332.48	366.15	362.56	365.00	363.22
Textile mill products	203.31	218.59	217.08	218.56	217.80	225.44	221.34	225.37	224.62	220.79	179.71	219.46	217.15	215.97	218.11
Apparel and other textile products	161.42	177.07	178.56	180.41	177.12	180.05	177.41	180.79	180.43	178.92	155.40	180.58	180.77	178.19	179.74
Paper and allied products	330.85	365.50	357.85	364.66	370.15	367.61	386.64	373.97	376.05	382.59	374.18	377.58	376.55	381.22	380.56
Printing and publishing	279.36	305.11	301.38	301.69	305.04	309.38	313.04	312.48	314.07	321.39	312.31	317.58	318.69	316.48	317.09
Chemicals and allied products	344.45	379.39	373.09	377.31	380.14	380.47	395.84	388.86	391.87	398.35	394.94	397.85	395.20	398.45	400.57
Petroleum and coal products	422.18	491.62	492.68	491.99	499.49	486.76	512.82	494.36	499.10	493.73	514.51	518.64	522.37	532.50	528.70
Rubber and miscellaneous plastics products	260.80	288.55	290.90	292.03	286.48	292.09	289.41	293.46	291.67	295.94	283.88	298.85	295.77	297.44	300.45
Leather and leather products	168.09	183.63	185.50	189.74	181.41	183.39	183.24	186.80	187.03	187.46	172.83	184.27	186.54	186.38	187.80
<b>TRANSPORTATION AND PUBLIC UTILITIES</b>	351.25	382.18	376.10	381.52	383.90	389.87	390.04	388.65	393.96	395.36	388.85	397.10	392.73	394.29	396.47
<b>WHOLESALE AND RETAIL TRADE</b>	176.46	190.95	188.48	190.51	193.85	194.83	194.49	192.32	192.68	194.45	191.89	194.66	194.66	195.91	197.46
<b>WHOLESALE TRADE</b>	267.96	292.20	288.37	289.11	294.10	296.06	296.45	298.38	300.69	302.25	300.13	303.31	303.72	304.07	308.39
<b>RETAIL TRADE</b>	147.38	158.03	156.08	158.17	161.92	162.23	162.17	157.64	158.54	160.89	157.47	159.35	159.64	161.02	163.25
<b>FINANCE, INSURANCE, AND REAL ESTATE</b>	209.60	229.05	225.63	225.63	227.96	232.23	230.04	232.77	236.02	234.21	237.47	239.64	239.22	240.01	246.01
<b>SERVICES</b>	190.71	208.97	206.05	206.99	209.85	210.89	211.25	213.85	216.78	217.12	219.32	220.68	220.03	221.33	222.30

<sup>1</sup> Not available.

NOTE: In accordance with usual practice, BLS has revised establishment survey data to reflect a new

benchmark and updated seasonal adjustment factors. Because of these revisions, establishment data in this table may differ from data published earlier. See technical note, page 70.

## UNEMPLOYMENT INSURANCE DATA

NATIONAL UNEMPLOYMENT INSURANCE DATA are compiled monthly by the Employment and Training Administration of the U.S. Department of Labor from monthly reports of unemployment insurance activity prepared by State agencies. Railroad unemployment insurance data are prepared by the U.S. Railroad Retirement Board.

### Definitions

Data for **all programs** represent an unduplicated count of insured unemployment under State programs, Unemployment Compensation for Ex-Servicemen, and Unemployment Compensation for Federal Employees, and the Railroad Insurance Act.

Under both State and Federal unemployment insurance programs for civilian employees, insured workers must report the completion of at least 1 week of unemployment before they are defined as unem-

ployed. Persons not covered by unemployment insurance (about 10 percent of the labor force) and those who have exhausted or not yet earned benefit rights are excluded from the scope of the survey. **Initial claims** are notices filed by persons in unemployment insurance programs to indicate they are out of work and wish to begin receiving compensation. A claimant who continued to be unemployed a full week is then counted in the insured unemployment figure. The **rate of insured unemployment** expresses the number of insured unemployed as a percent of the average insured employment in a 12-month period.

An **application** for benefits is filed by a railroad worker at the beginning of his first period of unemployment in a benefit year; no application is required for subsequent periods in the same year. **Number of payments** are payments made in 14-day registration periods. The **average amount of benefit payment** is an average for all compensable periods, not adjusted for recovery of overpayments or settlement of underpayments. However, **total benefits paid** have been adjusted.

### 18. Unemployment insurance and employment service operations

[All items except average benefits amounts are in thousands]

Item	1981									1982			
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. <sup>P</sup>
All programs:													
Insured unemployment	3,453	3,111	2,949	3,012	2,874	2,680	2,753	3,228	3,935	4,681	4,723	4,892	4,760
State unemployment insurance program: <sup>1</sup>													
Initial claims <sup>2</sup>	1,647	1,417	1,741	2,114	1,610	1,681	1,996	2,286	3,272	3,328	2,272	2,418	2,410
Insured unemployment (average weekly volume)	2,988	2,691	2,596	2,743	2,656	2,488	2,592	3,061	3,778	4,470	4,376	4,282	4,067
Rate of insured unemployment	3.4	3.1	3.0	3.1	3.0	2.9	3.0	3.5	4.3	5.1	5.0	4.9	4.6
Weeks of unemployment compensated	11,871	9,790	9,928	10,486	9,594	9,565	9,424	10,052	14,592	15,962	15,631	18,144	16,312
Average weekly benefit amount for total unemployment	\$105.96	\$105.49	\$99.02	\$103.47	\$105.94	\$107.39	\$108.92	\$110.52	\$112.83	\$114.83	\$116.95	\$117.10	\$117.77
Total benefits paid	\$1,226,815	\$1,006,341	\$1,012,764	\$1,061,899	\$1,004,864	\$1,001,020	\$997,757	\$1,080,810	\$1,592,546	\$1,764,206	\$1,781,830	\$2,072,642	\$1,867,457
Unemployment compensation for ex-servicemen: <sup>3</sup>													
Initial claims <sup>1</sup>	16	15	19	22	19	15	11	9	11	8	8	10	9
Insured unemployment (average weekly volume)	46	43	42	44	44	34	26	22	19	16	13	11	10
Weeks of unemployment compensated	214	183	192	203	190	153	116	91	93	65	49	48	37
Total benefits paid	\$23,048	\$19,965	\$21,145	\$22,785	\$21,425	\$17,144	\$12,952	\$10,043	\$10,155	\$7,098	\$5,311	\$5,141	\$4,085
Unemployment compensation for Federal civilian employees: <sup>4</sup>													
Initial claims	12	11	13	15	17	18	20	16	17	17	12	13	14
Insured unemployment (average weekly volume)	31	27	25	25	25	29	32	36	39	40	40	38	33
Weeks of unemployment compensated	135	107	105	105	102	100	112	127	174	162	154	172	148
Total benefits paid	\$13,701	\$11,023	\$10,705	\$10,805	\$9,543	\$10,495	\$11,719	\$13,491	\$18,891	\$18,040	\$17,517	\$19,677	\$16,916
Railroad unemployment insurance:													
Applications	6	6	26	41	13	15	21	13	19	22	11	9	5
Insured unemployment (average weekly volume)	41	35	30	28	29	34	40	44	54	75	67	65	57
Number of payments	94	79	86	32	63	74	86	83	117	153	140	154	130
Average amount of benefit payment	\$201.12	\$199.43	\$201.06	\$199.63	\$202.53	\$207.98	\$197.26	\$207.08	\$212.33	\$213.39	\$214.07	\$215.71	\$209.48
Total benefits paid	\$19,239	\$15,428	\$16,206	\$11,541	\$7,071	15,046	15,994	\$16,377	\$25,292	\$30,544	\$28,011	\$33,853	\$26,262
Employment service: <sup>5</sup>													
New applications and renewals	.....	.....	12,868	.....	.....	16,502	.....	.....	4,081	.....	.....	7,439	.....
Nonfarm placements	.....	.....	2,446	.....	.....	3,509	.....	.....	731	.....	.....	1,232	.....

<sup>1</sup> Initial claims and State insured unemployment include data under the program for Puerto Rican sugarcane workers.

<sup>2</sup> Includes interstate claims for the Virgin Islands. Excludes transition claims under State programs.

<sup>3</sup> Excludes data on claims and payments made jointly with other programs.

<sup>4</sup> Excludes data on claims and payments made jointly with State programs.

<sup>5</sup> Cumulative total for fiscal year (October 1-September 30). Data computed quarterly.

NOTE: Data for Puerto Rico and the Virgin Islands included. Dashes indicate data not available. r= revised.



## PRICE DATA

PRICE DATA are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period (1967 = 100, unless otherwise noted).

### Definitions

The **Consumer Price Index** is a monthly statistical measure of the average change in prices in a fixed market basket of goods and services. Effective with the January 1978 index, the Bureau of Labor Statistics began publishing CPI's for two groups of the population. One index, a new CPI for All Urban Consumers, covers 80 percent of the total noninstitutional population; and the other index, a revised CPI for Urban Wage Earners and Clerical Workers, covers about half the new index population. The All Urban Consumers index includes, in addition to wage earners and clerical workers, professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctor's and dentist's fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items is kept essentially unchanged between major revisions so that only price changes will be measured. Prices are collected from over 18,000 tenants, 24,000 retail establishments, and 18,000 housing units for property taxes in 85 urban areas across the country. All taxes directly associated with the purchase and use of items are included in the index. Because the CPI's are based on the expenditures of two population groups in 1972-73, they may not accurately reflect the experience of individual families and single persons with different buying habits.

Though the CPI is often called the "Cost-of-Living Index," it measures only price change, which is just one of several important factors affecting living costs. Area indexes do not measure differences in the level of prices among cities. They only measure the average change in prices for each area since the base period.

**Producer Price Indexes** measure average changes in prices received in primary markets of the United States by producers of commodities in all stages of processing. The sample used for calculating these indexes contains about 2,800 commodities and about 10,000 quotations per month selected to represent the movement of prices of all commodities produced in the manufacturing, agriculture, forestry, fishing, mining, gas and electricity, and public utilities sectors. The universe includes all commodities produced or imported for sale in commercial transactions in primary markets in the United States.

Producer Price Indexes can be organized by stage of processing or by commodity. The stage of processing structure organizes products by degree of fabrication (that is, finished goods, intermediate or semifinished goods, and crude materials). The commodity structure organizes products by similarity of end-use or material composition.

To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States, from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire.

Most prices are obtained directly from producing companies on a voluntary and confidential basis. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

In calculating Producer Price Indexes, price changes for the various commodities are averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1972. The detailed data are aggregated to obtain indexes for stage of processing groupings, commodity groupings, durability of product groupings, and a number of special composite groupings.

**Price indexes for the output of selected SIC industries** measure average price changes in commodities produced by particular industries, as defined in the *Standard Industrial Classification Manual 1972* (Washington, U.S. Office of Management and Budget, 1972). These indexes are derived from several price series, combined to match the economic activity of the specified industry and weighted by the value of shipments in the industry. They use data from comprehensive industrial censuses conducted by the U.S. Bureau of the Census and the U.S. Department of Agriculture.

### Notes on the data

Beginning with the May 1978 issue of the *Review*, regional CPI's cross classified by population size, were introduced. These indexes will enable users in local areas for which an index is not published to get a better approximation of the CPI for their area by using the appropriate population size class measure for their region. The cross-classified indexes will be published bimonthly. (See table 21.)

For further details about the new and the revised indexes and a comparison of various aspects of these indexes with the old unrevised CPI, see *Facts About the Revised Consumer Price Index*, a pamphlet in the Consumer Price Index Revision 1978 series. See also *The Consumer Price Index: Concepts and Content Over the Years*, Report 517, revised edition (Bureau of Labor Statistics, May 1978).

For interarea comparisons of living costs at three hypothetical standards of living, see the family budget data published in the *Handbook of Labor Statistics, 1977*, Bulletin 1966 (Bureau of Labor Statistics, 1977), tables 122-133. Additional data and analysis on price changes are provided in the *CPI Detailed Report* and *Producer Prices and Price Indexes*, both monthly publications of the Bureau.

As of January 1976, the Wholesale Price Index (as it was then called) incorporated a revised weighting structure reflecting 1972 values of shipments. From January 1967 through December 1975, 1963 values of shipments were used as weights.

For a discussion of the general method of computing consumer, producer, and industry price indexes, see *BLS Handbook of Methods for Surveys and Studies*, Bulletin 1910 (Bureau of Labor Statistics, 1976), chapters 13-15. See also John F. Early, "Improving the measurement of producer price change," *Monthly Labor Review*, April 1978, pp. 7-15. For industry prices, see also Bennett R. Moss, "Industry and Sector Price Indexes," *Monthly Labor Review*, August 1965, pp. 974-82.

**19. Consumer Price Index for Urban Wage Earners and Clerical Workers, annual averages and changes, 1967-81**

[1967 = 100]

Year	All items		Food and beverages		Housing		Apparel and upkeep		Transportation		Medical care		Entertainment		Other goods and services	
	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change
1967	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...	100.0	...
1968	104.2	4.2	103.6	3.6	104.0	4.0	105.4	5.4	103.2	3.2	106.1	6.1	105.7	5.7	105.2	5.2
1969	109.8	5.4	108.8	5.0	110.4	6.2	111.5	5.8	107.2	3.9	113.4	6.9	111.0	5.0	110.4	4.9
1970	116.3	5.9	114.7	5.4	118.2	7.1	116.1	4.1	112.7	5.1	120.6	6.3	116.7	5.1	116.8	5.8
1971	121.3	4.3	118.3	3.1	123.4	4.4	119.8	3.2	118.6	5.2	128.4	6.5	122.9	5.3	122.4	4.8
1972	125.3	3.3	123.2	4.1	128.1	3.8	122.3	2.1	119.9	1.1	132.5	3.2	126.5	2.9	127.5	4.2
1973	133.1	6.2	139.5	13.2	133.7	4.4	126.8	3.7	123.8	3.3	137.7	3.9	130.0	2.8	132.5	3.9
1974	147.7	11.0	158.7	13.8	148.8	11.3	136.2	7.4	137.7	11.2	150.5	9.3	139.8	7.5	142.0	7.2
1975	161.2	9.1	172.1	8.4	164.5	10.6	142.3	4.5	150.6	9.4	168.6	12.0	152.2	8.9	153.9	8.4
1976	170.5	5.8	177.4	3.1	174.6	6.1	147.6	3.7	165.5	9.9	184.7	9.5	159.8	5.0	162.7	5.7
1977	181.5	6.5	188.0	6.0	186.5	6.8	154.2	4.5	177.2	7.1	202.4	9.6	167.7	4.9	172.2	5.8
1978	195.3	7.6	206.2	9.7	202.6	8.6	159.5	3.4	185.8	4.9	219.4	8.4	176.2	5.1	183.2	6.4
1979	217.7	11.5	228.7	10.9	227.5	12.3	166.4	4.3	212.8	14.5	240.1	9.4	187.6	6.5	196.3	7.2
1980	247.0	13.5	248.7	8.7	263.2	15.7	177.4	6.6	250.5	17.7	267.2	11.3	203.7	8.5	213.6	8.8
1981	272.3	10.2	267.8	7.7	293.2	11.4	186.6	5.2	281.3	12.3	295.1	10.4	219.0	7.5	233.3	9.2

**20. Consumer Price Index for All Urban Consumers and revised CPI for Urban Wage Earners and Clerical Workers, U.S. city average—general summary and groups, subgroups, and selected items**

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981			1982				1981			1982			
	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
All items	266.8	280.7	281.5	282.5	283.4	283.1	284.3	266.8	280.4	281.1	282.1	282.9	282.5	283.7
Food and beverages	265.7	269.9	270.5	273.6	275.8	275.6	276.5	266.1	270.3	270.8	273.9	276.0	275.9	276.8
Housing	284.8	304.2	305.2	306.1	307.3	306.7	309.4	284.3	303.8	304.7	305.6	306.7	306.2	309.2
Apparel and upkeep	186.4	191.3	190.5	187.3	188.0	191.1	191.9	186.0	190.5	189.4	186.5	187.3	190.5	191.2
Transportation	275.3	289.1	289.8	289.9	288.0	285.1	282.9	276.3	290.8	291.5	291.6	289.6	286.6	284.3
Medical care	287.0	308.2	310.2	313.4	316.2	318.8	321.7	289.1	307.1	309.1	312.0	314.9	317.4	320.2
Entertainment	219.2	226.8	227.3	229.2	231.2	232.8	233.9	217.0	224.3	224.4	226.1	228.1	229.5	230.5
Other goods and services	229.9	245.9	246.7	248.4	250.3	252.2	253.8	227.9	242.5	243.5	245.0	247.1	249.3	250.9
Commodities	250.8	258.0	258.4	258.8	259.5	258.8	258.9	251.2	258.5	258.8	259.3	259.9	259.1	259.2
Commodities less food and beverages	240.0	248.3	248.7	248.0	248.1	247.1	247.0	240.5	249.1	249.3	248.7	248.6	247.5	247.2
Nondurables less food and beverages	263.8	266.7	266.7	265.6	265.3	263.4	259.7	266.5	269.0	268.9	267.8	267.5	265.3	261.3
Durables	221.1	233.2	233.7	233.4	233.7	233.5	235.8	219.3	232.3	232.7	232.4	232.5	232.4	234.8
Services	295.4	320.6	321.8	323.9	325.3	325.5	328.4	295.9	321.1	322.4	324.3	325.5	325.8	329.1
Rent, residential	204.2	215.0	216.5	217.8	218.6	219.6	220.1	203.9	214.5	216.0	217.4	218.1	219.1	219.6
Household services less rent	353.3	389.2	390.4	392.4	393.7	392.5	397.3	356.2	393.6	394.8	396.5	397.7	396.6	402.3
Transportation services	264.4	283.2	284.2	286.6	287.6	288.8	290.3	263.1	282.3	283.6	285.9	286.7	287.9	289.2
Medical care services	309.8	333.7	335.7	339.4	342.4	345.1	348.0	312.2	332.0	334.0	337.5	340.6	343.0	345.8
Other services	234.4	248.7	249.5	251.7	253.0	254.0	255.3	233.8	247.2	248.0	250.0	251.3	252.4	253.8
Special indexes:														
All items less food	264.2	280.1	280.8	281.4	282.1	281.7	282.9	264.4	280.1	280.7	281.3	281.7	281.3	282.5
All items less mortgage interest costs	253.6	264.2	264.9	266.1	267.1	267.2	267.9	254.2	264.6	265.2	266.4	267.2	267.3	267.9
Commodities less food	238.0	246.2	246.5	245.9	246.0	245.2	245.0	238.6	247.0	247.2	246.6	246.6	245.6	245.3
Nondurables less food	258.1	261.1	261.1	260.2	260.1	258.4	255.0	260.7	263.4	263.3	262.4	262.2	260.2	256.6
Nondurables less food and apparel	297.7	300.1	300.7	301.0	300.5	296.6	291.4	299.9	302.0	302.5	302.6	302.0	297.8	292.3
Nondurables	265.9	269.5	269.8	270.8	271.7	270.7	269.3	267.3	270.7	270.9	271.9	272.8	271.6	270.1
Services less rent	312.8	340.8	342.0	344.2	345.7	345.7	349.1	313.5	341.6	342.9	345.0	346.3	346.4	350.2
Services less medical care	291.8	316.9	318.1	320.0	321.1	321.1	324.0	292.0	317.5	318.7	320.5	321.6	321.6	324.9
Domestically produced farm foods	255.3	258.3	259.1	262.4	265.1	263.8	264.5	255.0	257.8	258.2	261.4	264.0	262.7	263.5
Selected beef cuts	267.7	271.9	270.7	269.6	271.7	272.0	275.1	270.7	273.2	271.9	271.1	273.1	273.3	276.4
Energy	409.8	414.1	414.6	416.4	413.0	406.1	395.7	414.0	417.3	417.6	419.0	415.4	407.9	396.9
All items less energy	255.6	270.4	271.1	272.1	273.4	273.6	275.7	254.7	269.2	269.9	270.9	272.1	272.3	274.5
All items less food and energy	250.1	267.2	267.9	268.5	269.5	269.8	272.2	248.9	265.9	266.6	267.1	268.0	268.3	270.9
Commodities less food and energy	213.5	223.8	224.2	223.7	224.5	225.3	227.2	212.2	223.0	223.3	222.8	223.6	224.5	226.4
Energy commodities	458.4	448.2	448.0	446.4	440.1	424.5	406.6	459.3	449.0	448.7	447.0	440.7	425.0	406.9
Services less energy	292.7	317.7	318.9	320.5	321.9	321.5	324.5	293.2	318.2	319.5	321.0	322.2	321.8	325.2
Purchasing power of the consumer dollar, 1967 = \$1	\$0.375	\$0.356	\$0.355	\$0.354	\$0.353	\$0.353	\$0.352	\$0.375	\$0.357	\$0.356	\$0.354	\$0.353	\$0.354	\$0.352

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20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers						Urban Wage Earners and Clerical Workers (revised)							
	1981			1982			1981			1982				
	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
<b>FOOD AND BEVERAGES</b>	265.7	269.9	270.5	273.6	275.8	275.6	276.5	266.1	270.3	270.8	273.9	276.0	275.9	276.8
<b>Food</b>	272.9	277.1	277.8	281.0	283.3	283.0	283.9	273.2	277.4	277.9	281.1	283.4	283.1	284.1
Food at home	268.7	271.0	271.7	275.3	278.0	277.1	277.9	268.2	270.4	270.8	274.4	277.0	276.2	277.0
Cereals and bakery products	268.3	276.3	277.7	279.8	280.9	281.3	281.7	268.0	275.5	276.6	278.6	279.8	280.0	280.4
Cereals and cereal products (12/77 = 100)	145.4	149.9	151.5	153.0	154.0	153.9	153.6	146.9	152.1	152.5	153.9	155.0	154.8	154.6
Flour and prepared flour mixes (12/77 = 100)	137.1	138.4	137.8	139.1	139.1	139.2	139.7	139.2	140.2	138.4	139.6	139.6	139.6	140.1
Cereal (12/77 = 100)	147.8	157.4	160.2	163.1	164.8	165.2	165.4	148.9	158.9	162.1	165.1	166.8	167.2	167.4
Rice, pasta, and cornmeal (12/77 = 100)	149.5	149.6	151.7	151.1	152.4	151.2	149.6	151.4	153.9	152.9	152.4	153.6	152.4	150.8
Bakery products (12/77 = 100)	140.8	144.9	145.4	146.4	146.8	147.1	147.5	140.1	143.7	144.3	145.3	145.7	146.0	146.3
White bread	233.2	241.3	241.5	243.3	243.8	242.3	242.8	232.1	237.6	237.4	239.4	240.0	238.3	238.8
Other breads (12/77 = 100)	139.5	142.8	143.4	143.9	143.7	145.1	145.2	141.2	144.9	145.3	145.7	145.5	147.0	147.1
Fresh biscuits, rolls, and muffins (12/77 = 100)	140.4	145.2	145.9	146.5	146.4	148.4	147.6	138.7	141.9	141.9	142.5	142.8	144.6	143.8
Fresh cakes and cupcakes (12/77 = 100)	142.1	145.0	144.9	147.2	147.0	148.0	148.4	140.8	143.2	143.7	145.8	145.8	146.4	146.8
Cookies (12/77 = 100)	141.2	146.3	147.6	148.1	149.2	149.4	150.2	141.8	146.8	148.4	148.9	150.1	150.2	151.2
Crackers, bread, and cracker products (12/77 = 100)	130.9	133.1	134.2	133.4	135.4	135.3	137.3	131.1	133.4	135.6	134.7	136.8	136.5	138.7
Fresh sweetrolls, coffeecake, and donuts (12/77 = 100)	141.7	144.8	145.4	146.2	147.0	146.3	146.8	141.7	145.8	147.8	148.9	149.3	148.7	149.3
Frozen and refrigerated bakery products and fresh pies, tarts, and turnovers (12/77 = 100)	144.0	149.2	149.3	151.2	151.5	153.5	153.4	139.0	143.1	143.0	144.7	144.8	146.8	146.5
Meats, poultry, fish, and eggs	247.7	254.2	253.7	253.7	256.8	256.9	258.3	247.1	254.0	253.1	253.3	256.4	256.4	257.8
Meats, poultry, and fish	253.0	259.2	258.4	259.1	261.2	262.1	264.2	252.2	258.8	257.7	258.6	260.7	261.5	263.6
Meats	251.0	259.6	258.7	257.8	260.2	261.2	263.6	250.7	259.3	257.9	257.3	259.7	260.6	262.8
Beef and veal	267.4	271.5	270.5	269.4	271.5	271.7	274.8	269.5	272.2	270.9	270.1	272.2	272.3	275.3
Ground beef other than canned	264.8	266.1	264.5	262.2	265.0	265.8	266.9	269.0	268.0	265.8	263.7	266.3	266.9	267.9
Chuck roast	281.4	282.6	282.2	279.6	285.8	284.3	285.4	291.8	292.6	291.5	288.5	290.9	293.1	294.1
Round roast	242.8	245.0	242.6	241.6	245.3	243.0	244.9	247.5	248.2	245.9	244.7	248.9	245.9	247.9
Round steak	252.9	256.7	254.6	257.5	256.1	258.8	262.8	251.3	254.8	252.2	254.1	254.4	256.4	260.8
Sirloin steak	261.5	262.0	260.1	258.2	257.1	260.6	271.1	262.7	260.7	260.7	258.9	257.8	262.2	272.4
Other beef and veal (12/77 = 100)	156.1	161.1	161.0	160.9	161.4	161.5	163.7	154.9	159.2	159.1	159.3	159.7	159.8	162.1
Pork	217.4	235.6	234.3	234.7	238.9	239.5	241.6	216.7	235.9	233.8	234.4	238.5	238.9	241.0
Bacon	209.0	238.1	237.2	235.5	245.6	249.6	255.9	210.0	242.9	240.5	239.3	249.3	253.3	259.7
Chops	209.2	217.0	212.4	219.2	222.1	216.3	223.4	206.3	216.2	211.0	217.6	220.2	214.7	221.7
Ham other than canned (12/77 = 100)	95.2	108.9	109.1	107.3	107.0	109.2	105.4	92.6	106.6	106.3	104.8	104.7	106.5	102.8
Sausage	277.4	298.1	299.1	297.6	300.0	305.8	305.7	280.1	299.2	300.0	298.8	301.0	306.6	306.3
Canned ham	230.1	243.1	244.3	245.4	246.1	247.6	245.6	230.8	247.0	247.7	249.0	249.9	251.2	248.9
Other pork (12/77 = 100)	123.4	131.1	130.0	129.5	133.8	132.6	135.2	123.8	130.9	129.2	128.8	133.1	131.7	134.5
Other meats	255.4	260.5	260.6	258.1	258.1	262.4	262.8	253.4	259.9	259.7	257.3	257.4	261.7	261.8
Frankfurters	253.5	259.9	261.0	256.7	258.0	260.5	259.5	252.8	260.9	260.0	256.1	257.1	260.0	258.4
Bologna, liverwurst, and salami (12/77 = 100)	143.5	146.7	146.4	145.4	146.1	149.2	150.2	142.6	145.9	146.3	145.4	146.2	149.4	150.3
Other luncheonmeats (12/77 = 100)	127.9	132.1	132.6	132.2	131.7	133.7	133.2	126.4	130.6	130.6	130.2	129.7	131.7	131.2
Lamb and organ meats (12/77 = 100)	143.1	141.7	140.7	138.6	137.7	141.0	142.6	143.8	144.6	143.9	141.4	141.0	144.2	145.6
Poultry	196.8	192.3	191.7	194.2	195.7	194.7	193.3	194.6	190.6	189.5	192.4	193.8	192.8	191.5
Fresh whole chicken	198.0	190.9	190.1	193.1	196.3	195.1	194.1	194.1	188.5	187.8	190.9	194.4	192.8	192.0
Fresh and frozen chicken parts (12/77 = 100)	127.5	127.3	128.1	128.5	128.9	127.5	127.6	125.8	126.5	126.3	126.9	127.1	125.9	125.9
Other poultry (12/77 = 100)	125.9	122.2	120.7	123.2	123.2	123.9	121.3	126.3	121.5	119.8	123.0	122.6	123.3	120.8
Fish and seafood	359.7	358.9	359.6	373.3	373.8	376.3	382.0	353.7	356.6	358.6	372.4	373.2	375.5	381.4
Canned fish and seafood (12/77 = 100)	138.8	141.5	140.7	140.6	140.9	141.0	141.5	136.6	141.0	140.2	140.0	140.4	140.5	140.8
Fresh and frozen fish and seafood (12/77 = 100)	135.9	133.9	134.7	143.2	143.2	144.7	147.9	133.6	132.7	134.4	143.0	143.2	144.6	148.0
Eggs	184.3	194.7	198.0	189.4	205.1	195.2	186.9	185.5	196.7	198.8	190.6	206.1	196.3	187.9
Dairy products	243.5	245.0	245.5	245.8	246.5	246.5	247.5	243.8	244.7	244.9	245.2	245.8	245.9	246.8
Fresh milk and cream (12/77 = 100)	134.6	134.9	135.2	135.1	135.5	135.3	135.9	134.7	134.6	134.6	134.6	134.9	134.8	135.3
Fresh whole milk	220.4	220.8	221.2	221.2	221.5	221.7	222.2	220.2	220.1	220.2	220.2	220.5	220.8	221.3
Other fresh milk and cream (12/77 = 100)	134.5	134.9	135.3	135.1	135.8	135.1	136.2	135.2	134.9	134.9	134.7	135.5	134.6	135.7
Processed dairy products (12/77 = 100)	142.0	143.5	143.9	144.4	144.8	144.9	145.6	142.6	144.0	144.2	144.7	145.1	145.3	145.9
Butter	244.3	248.0	248.7	249.3	248.9	250.1	250.1	247.7	250.2	251.3	252.0	251.4	252.7	252.7
Cheese (12/77 = 100)	140.6	141.1	141.0	142.0	142.8	143.3	143.7	140.5	141.1	141.3	142.3	143.1	143.6	144.0
Ice cream and related products (12/77 = 100)	146.7	149.3	150.3	150.8	150.8	149.5	150.9	147.8	149.4	149.4	149.9	149.1	148.9	150.2
Other dairy products (12/77 = 100)	135.7	138.7	139.7	138.4	140.0	139.5	139.9	136.1	140.2	140.5	139.1	140.8	140.3	140.8
Fruits and vegetables	281.9	272.0	276.4	294.7	301.5	293.1	294.0	280.0	268.1	272.6	291.3	297.4	289.1	290.3
Fresh fruits and vegetables	296.4	267.8	274.9	308.0	319.6	302.1	304.1	294.5	261.9	269.4	303.1	313.4	296.1	298.9
Fresh fruits	271.6	276.1	269.6	276.7	291.2	297.8	306.7	268.6	266.0	260.5	267.0	280.1	287.3	295.5
Apples	231.1	248.7	261.2	273.0	279.5	288.7	287.5	232.1	249.1	261.2	272.6	279.9	288.5	287.8
Bananas	266.8	249.4	254.9	253.5	251.0	263.0	268.5	262.2	248.3	252.8	251.1	247.9	261.1	266.1
Oranges	287.5	314.0	280.6	283.1	313.1	316.3	330.8	274.3	286.0	252.8	255.1	281.1	285.9	300.2
Other fresh fruits (12/77 = 100)	147.1	144.7	141.0	145.9	154.5	157.2	163.4	147.6	139.7	136.7	141.0	149.0	151.8	157.6
Fresh vegetables	319.6	260.1	279.8	337.3	346.2	306.1	301.8	318.0	258.2	277.6	335.8	343.5	304.2	302.0
Potatoes	378.1	286.3	286.8	288.8	297.4	301.0	306.1	369.8	281.5	280.0	282.7	291.5	294.8	300.8
Lettuce	226.9	257.1	343.1	514.4	408.9	270.9	355.2	231.5	247.4	342.7	515.8	408.0	271.3	358.6
Tomatoes	375.3	206.9	204.6	245.6	288.5	258.1	220.5	370.7	209.7	207.8	248.8	293.2	261.8	224.9
Other fresh vegetables (12/77 = 100)</														



**20. Continued—Consumer Price Index—U.S. city average**

[1967=100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981			1982				1981			1982			
	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
<b>FOOD AND BEVERAGES—Continued</b>														
<b>Food—Continued</b>														
Food at home—Continued														
Fruits and vegetables—Continued														
Cut corn and canned beans except lima (12/77=100)	130.2	138.3	138.9	139.9	140.7	141.2	140.5	129.0	136.0	136.5	137.5	138.3	138.8	137.9
Other canned and dried vegetables (12/77=100)	128.7	133.1	134.8	135.0	134.1	134.8	135.0	127.1	131.8	133.2	133.5	132.6	133.3	133.5
Other foods at home	324.7	326.0	325.6	328.7	330.7	331.7	331.6	325.4	327.0	326.4	329.6	331.5	332.6	332.6
Sugar and sweets	375.8	359.1	359.3	361.6	364.2	365.5	365.3	377.8	359.0	359.3	361.6	364.1	365.4	365.2
Candy and chewing gum (12/77=100)	144.1	149.3	149.9	150.1	150.0	150.3	150.9	145.1	148.9	149.9	150.0	149.8	150.1	150.8
Sugar and artificial sweeteners (12/77=100)	195.5	155.2	153.4	155.6	160.0	161.0	159.9	196.0	157.0	154.6	157.0	161.3	162.4	161.1
Other sweets (12/77=100)	139.8	144.9	146.1	147.1	146.9	147.4	147.2	138.7	143.1	144.2	145.2	145.1	145.5	145.3
Fats and oils (12/77=100)	270.1	262.2	261.1	261.6	260.5	259.6	260.4	270.4	263.1	261.0	261.5	260.6	259.7	260.4
Margarine	256.1	255.2	255.7	257.8	256.7	256.7	259.6	256.1	254.9	254.9	257.2	256.1	256.1	259.1
Nondairy substitutes and peanut butter (12/77=100)	182.4	163.0	160.1	157.7	157.8	156.1	157.3	182.3	163.0	158.5	156.0	156.3	154.4	155.6
Other fats, oils, and salad dressings (12/77=100)	129.8	129.8	129.7	130.5	129.8	129.5	129.0	129.7	130.4	130.1	131.0	130.2	130.0	129.5
Nonalcoholic beverages	414.4	413.4	412.5	418.7	423.4	424.8	424.1	415.8	415.2	414.2	420.5	425.0	426.6	426.0
Cola drinks, excluding diet cola	298.0	298.8	298.1	302.4	304.6	306.6	304.9	294.9	296.1	295.7	300.0	302.0	303.8	302.4
Carbonated drinks, including diet cola (12/77=100)	141.8	141.4	139.3	141.9	143.8	143.4	143.4	139.8	139.3	137.2	139.7	141.7	141.4	141.5
Roasted coffee	356.7	341.0	344.4	353.3	364.4	366.6	369.6	352.5	337.3	340.1	348.8	359.9	362.2	365.0
Freeze dried and instant coffee	339.5	330.8	332.0	336.9	342.8	343.6	343.4	340.9	333.2	331.6	336.5	342.5	343.4	343.0
Other noncarbonated drinks (12/77=100)	133.5	136.4	137.0	138.0	138.4	138.9	138.7	133.5	136.4	137.1	138.2	138.6	139.1	138.9
Other prepared foods	251.2	262.7	262.8	264.6	265.3	266.5	266.6	252.4	264.5	264.4	266.3	266.9	268.1	268.3
Canned and packaged soup (12/77=100)	129.3	133.4	133.7	134.3	135.9	135.6	135.7	129.8	136.1	135.7	136.4	137.9	137.8	137.8
Frozen prepared foods (12/77=100)	142.3	146.5	145.9	147.8	146.2	147.0	147.2	139.8	145.1	145.3	147.4	146.5	146.5	146.7
Snacks (12/77=100)	145.6	152.5	152.2	152.6	153.4	153.4	152.9	148.1	155.6	154.2	154.6	155.2	155.4	155.0
Seasonings, olives, pickles, and relish (12/77=100)	139.9	148.9	148.8	149.7	151.3	153.2	153.6	138.7	147.4	147.7	148.6	150.3	152.2	152.7
Other condiments (12/77=100)	139.2	145.0	144.6	146.4	146.9	148.2	148.7	141.7	146.5	146.2	148.0	148.4	149.9	150.4
Miscellaneous prepared foods (12/77=100)	136.7	144.8	145.8	146.9	147.0	147.7	147.6	137.7	145.2	145.8	147.0	147.1	147.9	147.7
Other canned and packaged prepared foods (12/77=100)	135.1	141.8	142.5	142.5	143.0	143.2	143.3	135.9	143.0	143.9	143.9	144.1	144.5	144.6
Food away from home	288.2	297.2	297.7	299.8	301.2	302.4	303.6	290.7	299.6	300.7	302.8	304.2	305.4	306.7
Lunch (12/77=100)	140.7	144.4	144.6	146.1	146.6	147.0	147.5	141.4	145.6	146.3	147.7	148.2	148.6	149.1
Dinner (12/77=100)	139.4	143.6	144.0	144.8	145.2	145.7	146.3	141.1	145.1	145.6	146.4	146.8	147.3	147.9
Other meals and snacks (12/77=100)	138.8	144.6	144.7	145.4	146.9	147.9	148.6	140.1	145.1	145.4	146.2	147.6	148.7	149.3
<b>Alcoholic beverages</b>	197.8	202.3	202.7	204.0	205.6	206.6	207.4	199.4	204.6	204.9	206.0	207.6	208.8	209.5
Alcoholic beverages at home (12/77=100)	128.5	131.2	131.4	132.2	133.3	134.0	134.6	130.0	132.8	132.8	133.4	134.6	135.4	136.0
Beer and ale	199.7	204.0	204.1	205.0	207.4	209.2	210.5	199.8	203.6	203.5	204.3	205.5	208.3	209.6
Whiskey	141.3	144.8	145.0	145.9	146.8	147.0	147.2	142.3	146.2	145.9	146.8	147.7	147.8	148.4
Wine	224.7	227.5	230.0	232.2	234.2	235.3	236.4	232.0	237.4	238.0	239.8	241.6	243.3	244.0
Other alcoholic beverages (12/77=100)	114.9	117.3	117.3	117.5	117.8	118.1	118.2	114.1	116.8	117.4	117.5	117.8	118.0	118.0
Alcoholic beverages away from home (12/77=100)	131.6	135.7	135.8	137.0	137.6	138.2	138.4	130.6	136.6	137.3	138.6	139.1	139.7	139.9
<b>HOUSING</b>	284.8	304.2	305.2	306.1	307.3	306.7	309.4	284.3	303.8	304.7	305.6	306.7	306.2	309.2
<b>Shelter</b>	303.8	327.2	328.0	328.3	329.5	327.6	331.4	304.6	328.5	329.3	329.4	330.3	328.5	332.8
Rent, residential	204.2	215.0	216.5	217.8	218.6	219.6	220.1	203.9	214.5	216.0	217.4	218.1	219.1	219.6
Other rental costs	285.9	305.3	306.3	313.6	316.9	320.1	323.7	285.8	305.0	305.3	312.3	315.6	318.9	322.8
Lodging while out of town	307.5	318.6	319.9	331.1	335.9	340.9	346.6	306.0	317.9	318.0	328.4	333.0	337.9	343.9
Tenants' insurance (12/77=100)	131.2	140.4	140.7	141.8	143.5	144.1	144.9	131.6	140.3	140.6	142.0	143.6	144.3	144.7
Homeownership	339.3	367.2	367.8	367.5	368.7	365.7	370.6	341.1	369.8	370.4	369.9	370.8	367.9	373.6
Home purchase	260.7	270.2	270.5	269.3	270.4	269.2	272.3	259.7	268.6	268.7	267.4	268.3	267.1	270.5
Financing, taxes, and insurance	447.1	505.6	506.3	506.0	507.2	500.9	508.4	452.6	511.9	512.9	512.2	513.2	507.0	516.0
Property insurance	378.5	393.3	394.1	393.0	393.7	394.1	393.6	382.5	395.5	396.5	395.6	396.0	396.5	396.0
Property taxes	199.9	208.0	210.7	212.9	215.1	216.6	217.2	201.7	210.0	212.5	214.5	217.2	218.5	219.1
Contracted mortgage interest cost	579.8	666.8	666.6	665.2	666.1	655.5	667.1	580.9	667.7	668.1	666.3	666.6	656.4	670.2
Mortgage interest rates	219.5	244.1	243.9	244.4	243.9	240.7	242.1	220.3	245.3	245.7	245.4	245.4	242.3	244.4
Maintenance and repairs	309.3	322.8	324.1	326.7	328.2	327.2	331.6	304.5	319.8	321.0	323.3	324.6	323.7	328.3
Maintenance and repair services	337.0	353.8	355.4	358.2	359.4	357.8	363.6	334.1	354.9	356.5	359.2	360.1	358.6	365.0
Maintenance and repair commodities	244.4	249.7	250.3	252.5	254.6	255.0	256.2	239.7	244.5	244.9	246.4	248.2	248.6	249.7
Paint and wallpaper, supplies, tools, and equipment (12/77=100)	143.4	146.5	147.3	149.4	150.9	151.8	153.1	136.8	140.0	140.5	142.3	143.7	144.7	145.8
Lumber, awnings, glass, and masonry (12/77=100)	124.3	124.1	124.3	124.6	124.6	123.9	124.5	123.1	121.8	121.6	121.9	121.7	121.2	121.9
Plumbing, electrical, heating, and cooling supplies (12/77=100)	127.9	133.1	131.5	131.9	133.8	133.4	133.4	127.9	132.4	131.6	131.8	133.4	133.1	133.1
Miscellaneous supplies and equipment (12/77=100)	126.4	131.6	132.5	133.6	134.8	135.1	135.6	129.9	134.2	134.7	135.7	136.9	137.1	137.4
<b>Fuel and other utilities</b>	310.5	329.8	331.8	336.2	337.1	339.3	339.2	311.4	330.9	332.7	337.0	337.9	340.2	340.3
<b>Fuels</b>	396.5	417.6	420.0	426.9	427.6	430.5	428.2	396.2	417.4	419.6	426.2	426.8	429.9	427.8
Fuel oil, coal, and bottled gas	690.6	676.1	682.5	686.0	683.1	664.0	641.3	693.7	679.3	685.5	688.9	686.0	666.7	644.0
Fuel oil	727.0	706.8	713.5	716.8	713.8	692.3	666.2	729.4	709.6	716.0	719.3	716.3	694.4	668.4
Other fuels (6/78=100)	162.5	167.7	169.4	170.9	170.0	168.0	166.4	164.2	169.1	170.8	172.1	171.4	169.5	167.9
Gas (piped) and electricity	330.6	358.3	359.9	367.4	368.7	375.9	377.8	329.6	357.5	358.8	366.0	367.3	374.8	376.8
Electricity	277.3	298.6	300.3	306.6	306.8	313.3	312.8	276.8	297.7	299.3	305.3	305.5	312.3	311.8
Utility (piped) gas	399.4	437.0	438.2	447.2	450.8	458.6	465.3	397.2	436.0	436.4	445.2	448.7	456.6	463.6

**20. Continued—Consumer Price Index—U.S. city average**

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981			1982				1981			1982			
	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
<b>HOUSING—Continued</b>														
<b>Fuel and other utilities—Continued</b>														
Other utilities and public services .....	175.1	190.7	191.9	192.7	193.9	195.0	197.7	175.4	191.0	192.2	193.1	194.3	195.4	198.2
Telephone services .....	143.4	155.6	156.8	157.2	157.9	158.5	160.8	143.4	155.8	156.9	157.3	158.0	158.6	161.0
Local charges (12/77 = 100) .....	114.8	123.5	124.4	124.0	125.3	125.6	127.9	114.9	123.8	124.6	124.2	125.4	125.7	128.1
Interstate toll calls (12/77 = 100) .....	101.8	116.7	116.7	116.8	116.6	117.7	119.9	101.9	116.8	116.8	116.9	116.7	117.8	120.2
Intrastate toll calls (12/77 = 100) .....	101.4	105.3	107.1	109.2	109.1	109.0	108.9	101.2	105.0	106.9	109.0	108.8	108.7	108.7
Water and sewerage maintenance .....	278.4	306.1	307.4	309.8	313.3	316.9	320.7	280.3	307.9	309.4	312.2	315.7	319.7	323.6
<b>Household furnishings and operations</b> .....	219.2	227.2	227.7	228.4	230.2	231.6	232.6	215.9	223.6	224.2	224.9	226.7	228.0	229.1
Housefurnishings .....	183.9	189.4	189.2	189.8	191.4	192.7	193.8	181.6	187.3	187.1	187.7	189.3	190.4	191.7
Textile housefurnishings .....	200.5	211.7	211.2	210.1	216.0	217.7	218.7	202.9	214.7	213.9	212.5	218.5	219.9	221.4
Household linens (12/77 = 100) .....	123.0	130.8	128.8	127.3	131.0	134.7	135.8	125.0	131.9	129.9	128.6	132.1	135.6	137.0
Curtains, drapes, slipcovers, and sewing materials (12/77 = 100) .....	127.1	133.1	134.7	134.8	138.5	136.7	136.9	128.2	136.1	137.4	137.0	141.0	138.7	139.1
Furniture and bedding .....	203.7	209.2	209.7	209.5	209.4	212.1	214.7	200.0	205.3	206.0	205.9	205.5	208.2	211.0
Bedroom furniture (12/77 = 100) .....	134.5	139.6	138.6	139.7	140.5	140.8	142.3	130.7	135.2	135.2	136.5	137.1	137.2	138.9
Sofas (12/77 = 100) .....	116.5	118.7	119.4	117.3	116.4	118.0	119.3	114.9	118.8	119.5	117.6	116.5	118.2	119.6
Living room chairs and tables (12/77 = 100) .....	116.6	118.8	119.0	118.9	118.6	121.6	123.2	117.6	118.9	119.1	119.0	118.8	121.8	123.3
Other furniture (12/77 = 100) .....	133.4	137.1	138.4	138.5	138.1	140.5	142.3	130.1	133.1	134.0	133.9	133.4	135.8	137.9
Appliances including TV and sound equipment .....	145.3	148.2	147.9	148.8	149.9	150.1	150.6	144.2	147.7	147.5	148.5	149.6	149.7	150.3
Television and sound equipment (12/77 = 100) .....	108.6	109.0	108.9	108.8	109.2	109.1	108.7	107.1	108.3	108.0	107.9	108.4	108.2	107.7
Television .....	106.0	104.8	104.7	104.4	104.5	104.7	104.2	104.7	103.6	103.3	103.1	103.3	103.5	103.0
Sound equipment (12/77 = 100) .....	112.1	113.9	113.7	113.8	114.5	114.0	113.7	110.2	113.4	112.9	113.0	113.8	113.2	112.8
Household appliances .....	170.4	176.1	175.9	178.0	179.7	180.3	182.1	169.9	175.9	176.0	178.1	179.9	180.4	182.3
Refrigerators and home freezers .....	170.6	178.7	179.9	180.8	182.6	183.7	184.8	174.7	182.7	185.3	186.1	187.9	189.3	190.6
Laundry equipment (12/77 = 100) .....	126.1	130.7	130.5	132.2	133.5	133.3	136.4	125.7	130.8	130.3	132.4	133.8	133.5	136.6
Other household appliances (12/77 = 100) .....	116.6	119.4	118.7	120.6	121.6	122.2	122.9	114.4	117.4	116.8	118.5	119.7	120.0	120.7
Stoves, dishwashers, vacuums, and sewing machines (12/77 = 100) .....	115.8	118.7	117.9	119.4	121.0	121.9	122.3	113.9	116.8	116.2	117.4	118.9	119.3	119.7
Office machines, small electric appliances, and air conditioners (12/77 = 100) .....	117.4	120.1	119.6	121.9	122.4	122.5	123.5	115.0	118.1	117.3	119.7	120.5	120.7	121.8
Other household equipment (12/77 = 100) .....	130.0	134.4	134.0	134.9	136.7	137.3	137.8	127.9	132.4	131.9	132.9	134.7	135.3	135.6
Floor and window coverings, infants', laundry, cleaning, and outdoor equipment (12/77 = 100) .....	131.4	136.1	135.9	136.3	139.1	140.9	140.3	124.4	129.7	128.3	128.6	131.0	133.3	132.9
Clocks, lamps, and decor items (12/77 = 100) .....	125.6	129.5	128.4	128.6	129.8	129.0	130.2	120.9	125.2	124.7	124.8	126.0	125.4	126.5
Tableware, serving pieces, and nonelectric kitchenware (12/77 = 100) .....	137.1	141.2	141.0	142.3	143.3	143.1	145.0	134.1	137.5	137.1	138.2	139.5	139.0	140.6
Lawn equipment, power tools, and other hardware (12/77 = 100) .....	121.5	126.9	126.3	127.8	130.3	132.1	130.8	125.9	131.6	131.5	133.2	135.5	137.3	136.0
Housekeeping supplies .....	266.9	275.4	277.4	279.1	282.4	284.2	284.9	263.4	271.9	274.1	275.7	278.8	280.4	281.2
Soaps and detergents .....	259.4	269.7	271.6	275.5	278.0	279.5	280.0	256.7	265.2	268.0	272.0	274.4	275.7	276.3
Other laundry and cleaning products (12/77 = 100) .....	131.0	137.3	138.8	139.6	141.0	142.1	142.7	130.4	137.0	137.5	138.4	139.8	140.9	141.6
Cleansing and toilet tissue, paper towels and napkins (12/77 = 100) .....	138.4	143.6	144.5	145.1	145.7	145.7	146.4	138.5	143.9	144.4	145.1	145.6	145.4	146.2
Stationery, stationery supplies, and gift wrap (12/77 = 100) .....	123.1	128.5	128.8	128.8	130.4	130.7	131.4	124.8	131.3	131.6	131.7	133.4	133.8	134.6
Miscellaneous household products (12/77 = 100) .....	138.1	143.0	145.4	146.2	146.9	147.5	147.5	134.5	137.4	140.4	141.2	141.8	142.4	142.4
Lawn and garden supplies (12/77 = 100) .....	139.1	136.8	136.7	137.1	141.8	144.7	144.7	131.1	129.6	129.4	129.2	134.1	136.7	136.8
Housekeeping services .....	289.9	305.2	306.9	307.4	308.1	309.9	310.4	288.6	303.9	305.4	305.9	306.8	308.2	309.2
Postage .....	308.0	337.5	337.5	337.5	337.5	337.5	337.5	308.1	337.5	337.5	337.5	337.5	337.5	337.5
Moving, storage, freight, household laundry, and drycleaning services (12/77 = 100) .....	140.7	147.0	147.8	148.4	149.4	150.8	152.1	140.2	146.7	147.6	148.0	149.1	150.6	152.2
Appliance and furniture repair (12/77 = 100) .....	125.2	132.2	133.0	133.6	134.2	135.0	135.6	124.3	131.2	131.6	132.2	132.8	133.5	134.1
<b>APPAREL AND UPKEEP</b> .....	186.4	191.3	190.5	187.3	188.0	191.1	191.9	186.0	190.5	189.4	186.5	187.3	190.5	191.2
<b>Apparel commodities</b> .....	177.6	181.8	180.7	177.0	177.6	180.8	181.4	177.5	181.5	180.1	176.7	177.4	180.8	181.3
Apparel commodities less footwear .....	174.0	177.9	176.6	172.8	173.4	176.8	177.4	173.9	177.3	175.6	172.2	173.0	176.6	177.1
Men's and boys' .....	175.6	183.6	181.6	178.7	179.3	181.7	183.1	176.1	183.2	181.7	178.6	179.4	181.6	182.9
Men's (12/77 = 100) .....	110.5	115.9	114.5	112.9	113.0	114.5	115.5	110.9	115.9	115.0	113.3	113.5	114.7	115.7
Suits, sport coats, and jackets (12/77 = 100) .....	104.1	109.9	106.4	104.3	104.8	107.2	107.6	98.3	102.0	99.5	97.8	98.2	100.4	101.1
Coats and jackets (12/77 = 100) .....	98.1	102.8	101.4	96.4	95.8	98.1	99.1	99.6	105.1	104.1	97.6	97.2	99.7	100.7
Furnishings and special clothing (12/77 = 100) .....	127.5	133.6	134.2	133.6	134.7	136.8	138.2	122.7	129.8	130.6	129.8	131.1	133.1	134.5
Shirts (12/77 = 100) .....	117.0	123.0	122.7	120.7	119.3	119.9	121.3	119.5	125.4	125.3	123.3	121.8	122.3	123.4
Dungarees, jeans, and trousers (12/77 = 100) .....	105.4	109.8	108.5	108.2	108.6	108.6	109.7	111.5	115.5	114.1	113.6	114.1	114.2	115.1
Boys' (12/77 = 100) .....	114.5	118.0	117.2	114.6	116.0	117.8	118.3	113.9	116.5	115.4	112.9	114.3	116.1	116.5
Coats, jackets, sweaters, and shirts (12/77 = 100) .....	107.2	111.6	109.9	104.7	105.9	109.4	111.2	110.9	112.8	110.9	105.3	106.3	109.7	111.5
Furnishings (12/77 = 100) .....	121.5	127.0	127.5	127.3	128.2	128.7	130.3	118.2	123.3	123.5	123.3	124.2	124.7	126.0
Suits, trousers, sport coats, and jackets (12/77 = 100) .....	117.4	119.3	118.8	117.2	119.1	120.1	119.0	114.8	116.9	115.9	114.7	116.7	117.8	118.8
Women's and girls' .....	158.8	160.6	159.6	154.3	154.7	160.3	160.9	160.7	162.1	160.7	156.4	157.1	163.0	163.4
Women's (12/77 = 100) .....	105.0	106.3	105.8	102.3	102.9	106.8	107.1	106.7	107.6	107.1	103.9	104.8	109.0	109.1
Coats and jackets .....	157.6	164.0	161.8	158.4	156.4	162.0	163.4	156.8	166.3	167.3	161.6	163.1	173.1	172.9
Dresses .....	167.8	165.0	164.0	153.1	152.8	163.1	166.6	159.8	151.9	149.5	140.7	140.9	148.1	151.1
Separates and sportswear (12/77 = 100) .....	100.2	101.1	100.7	96.7	96.3	100.3	100.1	102.6	101.9	101.3	97.3	96.8	101.2	101.0
Underwear, nightwear, and hosiery (12/77 = 100) .....	119.3	124.1	124.8	124.0	126.2	127.1	127.4	119.1	124.0	124.5	123.7	126.0	126.9	127.3
Suits (12/77 = 100) .....	91.6	89.5	87.7	84.2	87.0	92.7	89.4	108.0	108.5	106.0	104.0	105.6	114.1	111.0
Girls' (12/77 = 100) .....	108.6	109.2	107.7	104.4	102.7	105.6	106.4	107.8	108.4	106.0	104.2	103.1	106.0	106.9
Coats, jackets, dresses, and suits (12/77 = 100) .....	106.4	100.3	98.4	93.4	92.6	98.2	98.8	101.3	99.9	96.1	91.2	91.5	97.2	97.6
Separates and sportswear (12/77 = 100) .....	106.8	111.3	108.9	106.3	103.4	104.6	105.4	109.5	110.2	107.5	108.2	106.0	106.9	107.6
Underwear, nightwear, hosiery, and accessories (12/77 = 100) .....	115.5	120.0	120.7	119.2	118.0	119.6	122.0	115.4	119.0	119.5	118.2	117.0	118.7	121.0

**20. Continued — Consumer Price Index — U.S. city average**

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers						Urban Wage Earners and Clerical Workers (revised)							
	1981			1982			1981				1982			
	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
<b>APPAREL AND UPKEEP — Continued</b>														
<b>Apparel commodities — Continued</b>														
Apparel commodities less footwear — Continued														
Infants' and toddlers'	259.2	264.9	259.4	259.6	262.2	264.7	267.0	269.3	274.1	270.6	270.1	271.4	275.4	278.2
Other apparel commodities	214.1	214.8	214.5	212.9	214.3	212.7	210.8	205.6	206.1	203.2	201.4	202.8	201.6	199.5
Sewing materials and notions (12/77 = 100)	114.8	118.6	118.3	116.2	117.6	118.1	118.5	114.3	116.4	116.2	114.3	115.9	116.5	116.9
Jewelry and luggage (12/77 = 100)	148.4	147.5	147.4	146.7	147.4	145.7	143.8	141.4	141.0	138.4	137.5	138.1	136.7	134.5
Footwear	199.3	205.4	205.7	202.8	202.8	204.9	205.6	198.4	206.2	205.9	203.1	203.3	205.2	206.1
Men's (12/77 = 100)	126.8	130.3	130.7	130.3	130.7	132.5	132.3	128.0	132.3	132.5	132.2	132.6	134.5	134.4
Boys' and girls' (12/77 = 100)	128.2	132.1	132.1	130.1	129.5	129.2	130.4	126.7	134.0	134.8	132.5	132.3	132.1	133.6
Women's (12/77 = 100)	121.3	125.2	125.4	122.6	122.7	124.7	125.1	119.3	122.9	121.6	118.9	119.0	120.8	121.1
<b>Apparel services</b>	254.3	264.6	266.4	267.6	269.4	271.3	273.4	252.7	262.3	264.4	265.5	267.2	269.0	271.0
Laundry and drycleaning other than coin operated (12/77 = 100)	150.9	158.2	159.2	160.0	161.4	162.4	163.5	150.4	156.3	157.8	158.5	159.9	160.9	162.0
Other apparel services (12/77 = 100)	134.5	137.9	139.1	139.4	139.8	141.1	142.5	134.0	138.6	139.6	139.9	140.3	141.5	142.7
<b>TRANSPORTATION</b>	275.3	289.1	289.8	289.9	288.0	285.1	282.9	276.3	290.8	291.5	291.6	289.6	286.6	284.3
<b>Private</b>	273.4	285.8	286.5	286.6	284.5	281.3	278.8	275.1	288.3	289.0	289.0	286.9	283.7	281.2
New cars	186.1	195.3	197.0	197.4	195.5	194.4	196.0	186.2	195.2	196.9	197.3	195.3	194.2	195.9
Used cars	239.1	281.4	281.9	280.5	279.7	280.9	285.1	239.1	281.4	281.9	280.5	279.7	280.9	285.2
Gasoline	419.3	409.5	408.4	406.0	399.1	383.9	366.7	420.8	410.9	409.8	407.5	400.6	385.4	368.2
Automobile maintenance and repair	289.0	302.8	304.1	305.5	307.7	310.2	311.9	289.7	303.4	304.8	306.2	308.4	311.1	312.8
Body work (12/77 = 100)	140.8	149.9	150.6	151.5	153.7	154.5	155.0	140.7	148.3	149.8	149.8	152.1	152.7	153.3
Automobile drive train, brake, and miscellaneous mechanical repair (12/77 = 100)	138.0	144.2	144.7	145.7	146.5	148.7	149.5	140.5	147.3	148.5	149.5	150.2	152.8	153.7
Maintenance and servicing (12/77 = 100)	135.5	140.9	141.5	142.0	142.7	143.9	144.5	135.7	140.5	141.0	141.5	142.3	143.4	144.0
Power plant repair (12/77 = 100)	137.8	144.9	145.6	146.2	147.3	148.0	149.1	136.7	144.7	145.1	145.7	146.8	147.5	148.6
Other private transportation	236.3	249.5	250.6	253.3	253.4	254.5	255.1	239.2	253.0	254.2	256.9	256.8	257.8	258.2
Other private transportation commodities	208.1	213.4	214.5	215.5	214.8	215.6	214.9	210.4	216.8	216.9	218.0	217.3	218.2	217.2
Motor oil, coolant, and other products (12/77 = 100)	143.5	148.5	148.7	148.2	149.3	150.2	150.7	140.5	146.7	147.2	146.9	147.8	148.7	149.2
Automobile parts and equipment (12/77 = 100)	133.2	136.4	137.2	138.1	137.4	137.9	137.2	135.4	139.2	139.2	140.0	139.4	139.9	139.2
Tires	185.8	189.7	191.5	192.8	191.3	191.7	190.1	189.6	195.1	195.2	196.5	195.1	195.5	193.7
Other parts and equipment (12/77 = 100)	130.1	134.1	133.9	134.3	134.6	135.7	136.2	130.8	134.1	133.9	134.5	134.9	135.9	136.6
Other private transportation services	246.2	261.5	262.6	265.8	266.1	267.2	268.2	249.2	265.1	266.6	269.7	269.8	270.8	271.6
Automobile insurance	255.7	265.4	266.0	266.8	268.1	269.8	270.4	255.2	265.0	265.6	266.6	268.0	269.6	270.2
Automobile finance charges (12/77 = 100)	166.5	188.7	190.5	190.9	188.9	188.9	187.2	166.3	187.6	189.9	190.3	188.3	188.2	186.7
Automobile rental, registration, and other fees (12/77 = 100)	118.2	120.7	120.8	127.6	128.9	129.7	133.3	119.3	121.1	121.4	128.4	129.5	130.1	133.7
State registration	146.9	149.0	149.0	166.9	167.1	168.5	174.2	147.0	149.0	149.0	166.2	166.5	167.8	173.8
Drivers' licenses (12/77 = 100)	105.5	110.4	111.9	117.3	121.7	122.9	123.0	105.2	110.3	111.9	117.1	121.7	123.0	123.0
Vehicle inspection (12/77 = 100)	126.0	( <sup>1</sup> )	128.3	129.2	129.3	129.3	129.0	126.6	( <sup>1</sup> )	129.0	130.5	130.6	130.6	130.4
Other vehicle-related fees (12/77 = 100)	138.4	141.3	141.6	142.5	144.8	145.3	149.5	147.1	148.6	149.2	150.4	152.4	152.5	156.4
<b>Public</b>	297.2	333.2	333.8	334.9	336.8	336.7	339.3	287.7	328.2	328.6	329.4	331.0	331.0	333.3
Airline fare	348.6	374.5	374.7	375.5	379.3	379.0	382.7	346.6	373.1	372.8	372.7	376.3	<sup>c</sup> 376.3	379.8
Inter-city bus fare	329.1	362.2	365.2	367.3	365.7	365.6	367.0	329.2	362.9	366.1	368.9	367.4	367.0	368.7
Intracity mass transit	251.7	304.4	304.6	305.9	306.7	306.6	308.1	249.8	303.6	303.9	305.1	305.8	305.7	307.2
Taxi fare	279.9	291.3	294.7	296.3	296.7	297.2	297.6	287.4	300.4	304.1	305.6	306.1	306.6	307.3
Inter-city train fare	277.2	319.2	319.2	318.1	314.0	314.1	332.1	277.5	318.9	318.9	317.9	314.5	314.5	332.1
<b>MEDICAL CARE</b>	287.0	308.2	310.2	313.4	316.2	318.8	321.7	289.1	307.1	309.1	312.0	314.9	317.4	320.2
<b>Medical care commodities</b>	182.4	193.1	194.9	195.9	197.7	200.0	202.4	183.4	193.8	195.4	196.4	198.3	200.6	203.0
Prescription drugs	168.5	179.6	181.0	181.9	183.7	186.1	188.8	169.2	180.3	181.9	182.8	184.7	187.0	189.7
Anti-infective drugs (12/77 = 100)	130.2	136.3	137.8	138.2	138.4	139.3	140.9	132.4	138.9	139.7	140.1	140.4	141.1	142.5
Tranquilizers and sedatives (12/77 = 100)	134.4	143.6	144.8	145.4	146.8	<sup>c</sup> 148.6	152.0	133.3	143.3	144.4	144.9	146.5	148.3	151.8
Circulatories and diuretics (12/77 = 100)	123.9	130.4	131.9	132.2	134.0	135.7	136.7	125.3	131.0	131.8	132.1	134.0	135.6	136.6
Hormones, diabetic drugs, biologicals, and prescription medical supplies (12/77 = 100)	151.2	163.3	164.6	165.6	168.4	170.8	173.3	150.9	164.1	165.9	166.9	169.7	172.0	174.6
Pain and symptom control drugs (12/77 = 100)	134.5	144.9	145.9	147.3	148.8	150.8	153.1	135.8	145.4	147.3	148.7	150.3	152.3	154.6
Supplements, cough and cold preparations, and respiratory agents (12/77 = 100)	128.6	137.5	138.1	138.8	139.9	142.7	144.7	128.8	136.8	138.0	138.8	139.9	142.7	144.8
Nonprescription drugs and medical supplies (12/77 = 100)	130.9	137.8	139.2	139.9	141.1	142.5	143.9	131.9	138.5	139.7	140.4	141.6	143.2	144.6
Eyeglasses (12/77 = 100)	125.1	127.8	128.4	128.3	128.9	129.5	130.1	123.4	126.7	127.1	127.1	127.6	128.1	128.7
Internal and respiratory over-the-counter drugs	205.9	218.6	221.6	222.8	225.1	228.1	231.1	208.0	220.2	222.8	223.9	226.4	229.6	232.5
Nonprescription medical equipment and supplies (12/77 = 100)	126.2	133.7	134.6	135.9	137.1	138.1	138.9	128.2	134.7	135.2	136.6	137.7	138.8	139.7
<b>Medical care services</b>	309.8	333.7	335.7	339.4	342.4	345.1	348.0	312.2	332.0	334.0	337.5	340.6	343.0	345.8
Professional services	271.7	288.4	290.0	292.0	294.2	295.8	297.8	276.2	288.2	290.3	292.2	294.3	295.9	297.8
Physicians' services	292.2	311.3	313.0	315.5	318.8	320.3	322.2	297.9	314.1	316.0	318.6	321.7	323.2	325.5
Dental services	257.1	272.3	273.9	275.8	276.8	278.6	281.1	262.2	270.1	272.3	274.1	274.9	276.6	279.2
Other professional services (12/77 = 100)	132.6	139.5	140.3	140.3	141.5	142.4	142.5	131.3	136.2	137.2	137.2	138.5	139.4	139.4
Other medical care services	355.9	388.4	390.9	396.8	400.8	404.7	408.7	356.2	386.2	388.1	393.8	398.0	401.6	405.4
Hospital and other medical services (12/77 = 100)	148.1	161.9	162.7	165.6	167.1	168.5	169.8	147.3	160.6	161.1	164.0	165.7	166.9	168.3
Hospital room	465.0	515.4	519.3	529.4	533.8	538.5	542.2	461.4	509.6	512.6	522.0	527.0	531.0	535.2
Other hospital and medical care services (12/77 = 100)	147.3	159.2	159.6	162.2	163.8	165.2	166.4	146.8	158.3	158.4	161.2	163.0	164.2	165.5



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20. Continued—Consumer Price Index—U.S. city average

[1967=100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1981			1982				1981			1982			
	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
<b>ENTERTAINMENT</b> .....	219.2	226.8	227.3	229.2	231.2	232.8	233.9	217.0	224.3	224.4	226.1	228.1	229.5	230.5
<b>Entertainment commodities</b> .....	223.6	230.3	230.6	232.0	234.3	236.6	238.0	219.4	225.5	225.4	226.7	228.9	230.8	232.0
Reading materials (12/77 = 100) .....	134.1	139.8	139.6	142.9	144.1	146.1	146.8	134.1	139.3	139.1	142.1	143.3	145.3	146.1
Newspapers .....	262.5	267.6	267.7	270.5	273.1	276.4	280.1	262.5	267.5	267.6	270.1	272.8	276.0	279.7
Magazines, periodicals, and books (12/77 = 100) .....	134.8	143.9	143.5	149.0	149.9	152.4	151.6	134.8	143.7	143.4	148.8	149.7	152.2	151.4
Sporting goods and equipment (12/77 = 100) .....	127.5	130.2	130.0	129.5	131.5	132.3	132.9	120.9	122.8	122.4	122.4	123.9	124.3	124.7
Sport vehicles (12/77 = 100) .....	130.4	( <sup>1</sup> )	132.1	( <sup>1</sup> )	133.9	135.4	136.1	120.0	( <sup>1</sup> )	120.2	( <sup>1</sup> )	121.9	122.5	122.8
Indoor and warm weather sport equipment (12/77 = 100) .....	116.7	119.6	119.9	120.1	119.6	119.9	120.4	115.4	118.2	117.9	118.2	117.7	118.1	118.6
Bicycles .....	188.3	194.3	193.9	194.8	197.3	197.6	198.9	189.7	196.3	195.2	196.2	198.9	198.9	200.2
Other sporting goods and equipment (12/77 = 100) .....	122.6	126.7	126.2	125.3	127.0	125.6	126.3	121.1	126.9	126.3	125.2	127.4	126.0	126.5
Toys, hobbies, and other entertainment (12/77 = 100) .....	127.8	131.3	132.0	132.2	133.2	134.5	135.4	127.2	130.8	130.9	131.2	132.3	133.5	134.3
Toys, hobbies, and music equipment (12/77 = 100) .....	126.2	129.7	130.1	130.8	131.7	133.4	134.1	124.0	126.7	126.9	127.7	128.6	130.2	130.7
Photographic supplies and equipment (12/77 = 100) .....	125.4	125.5	125.2	125.2	126.9	128.3	128.8	126.7	127.5	126.3	126.3	127.9	129.5	131.0
Pet supplies and expenses (12/77 = 100) .....	132.4	138.3	140.2	139.7	140.6	140.8	141.9	133.2	140.1	140.9	140.5	141.6	141.7	142.7
<b>Entertainment services</b> .....	213.4	222.3	223.0	225.5	227.1	227.8	228.5	213.9	223.4	223.9	226.1	227.8	228.4	229.2
Fees for participant sports (12/77 = 100) .....	130.7	137.3	137.6	139.6	140.9	141.9	142.0	130.2	139.1	139.3	141.2	142.5	143.5	143.7
Admissions (12/77 = 100) .....	124.5	128.9	129.7	131.2	131.6	131.2	132.2	124.7	128.3	128.7	130.1	130.6	130.3	131.2
Other entertainment services (12/77 = 100) .....	121.1	123.4	123.7	124.2	125.0	125.1	125.2	122.4	124.1	124.3	124.7	125.9	125.9	125.9
<b>OTHER GOODS AND SERVICES</b> .....	229.9	245.9	246.7	248.4	250.3	252.2	253.8	227.9	242.5	243.5	245.0	247.1	249.3	250.9
<b>Tobacco products</b> .....	213.3	226.2	226.8	227.1	230.7	234.1	235.1	213.2	225.4	225.9	226.2	229.8	233.2	234.0
Cigarettes .....	215.5	228.9	229.7	230.0	233.6	237.3	238.0	215.5	228.1	228.7	229.1	232.7	236.3	236.9
Other tobacco products and smoking accessories (12/77 = 100) .....	129.6	134.7	134.4	134.7	136.8	138.1	139.9	130.0	135.0	134.7	135.0	136.9	138.2	140.1
<b>Personal care</b> .....	228.7	237.7	239.1	240.9	242.3	243.7	245.9	226.4	235.5	237.1	238.8	240.4	241.8	244.1
Toilet goods and personal care appliances .....	223.9	232.5	234.7	236.4	238.5	240.6	243.8	222.5	233.1	235.4	236.9	239.2	241.5	244.7
Products for the hair, hairpieces, and wigs (12/77 = 100) .....	131.9	135.4	136.5	137.2	138.4	140.8	142.9	128.8	133.3	135.8	136.4	137.8	140.0	142.3
Dental and shaving products (12/77 = 100) .....	136.6	140.5	141.2	144.0	145.6	148.0	149.0	135.1	139.3	139.8	142.6	144.2	146.6	147.6
Cosmetics, bath and nail preparations, manicure and eye makeup implements (12/77 = 100) .....	125.3	131.8	133.2	134.1	135.0	135.1	136.5	124.4	132.2	133.7	134.5	135.8	136.1	137.5
Other toilet goods and small personal care appliances (12/77 = 100) .....	128.4	134.3	136.0	135.9	137.0	137.4	140.3	131.3	139.1	139.1	138.9	140.2	140.7	143.5
Personal care services .....	233.7	243.1	243.9	245.7	246.5	247.3	248.7	230.5	238.1	239.2	241.0	241.8	242.6	244.0
Beauty parlor services for women .....	236.0	244.8	245.2	246.9	247.7	248.9	250.7	231.7	237.8	238.8	240.5	241.3	242.5	244.3
Haircuts and other barber shop services for men (12/77 = 100) .....	129.9	135.9	136.8	138.0	138.4	138.4	138.8	129.1	134.9	135.7	136.8	137.2	137.2	137.6
<b>Personal and educational expenses</b> .....	256.2	284.9	285.1	288.1	289.2	290.4	291.9	257.1	285.6	285.9	288.9	290.2	291.7	293.5
Schoolbooks and supplies .....	230.8	254.6	254.5	260.7	262.9	263.3	263.8	234.6	258.3	258.5	264.8	267.1	267.5	268.0
Personal and educational services .....	262.4	292.1	292.3	294.8	295.8	297.1	298.7	262.9	292.5	292.8	295.2	296.3	298.0	300.0
Tuition and other school fees .....	132.8	149.1	149.1	150.5	150.6	151.1	151.4	133.0	149.4	149.4	150.7	150.9	151.7	152.0
College tuition (12/77 = 100) .....	132.3	148.3	148.3	149.9	150.1	150.7	151.0	132.3	148.1	148.1	149.6	149.8	150.9	151.3
Elementary and high school tuition (12/77 = 100) .....	134.4	152.0	152.0	152.1	152.2	152.2	152.2	134.4	152.7	152.7	152.8	152.9	152.9	152.9
Personal expenses (12/77 = 100) .....	141.8	152.8	153.4	154.3	156.1	157.4	160.9	141.1	152.1	152.7	153.7	155.3	156.7	160.5
<b>Special indexes:</b>														
Gasoline, motor oil, coolant, and other products .....	413.2	403.9	402.8	400.5	393.9	379.3	362.6	414.5	405.1	404.0	401.8	395.3	380.6	363.7
Insurance and finance .....	378.1	422.2	423.1	423.9	424.8	420.9	426.3	377.6	420.9	422.1	422.8	423.5	419.9	425.9
Utilities and public transportation .....	267.9	292.6	293.9	297.7	299.1	302.7	305.1	266.1	291.5	292.6	296.4	297.7	301.5	304.0
Housekeeping and home maintenance services .....	323.1	339.6	341.3	343.0	344.0	344.0	347.5	321.1	339.9	341.5	343.3	344.2	344.0	348.2

<sup>1</sup> Not available.

c=corrected.

**21. Consumer Price Index for All Urban Consumers: Cross classification of region and population size class by expenditure category and commodity and service group**

[December 1977 = 100]

Category and group	Size class A (1.25 million or more)			Size class B (385,000-1.250 million)			Size class C (75,000-385,000)			Size class D (75,000 or less)		
	1981		1982	1981		1982	1981		1982	1981		1982
	Dec.	Feb.	Apr.	Dec.	Feb.	Apr.	Dec.	Feb.	Apr.	Dec.	Feb.	Apr.
<b>Northeast</b>												
<b>EXPENDITURE CATEGORY</b>												
All items .....	144.2	144.2	143.6	152.9	150.7	150.0	159.2	158.1	158.6	150.7	151.4	151.9
Food and beverages .....	139.6	143.3	143.7	139.6	142.7	142.2	142.8	145.7	147.4	137.0	140.4	140.4
Housing .....	148.0	146.0	144.5	161.9	155.7	155.3	176.3	172.5	173.3	159.3	159.5	160.5
Apparel and upkeep .....	117.5	117.0	119.1	123.1	120.5	122.5	125.9	123.1	127.4	125.4	119.9	125.1
Transportation .....	157.9	156.5	153.7	165.4	164.2	160.0	162.7	161.6	158.6	161.8	161.7	158.1
Medical care .....	142.0	145.1	146.4	146.6	147.0	148.9	146.3	148.7	150.4	143.0	144.8	151.5
Entertainment .....	131.9	133.3	135.5	131.0	132.4	136.2	133.7	136.1	135.8	134.3	137.6	139.0
Other goods and services .....	135.4	136.9	139.0	138.7	140.6	141.1	142.0	142.9	145.3	138.5	140.6	142.9
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities .....	141.8	142.1	140.8	149.6	147.9	146.6	151.1	150.1	149.6	147.2	147.6	146.5
Commodities less food and beverages .....	143.2	141.4	139.0	154.5	150.5	148.7	154.9	152.2	150.6	152.1	151.0	149.4
Services .....	147.3	146.9	147.4	158.0	155.1	155.4	172.5	171.0	173.4	156.1	157.3	160.4
<b>North Central region</b>												
<b>EXPENDITURE CATEGORY</b>												
All items .....	152.6	153.6	155.2	149.2	151.9	155.1	147.4	149.1	151.2	147.6	151.0	153.3
Food and beverages .....	139.8	141.6	141.9	139.3	140.8	141.7	140.7	143.1	143.1	143.4	144.7	146.2
Housing .....	163.3	164.9	168.8	153.8	159.9	167.2	150.0	152.7	157.2	149.1	155.5	160.7
Apparel and upkeep .....	113.7	112.7	114.8	128.0	121.1	122.7	122.4	121.8	125.8	123.6	119.5	123.5
Transportation .....	162.7	161.1	158.7	160.8	159.7	156.9	162.3	161.0	158.4	160.1	160.3	157.2
Medical care .....	144.6	148.4	150.9	146.8	150.8	152.8	147.7	150.3	153.8	151.2	154.5	157.0
Entertainment .....	134.1	137.1	137.0	124.4	126.4	130.3	132.6	136.1	138.1	129.2	132.5	130.9
Other goods and services .....	137.0	138.8	140.3	142.9	145.1	146.5	135.6	137.3	139.0	141.7	144.6	146.4
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities .....	145.1	145.2	145.4	142.9	145.4	146.4	142.2	143.5	144.3	140.7	142.1	143.7
Commodities less food and beverages .....	147.6	146.9	147.0	144.4	147.3	148.3	142.8	143.6	144.8	139.5	141.0	142.6
Services .....	163.7	166.1	169.8	159.5	162.6	169.3	156.1	158.4	162.4	158.7	165.0	168.7
<b>South</b>												
<b>EXPENDITURE CATEGORY</b>												
All items .....	152.0	152.6	152.9	155.9	157.2	155.7	152.3	154.0	152.3	150.8	152.3	153.5
Food and beverages .....	141.4	144.2	145.0	141.3	144.8	144.9	141.9	144.1	144.0	143.4	146.1	145.9
Housing .....	160.3	160.2	161.1	166.7	168.3	165.2	159.7	162.7	159.1	156.2	158.8	161.5
Apparel and upkeep .....	123.5	122.6	125.6	123.7	121.1	124.3	118.2	117.0	120.2	110.4	105.7	111.1
Transportation .....	161.9	161.5	157.5	164.1	162.8	159.7	162.3	160.7	157.1	161.6	159.9	155.8
Medical care .....	143.2	145.9	149.5	147.6	150.5	152.3	153.0	155.4	160.1	160.1	162.5	165.1
Entertainment .....	127.4	129.3	130.1	137.1	140.0	141.2	136.4	140.4	141.1	138.4	140.4	145.7
Other goods and services .....	139.7	141.2	142.8	139.5	140.7	142.4	139.9	142.0	143.7	140.5	147.9	150.2
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities .....	145.9	146.8	146.3	147.5	148.4	147.6	145.3	146.0	144.3	145.1	145.0	146.0
Commodities less food and beverages .....	147.9	148.0	146.9	150.1	149.9	148.8	146.7	146.8	144.5	145.8	144.6	146.0
Services .....	160.5	160.7	162.1	168.6	170.4	167.8	163.1	166.3	164.5	159.5	163.3	164.8
<b>West</b>												
<b>EXPENDITURE CATEGORY</b>												
All items .....	156.1	157.9	158.5	155.1	157.1	157.0	149.4	150.2	151.1	149.1	153.3	157.9
Food and beverages .....	140.8	143.9	144.5	145.4	147.9	147.6	140.1	143.4	143.5	145.8	148.1	148.5
Housing .....	165.5	167.2	168.1	161.6	164.9	164.8	153.8	154.4	156.3	146.1	153.9	163.5
Apparel and upkeep .....	121.9	121.7	120.6	127.1	126.4	126.6	117.1	118.8	119.7	135.6	131.9	140.4
Transportation .....	162.9	164.2	162.9	165.0	163.6	161.7	162.8	160.9	158.3	164.6	164.5	160.5
Medical care .....	155.7	157.8	160.7	151.3	153.7	156.0	151.1	154.8	157.3	152.8	157.9	162.4
Entertainment .....	133.6	135.1	137.7	133.9	135.5	136.8	129.4	130.4	133.9	145.6	147.8	148.9
Other goods and services .....	141.0	144.5	147.5	142.8	145.3	148.9	136.8	137.1	139.5	148.0	147.6	149.8
<b>COMMODITY AND SERVICE GROUP</b>												
Commodities .....	144.9	146.0	145.5	147.2	148.4	148.1	143.7	145.2	146.4	145.5	147.5	148.9
Commodities less food and beverages .....	146.6	146.9	145.9	148.0	148.6	148.3	145.1	145.9	147.5	145.4	147.3	149.1
Services .....	170.9	173.7	175.9	166.0	169.1	169.3	157.5	157.3	157.9	154.6	161.8	171.2

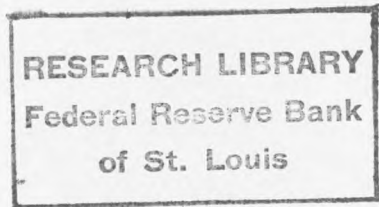
**22. Consumer Price Index—U.S. city average, and selected areas**

[1967=100 unless otherwise specified]

Area <sup>1</sup>	All Urban Consumers						Urban Wage Earners and Clerical Workers (revised)							
	1981			1982			1981			1982				
	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Apr.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
U.S. city average <sup>2</sup>	266.8	280.7	281.5	282.5	283.4	283.1	284.3	266.8	280.4	281.1	282.1	282.9	282.5	283.7
Anchorage, Alaska (10/67=100)	...	253.7	...	253.0	...	260.0	...	...	249.3	...	248.6	...	254.5	...
Atlanta, Ga.	265.9	...	282.2	...	279.8	...	280.2	268.8	...	284.1	...	282.7	...	282.9
Baltimore, Md.	...	280.7	...	282.1	...	281.9	...	...	280.9	...	282.3	...	282.2	...
Boston, Mass.	...	274.2	...	274.0	...	269.8	...	...	274.3	...	273.4	...	269.8	...
Buffalo, N.Y.	254.6	...	264.3	...	259.9	...	258.3	252.7	...	262.7	...	258.0	...	256.4
Chicago, Ill.-Northwestern Ind.	263.7	277.0	273.9	275.4	274.9	276.4	280.2	263.0	277.3	274.4	275.9	275.4	276.5	280.0
Cincinnati, Ohio-Ky.-Ind.	...	276.6	...	285.7	...	284.9	...	...	279.0	...	288.4	...	287.2	...
Cleveland, Ohio	272.0	...	281.6	...	285.9	...	286.5	272.1	...	281.2	...	285.0	...	285.7
Dallas-Ft. Worth, Tex.	279.6	...	295.1	...	293.6	...	297.2	276.9	...	291.0	...	289.8	...	292.7
Denver-Boulder, Colo.	...	297.8	...	305.4	...	309.2	...	...	302.8	...	310.5	...	315.0	...
Detroit, Mich.	272.4	279.6	278.3	280.8	277.8	278.2	283.7	268.0	276.4	275.1	277.8	274.8	275.1	280.3
Honolulu, Hawaii	250.0	...	258.3	...	262.2	...	263.8	250.2	...	259.3	...	263.2	...	264.7
Houston, Tex.	286.4	...	302.7	...	304.1	...	304.9	283.1	...	298.8	...	300.3	...	302.1
Kansas City, Mo.-Kansas	265.4	...	273.5	...	276.0	...	274.0	264.3	...	272.0	...	274.1	...	272.1
Los Angeles-Long Beach, Anaheim, Calif.	265.5	281.8	282.3	285.8	285.6	286.6	286.8	269.1	285.5	286.1	289.8	289.4	290.4	290.5
Miami, Fla. (11/77=100)	...	153.6	...	155.2	...	155.1	...	...	154.7	...	156.4	...	156.4	...
Milwaukee, Wis.	...	287.5	...	291.3	...	289.3	...	...	291.5	...	295.3	...	292.5	...
Minneapolis-St. Paul, Minn.-Wis.	266.5	...	298.7	...	306.0	...	301.7	267.3	...	298.3	...	305.3	...	301.2
New York, N.Y.-Northeastern N.J.	255.4	267.8	267.9	268.5	269.0	267.4	268.2	254.8	266.9	266.9	267.5	267.8	265.9	266.5
Northeast, Pa. (Scranton)	...	272.2	...	272.5	...	267.2	...	...	275.2	...	274.5	...	268.4	...
Philadelphia, Pa.-N.J.	261.0	274.1	274.9	275.7	275.5	274.7	275.1	261.5	274.5	274.1	275.1	275.1	274.3	274.5
Pittsburgh, Pa.	265.7	...	281.8	...	278.6	...	275.3	267.3	...	282.6	...	280.0	...	276.7
Portland, Oreg.-Wash.	...	278.7	...	288.4	...	286.7	...	...	276.3	...	285.5	...	283.9	...
St. Louis, Mo.-Ill.	...	273.8	...	278.4	...	280.7	...	...	273.0	...	277.1	...	278.3	...
San Diego, Calif.	...	321.3	...	323.1	...	319.0	...	...	315.1	...	317.4	...	313.9	...
San Francisco-Oakland, Calif.	270.3	...	294.0	...	295.8	...	298.8	270.9	...	292.7	...	294.9	...	297.8
Seattle-Everett, Wash.	...	289.2	...	295.9	...	293.4	...	...	285.7	...	291.9	...	289.6	...
Washington, D.C.-Md.-Va.	...	275.5	...	278.0	...	278.8	...	...	279.3	...	281.8	...	283.8	...

<sup>1</sup>The areas listed include not only the central city but the entire portion of the Standard Metropolitan Statistical Area, as defined for the 1970 Census of Population, except that the Standard Consolidated

Area is used for New York and Chicago.  
<sup>2</sup>Average of 85 cities.





### 23. Producer Price Indexes, by stage of processing

[1967 = 100]

Commodity grouping	Annual average 1981	1981								1982				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. <sup>1</sup>	Feb.	Mar.	Apr.	May
<b>FINISHED GOODS</b>														
Finished goods .....	269.8	269.6	270.5	271.8	271.5	271.5	274.3	274.7	275.4	277.9	277.4	276.9	276.9	277.7
Finished consumer goods .....	271.2	271.5	272.3	273.5	273.0	273.1	275.1	275.2	275.8	278.3	278.1	277.2	276.9	277.6
Finished consumer foods .....	253.5	252.8	253.8	257.6	256.3	256.2	254.0	252.7	252.9	256.4	258.2	257.1	259.8	262.3
Crude .....	263.6	263.1	258.9	262.7	256.9	253.5	253.8	260.0	273.9	280.6	282.0	262.9	266.1	259.4
Processed .....	250.6	249.8	251.3	255.0	254.2	254.4	252.0	249.9	249.0	252.1	253.9	254.4	257.1	260.4
Nondurable goods less foods .....	319.4	321.0	322.0	322.5	322.1	324.2	324.3	325.4	326.3	329.3	329.3	328.0	324.9	324.1
Durable goods .....	218.5	218.1	218.2	218.1	218.3	215.8	224.5	224.7	225.4	226.2	223.5	223.5	223.8	224.7
Consumer nondurable goods less food and energy .....	208.6	207.7	208.4	209.5	210.4	211.8	212.6	213.6	213.9	217.4	218.8	219.6	221.4	222.9
Capital equipment .....	264.3	262.5	263.8	265.4	265.8	265.3	271.5	273.0	274.1	276.2	274.8	275.7	277.1	278.3
<b>INTERMEDIATE MATERIALS</b>														
Intermediate materials, supplies, and components .....	306.0	306.7	307.2	308.5	310.1	309.7	309.4	309.0	309.4	311.0	311.3	310.9	310.1	309.8
Materials and components for manufacturing .....	286.2	285.1	285.8	287.9	289.8	290.2	290.2	289.5	289.3	290.4	291.3	290.8	290.9	291.5
Materials for food manufacturing .....	260.9	259.0	262.4	260.5	261.0	254.6	250.9	246.8	245.6	250.7	254.3	252.0	254.3	260.0
Materials for nondurable manufacturing .....	285.9	287.0	287.7	289.2	291.0	291.2	290.9	289.4	288.8	289.0	289.5	289.5	288.1	288.1
Materials for durable manufacturing .....	312.2	311.2	310.7	314.4	316.0	317.1	316.7	314.9	314.0	313.6	313.5	311.2	311.2	310.6
Components for manufacturing .....	259.2	256.3	257.3	259.5	261.8	263.8	265.1	266.9	267.8	269.8	271.1	272.0	272.9	273.8
Materials and components for construction .....	287.5	288.5	289.6	290.4	290.7	290.0	290.1	290.2	291.1	292.0	292.8	293.3	293.8	293.4
Processed fuels and lubricants .....	595.0	608.7	605.7	602.0	607.8	601.4	596.9	595.1	598.1	604.4	597.1	593.5	579.8	569.9
Manufacturing industries .....	498.2	510.7	505.4	500.3	508.3	500.5	497.5	496.4	499.0	505.9	498.7	497.1	487.6	482.3
Nonmanufacturing industries .....	680.5	695.2	694.3	692.0	695.6	690.5	684.7	682.2	685.6	691.3	683.9	678.4	660.9	646.7
Containers .....	276.2	276.4	277.2	278.8	280.3	280.6	280.9	280.6	280.2	282.5	285.2	286.5	287.4	287.1
Supplies .....	263.9	264.0	264.6	266.0	266.1	266.1	266.6	267.2	268.3	269.8	270.7	270.9	272.3	273.6
Manufacturing industries .....	253.2	252.3	253.4	255.0	256.0	256.8	258.2	259.2	261.0	262.6	263.5	264.8	265.6	267.2
Nonmanufacturing industries .....	269.6	270.2	270.5	272.0	271.6	271.1	271.2	271.6	272.4	273.8	274.8	274.4	276.0	277.2
Feeds .....	230.4	242.9	235.4	232.8	229.1	221.3	215.9	212.0	214.6	214.8	212.7	208.8	212.9	214.2
Other supplies .....	276.4	273.8	276.3	278.7	279.3	280.7	282.3	283.7	284.1	285.7	287.6	288.1	289.1	290.2
<b>CRUDE MATERIALS</b>														
Crude materials for further processing .....	329.1	334.4	335.4	337.3	333.0	327.4	319.9	313.9	311.5	318.4	321.5	319.9	322.8	328.1
Foodstuffs and feedstuffs .....	257.4	260.6	264.3	267.2	261.8	253.4	245.7	238.3	233.7	242.6	248.3	247.9	254.3	262.3
Nonfood materials .....	481.6	492.4	487.4	487.2	485.3	486.0	479.2	476.3	478.6	481.5	479.3	475.0	470.4	470.4
Nonfood materials except fuel .....	413.9	428.3	418.1	413.1	413.9	410.2	404.1	397.8	396.2	399.5	395.1	387.4	379.0	376.6
Manufacturing industries .....	429.6	445.5	434.2	428.7	429.6	425.4	418.6	411.7	409.8	413.2	407.6	398.5	389.0	386.4
Construction .....	262.4	261.7	262.6	262.6	263.1	263.6	264.7	264.8	265.2	267.6	272.1	275.1	275.3	274.0
Crude fuel .....	676.5	738.4	759.2	781.2	766.7	788.7	779.0	792.5	813.0	812.9	823.5	837.7	853.7	866.1
Manufacturing industries .....	865.4	850.6	877.2	902.6	883.0	911.4	898.4	915.8	942.5	940.3	953.4	972.8	992.4	1,008.2
Nonmanufacturing industries .....	674.3	662.2	678.5	698.1	687.8	704.8	697.8	708.2	724.0	725.6	734.4	744.5	757.6	767.4
<b>SPECIAL GROUPINGS</b>														
Finished goods excluding foods .....	273.2	273.3	274.1	274.7	274.6	274.7	279.1	280.0	280.9	283.0	281.8	281.5	280.6	280.9
Finished consumer goods excluding foods .....	276.3	277.0	277.7	277.9	277.7	277.9	281.6	282.4	283.2	285.2	284.1	283.3	281.7	281.6
Finished consumer goods less energy .....	233.9	232.8	233.4	235.0	235.0	234.9	237.2	237.2	237.6	240.5	240.8	240.7	242.4	244.1
Intermediate materials less foods and feeds .....	310.1	310.7	311.2	312.7	314.5	314.6	314.6	314.5	314.9	316.4	316.6	316.3	315.3	314.6
Intermediate materials less energy .....	285.2	284.7	285.5	287.2	288.5	288.7	288.8	288.5	288.7	289.9	290.9	290.7	291.2	291.7
Intermediate foods and feeds .....	250.7	253.1	253.2	251.1	250.2	243.5	239.3	235.2	235.2	238.8	240.6	237.8	240.7	245.0
Crude materials less agricultural products .....	545.8	557.5	551.3	550.6	549.1	551.4	543.4	540.7	543.5	546.1	543.9	538.2	532.2	531.7
Crude materials less energy .....	254.0	257.9	259.7	261.8	258.0	250.4	243.2	235.8	231.6	239.1	243.4	242.8	247.3	252.5

<sup>1</sup> Data for January 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

r = revised.

**24. Producer Price Indexes, by commodity groupings**

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1981	1981								1982				
			May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. 1	Feb.	Mar.	Apr.	May
	<b>All commodities</b>	293.4	294.1	294.8	296.2	296.4	295.7	296.1	295.5	295.8	298.3	298.5	297.9	297.9	298.6
	<b>All commodities (1957-59 = 100)</b>	311.3	312.0	312.8	314.3	314.5	313.7	314.2	313.5	313.8	316.5	316.7	316.1	316.1	316.8
	<b>Farm products and processed foods and feeds</b>	251.5	252.9	254.3	256.8	254.2	250.3	246.0	242.5	241.0	246.0	248.5	247.5	251.4	255.6
	<b>Industrial commodities</b>	304.1	304.7	305.1	306.2	307.2	307.4	309.0	309.3	310.0	311.8	311.4	311.0	309.9	309.5
	<b>FARM PRODUCTS AND PROCESSED FOODS AND FEEDS</b>														
01	Farm products	254.9	259.6	260.7	263.3	257.9	251.1	243.1	237.4	234.6	242.2	247.1	244.6	250.6	256.1
01-1	Fresh and dried fruits and vegetables	267.0	275.3	263.3	265.6	258.1	252.8	248.8	254.0	280.5	289.2	289.3	256.4	266.7	270.7
01-2	Grains	248.4	257.7	257.1	257.4	242.7	227.0	227.6	226.5	213.6	225.2	223.2	220.9	226.0	228.2
01-3	Livestock	248.0	251.8	263.0	266.5	262.0	257.3	244.5	231.1	225.0	236.8	251.2	255.6	267.6	282.9
01-4	Live poultry	201.2	207.2	210.0	215.3	210.3	196.7	185.7	175.0	171.4	186.8	197.3	197.7	186.2	192.7
01-5	Plant and animal fibers	242.0	258.3	259.6	251.3	232.5	206.5	211.7	198.5	188.4	198.2	193.6	199.7	207.4	214.1
01-6	Fluid milk	287.4	283.6	285.0	284.3	285.0	287.3	294.3	288.2	286.7	287.6	285.8	282.5	280.3	278.8
01-7	Eggs	187.1	165.0	174.6	185.1	180.7	193.2	193.8	209.7	195.5	187.0	200.6	204.0	192.1	164.3
01-8	Hay, hayseeds, and oilseeds	274.1	299.0	285.3	290.0	284.3	267.2	230.4	221.1	218.8	218.4	217.6	213.7	222.8	224.3
01-9	Other farm products	274.3	259.7	242.7	250.2	263.9	268.9	263.3	273.1	280.2	280.1	273.7	273.0	274.2	273.9
02	Processed foods and feeds	248.7	248.2	249.9	252.2	251.2	248.9	246.6	244.3	243.6	247.1	248.3	248.1	250.8	254.4
02-1	Cereal and bakery products	255.5	256.3	256.4	258.3	257.7	258.5	256.9	256.5	255.1	256.6	255.3	254.2	253.8	253.9
02-2	Meats, poultry, and fish	246.2	245.2	248.6	257.1	254.4	253.3	246.6	240.0	236.1	243.7	247.4	249.7	257.1	267.1
02-3	Dairy products	245.7	244.6	245.2	245.1	245.3	245.5	246.8	246.9	247.2	247.7	248.0	248.0	248.4	248.5
02-4	Processed fruits and vegetables	261.1	259.4	262.5	265.9	267.3	270.0	271.7	270.5	271.8	273.2	274.7	275.7	274.5	273.4
02-5	Sugar and confectionery	276.8	262.8	274.8	266.0	267.3	246.8	246.7	244.1	247.6	256.8	260.3	255.0	256.4	265.8
02-6	Beverages and beverage materials	247.5	247.6	248.1	249.0	249.4	249.1	250.0	251.4	251.9	253.9	254.2	255.7	256.6	256.7
02-7	Fats and oils	227.5	228.2	227.3	234.8	229.5	224.3	223.4	221.5	219.1	216.6	218.1	214.1	218.6	222.2
02-8	Miscellaneous processed foods	250.1	251.1	251.5	252.2	252.1	253.0	249.9	250.1	250.1	251.0	250.9	249.6	249.5	248.0
02-9	Prepared animal feeds	230.3	241.0	234.3	232.2	228.9	222.9	218.1	214.7	217.2	217.4	215.4	212.0	216.1	217.4
	<b>INDUSTRIAL COMMODITIES</b>														
03	Textile products and apparel	199.6	199.2	200.1	201.3	202.4	202.9	204.0	203.6	203.4	205.0	204.2	205.0	204.7	205.1
03-1	Synthetic fibers (12/75 = 100)	156.7	156.4	157.9	159.7	161.2	161.0	162.7	161.6	161.5	162.9	164.1	163.8	162.1	164.3
03-2	Processed yarns and threads (12/75 = 100)	137.8	138.6	139.3	140.3	142.0	142.3	144.4	140.3	139.6	139.2	134.9	140.8	140.4	141.0
03-3	Gray fabrics (12/75 = 100)	146.7	145.8	147.4	148.2	149.0	149.1	148.0	147.4	147.2	148.2	147.4	147.1	145.8	145.5
03-4	Finished fabrics (12/75 = 100)	125.2	125.7	125.6	126.0	126.8	126.8	126.7	126.5	126.6	126.8	126.9	125.7	125.5	125.4
03-81	Apparel	185.5	185.2	186.2	187.2	187.8	188.0	189.9	190.8	191.0	192.7	191.0	191.7	192.2	192.7
03-82	Textile housefurnishings	228.2	224.0	223.9	221.1	228.8	232.2	233.0	233.4	233.6	237.6	245.5	246.2	246.5	246.4
04	Hides, skins, leather, and related products	261.5	263.7	261.6	261.1	261.3	261.7	260.0	259.8	260.7	261.8	263.3	262.7	264.4	263.4
04-2	Leather	319.5	330.0	321.0	319.0	313.7	313.2	313.7	311.3	312.3	319.0	317.8	315.5	313.2	309.5
04-3	Footwear	241.2	241.4	241.5	242.4	242.5	242.9	239.6	239.8	240.1	238.9	239.2	240.6	243.7	242.5
04-4	Other leather and related products	243.5	244.2	244.3	242.9	245.1	245.0	245.0	245.4	245.4	247.5	253.3	253.2	253.2	253.2
05	Fuels and related products and power	694.4	709.0	707.6	704.9	704.3	703.5	698.1	698.1	702.5	705.1	697.6	690.1	671.2	661.9
05-1	Coal	497.3	487.3	491.7	505.5	507.0	510.2	510.8	512.7	515.2	525.3	529.1	527.0	532.5	534.4
05-2	Coke	456.5	467.9	469.7	469.4	469.7	469.7	469.7	469.7	469.7	469.7	470.3	468.1	468.1	468.2
05-3	Gas fuels <sup>2</sup>	938.8	933.9	954.6	969.4	969.3	976.6	965.6	983.0	1,003.7	987.9	987.9	993.8	996.6	1,003.4
05-4	Electric power	366.8	360.4	366.6	374.6	385.8	383.8	378.4	378.3	384.2	392.8	392.6	404.1	406.7	405.5
05-61	Crude petroleum <sup>3</sup>	803.6	839.9	815.9	798.9	796.8	798.2	785.9	787.2	787.2	787.2	770.4	745.0	718.0	718.2
05-7	Petroleum products, refined <sup>4</sup>	805.8	835.3	828.1	816.3	813.4	806.1	802.3	798.3	798.6	801.9	789.4	770.5	733.4	712.7
06	Chemicals and allied products	287.8	288.6	290.5	291.3	293.3	293.3	292.4	292.0	291.8	292.9	294.5	294.6	294.5	296.2
06-1	Industrial chemicals <sup>5</sup>	363.8	368.5	369.7	370.4	371.5	371.8	367.9	363.7	362.8	362.9	362.8	362.6	359.6	358.1
06-21	Prepared paint	249.9	250.0	250.0	250.7	250.7	250.7	254.5	256.4	258.9	259.3	259.3	259.3	259.3	265.1
06-22	Paint materials	300.2	300.3	300.8	304.5	308.5	308.0	308.1	308.3	305.8	306.6	308.6	306.8	306.8	306.2
06-3	Drugs and pharmaceuticals	193.4	192.4	193.2	195.5	195.0	197.8	198.5	198.2	198.9	202.2	203.0	204.8	208.6	209.4
06-4	Fats and oils, inedible	295.6	312.1	303.1	290.9	305.6	285.6	277.7	282.5	280.4	272.8	274.2	290.1	282.6	288.4
06-5	Agricultural chemicals and chemical products	284.8	279.1	288.9	288.9	293.4	292.6	293.1	295.7	294.9	296.8	297.9	297.0	296.3	294.9
06-6	Plastic resins and materials	289.2	287.9	290.0	295.9	297.5	296.8	299.5	293.2	294.2	286.1	295.9	286.8	286.1	285.4
06-7	Other chemicals and allied products	254.4	254.8	256.3	254.8	257.3	257.4	256.9	259.9	260.0	263.8	265.0	267.7	269.0	275.9
07	Rubber and plastic products	232.8	231.8	233.4	232.1	234.1	235.7	237.3	238.0	238.3	237.3	241.0	241.8	241.9	242.9
07-1	Rubber and rubber products	256.7	254.4	256.8	254.7	256.9	260.3	262.9	264.4	264.6	262.5	269.7	269.3	268.7	271.2
07-11	Crude rubber	281.7	283.2	285.2	284.2	284.7	283.1	279.8	281.8	281.8	282.1	282.1	282.8	283.2	283.6
07-12	Tires and tubes	250.9	251.2	251.2	246.8	249.9	256.5	257.1	255.9	255.4	253.6	259.6	256.3	254.4	255.0
07-13	Miscellaneous rubber products	252.4	245.7	250.9	251.4	253.1	253.9	261.1	266.7	267.2	263.8	274.9	278.1	278.8	284.6
07-2	Plastic products (6/78 = 100)	128.4	128.6	129.1	128.7	129.8	129.9	130.3	130.3	130.6	130.5	130.9	132.0	132.4	132.3
08	Lumber and wood products	292.8	298.4	298.1	296.5	294.5	289.3	284.3	282.1	285.4	285.5	285.4	285.4	286.1	283.9
08-1	Lumber	325.2	336.3	335.8	332.4	329.9	320.2	311.7	306.6	309.9	310.0	308.3	308.1	311.5	309.2
08-2	Millwork	273.4	274.8	272.2	273.6	272.3	271.4	271.3	271.8	273.7	277.1	278.4	276.4	276.4	275.8
08-3	Plywood	245.7	248.3	251.5	247.8	245.6	240.8	234.3	233.5	239.7	237.4	235.7	237.1	234.1	230.6
08-4	Other wood products	239.2	238.2	239.8	240.7	239.8	240.5	239.9	239.3	239.4	238.2	239.8	239.6	237.7	237.3

See footnotes at end of table.

**24. Continued—Producer Price Indexes, by commodity groupings**

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1980	1981								1982				
			May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. <sup>1</sup>	Feb.	Mar.	Apr.	May
<b>INDUSTRIAL COMMODITIES—Continued</b>															
09	Pulp, paper, and allied products . . . . .	273.7	272.1	272.9	274.9	275.9	277.8	279.2	280.4	281.0	285.5	285.4	286.3	287.9	289.1
09-1	Pulp, paper, and products, excluding building paper and board . . . . .	271.0	269.9	271.2	272.3	273.7	274.8	275.7	275.8	275.6	276.1	277.0	277.3	276.4	275.4
09-11	Woodpulp . . . . .	398.1	394.2	394.2	394.2	394.2	394.2	402.3	413.7	413.7	410.3	412.8	414.1	392.3	398.2
09-12	Wastepaper . . . . .	175.7	182.7	182.9	182.1	182.1	178.5	165.1	144.5	143.4	135.2	128.8	129.2	128.1	121.5
09-13	Paper . . . . .	280.0	275.9	278.5	279.7	282.1	285.9	287.8	287.4	287.2	289.2	289.5	289.5	291.7	288.8
09-14	Paperboard . . . . .	258.2	258.8	259.2	259.4	260.6	261.6	261.7	261.6	260.0	259.7	261.4	261.1	261.2	258.8
09-15	Converted paper and paperboard products . . . . .	259.0	258.8	259.9	261.2	262.4	262.8	263.2	263.1	263.2	263.9	264.9	265.5	265.0	264.7
09-2	Building paper and board . . . . .	231.3	237.3	237.4	235.5	234.2	234.2	233.3	232.1	230.3	233.8	231.1	237.5	235.5	239.5
10	Metals and metal products . . . . .	300.4	299.1	298.4	302.0	304.1	304.9	305.3	304.2	303.3	304.7	305.0	303.6	303.8	303.4
10-1	Iron and steel . . . . .	333.8	330.4	330.1	338.8	339.9	339.8	341.3	340.0	339.9	343.1	343.0	342.4	342.6	341.2
10-13	Steel mill products . . . . .	337.6	331.8	332.2	344.9	344.9	345.3	348.7	348.6	348.9	350.6	350.5	350.5	352.2	352.1
10-2	Nonferrous metals . . . . .	286.0	287.7	284.5	282.8	287.3	289.4	285.4	281.1	277.1	274.4	274.2	267.6	266.1	263.5
10-3	Metal containers . . . . .	315.9	314.1	314.1	315.2	318.7	318.8	318.2	318.1	316.8	324.3	325.4	326.1	329.7	330.1
10-4	Hardware . . . . .	262.4	259.4	259.7	263.8	265.3	267.8	269.5	271.5	272.0	274.1	272.5	275.7	276.2	276.7
10-5	Plumbing fixtures and brass fittings . . . . .	267.4	266.2	268.9	270.9	271.2	271.6	272.9	273.1	274.0	274.6	276.1	278.9	280.3	281.0
10-6	Heating equipment . . . . .	223.9	222.3	223.5	226.4	227.9	228.5	229.0	228.8	229.9	233.4	231.9	233.5	235.8	237.3
10-7	Fabricated structural metal products . . . . .	295.4	294.0	295.0	297.9	299.3	300.0	302.6	303.2	303.0	303.4	303.5	304.5	305.0	304.8
10-8	Miscellaneous metal products . . . . .	270.8	269.7	269.4	272.0	272.9	273.7	276.1	278.0	278.3	281.2	284.0	284.6	285.3	290.0
11	Machinery and equipment . . . . .	263.1	260.7	262.1	264.8	266.2	268.1	269.3	270.4	272.0	274.1	274.9	275.7	277.3	278.1
11-1	Agricultural machinery and equipment . . . . .	287.7	285.7	286.8	288.1	290.3	292.8	295.5	300.8	302.8	303.1	303.7	304.6	306.1	307.0
11-2	Construction machinery and equipment . . . . .	320.8	318.4	320.1	323.8	325.0	326.5	328.3	329.6	332.0	337.0	338.1	337.4	341.4	343.4
11-3	Metalworking machinery and equipment . . . . .	301.2	299.9	301.3	302.9	303.5	305.3	306.6	307.9	312.9	315.9	315.8	317.0	318.7	320.3
11-4	General purpose machinery and equipment . . . . .	288.5	285.9	287.0	290.6	292.3	293.9	295.1	296.2	297.9	300.0	300.8	301.5	302.9	303.3
11-6	Special industry machinery and equipment . . . . .	308.0	307.2	308.8	311.0	310.3	312.8	314.6	315.0	316.4	320.4	320.3	320.6	323.1	324.1
11-7	Electrical machinery and equipment . . . . .	220.1	217.5	219.2	221.1	222.8	224.2	225.3	226.0	227.0	228.7	229.4	230.5	231.6	231.7
11-9	Miscellaneous machinery . . . . .	252.3	248.8	250.1	254.0	256.0	258.5	259.0	259.8	260.4	261.6	263.4	264.1	265.4	267.2
12	Furniture and household durables . . . . .	198.4	197.4	197.3	199.5	199.6	201.0	201.3	202.1	202.9	203.5	203.9	204.7	205.6	206.1
12-1	Household furniture . . . . .	219.4	216.4	218.6	220.0	220.7	222.2	222.8	225.1	226.6	227.5	228.3	228.5	230.6	230.9
12-2	Commercial furniture . . . . .	257.6	257.7	257.9	258.7	259.1	261.6	262.1	263.3	263.9	266.7	271.6	273.9	274.5	275.5
12-3	Floor coverings . . . . .	178.6	179.5	180.7	182.8	181.9	181.7	180.9	182.3	181.4	180.3	179.8	178.0	180.3	180.5
12-4	Household appliances . . . . .	186.9	185.5	186.1	188.8	189.1	190.1	190.8	190.9	191.3	193.4	193.8	195.9	196.3	197.8
12-5	Home electronic equipment . . . . .	89.1	90.8	86.7	87.4	87.6	87.8	88.1	88.0	89.6	89.3	87.5	86.8	88.2	88.1
12-6	Other household durable goods . . . . .	280.8	276.7	276.4	282.1	280.9	285.8	285.8	285.3	286.2	283.4	283.0	284.3	283.5	283.1
13	Nonmetallic mineral products . . . . .	309.5	312.0	313.6	314.3	314.1	313.2	313.3	313.7	313.5	315.6	318.4	319.7	320.0	319.1
13-11	Flat glass . . . . .	212.9	210.2	210.3	218.3	218.3	218.3	218.5	218.5	216.1	216.2	216.1	216.2	216.2	216.2
13-2	Concrete ingredients . . . . .	296.3	297.5	297.5	297.7	298.0	298.5	298.4	298.6	298.7	306.2	308.1	309.5	309.2	310.7
13-3	Concrete products . . . . .	291.2	291.2	293.5	293.4	293.4	292.9	293.3	293.4	293.6	295.5	295.6	296.0	297.3	297.1
13-4	Structural clay products, excluding refractories . . . . .	249.7	250.1	250.7	250.9	250.9	255.3	256.2	256.5	257.5	257.5	257.4	257.4	260.7	258.1
13-5	Refractories . . . . .	302.5	304.0	307.1	307.1	307.1	307.1	307.8	308.9	311.3	316.8	330.9	338.4	339.7	340.4
13-6	Asphalt roofing . . . . .	407.0	407.4	428.5	421.9	420.9	401.6	402.9	410.2	405.6	401.3	398.8	392.8	385.2	384.0
13-7	Gypsum products . . . . .	256.2	261.1	260.7	259.7	255.3	252.9	252.4	251.3	249.7	250.4	255.0	260.7	262.8	259.4
13-8	Glass containers . . . . .	328.5	335.3	335.3	335.5	335.5	335.5	335.5	335.5	335.5	335.4	349.6	355.2	357.4	357.4
13-9	Other nonmetallic minerals . . . . .	463.9	477.6	476.8	476.2	475.3	474.3	473.3	473.5	474.7	474.7	479.0	480.1	478.8	472.1
14	Transportation equipment (12/68 = 100) . . . . .	235.4	233.6	234.3	235.0	235.9	231.8	244.5	246.3	246.8	248.6	244.7	244.9	245.6	247.2
14-1	Motor vehicles and equipment . . . . .	237.5	236.0	236.7	237.4	238.4	232.8	247.8	248.9	249.5	250.8	246.1	246.4	246.6	248.7
14-4	Railroad equipment . . . . .	338.2	331.2	331.4	338.1	338.7	338.7	338.7	341.3	340.1	345.8	352.4	352.8	353.9	349.6
15	Miscellaneous products . . . . .	265.6	266.9	266.3	263.2	262.6	267.0	268.5	269.5	267.6	268.3	273.7	272.9	273.3	272.3
15-1	Toys, sporting goods, small arms, ammunition . . . . .	212.2	211.4	211.2	213.2	212.7	213.6	213.0	212.7	213.3	218.4	221.0	221.6	221.9	222.7
15-2	Tobacco products . . . . .	268.3	268.7	268.7	268.8	268.8	274.5	278.2	278.2	278.2	278.2	306.4	306.4	306.5	306.7
15-3	Notions . . . . .	259.6	267.8	268.0	267.5	267.7	267.8	269.7	269.7	269.7	270.3	270.7	271.8	271.8	280.3
15-4	Photographic equipment and supplies . . . . .	210.1	212.5	212.5	211.4	207.1	208.7	208.9	209.0	209.1	209.9	210.8	212.5	214.6	210.9
15-5	Mobile homes (12/74 = 100) . . . . .	( <sup>6</sup> )	( <sup>6</sup> )	( <sup>6</sup> )	158.1	158.3	158.7	159.1	159.3	159.3	159.5	159.6	161.6	162.0	162.1
15-9	Other miscellaneous products . . . . .	346.9	349.4	346.9	333.1	334.6	345.5	348.5	344.8	344.6	342.2	340.9	334.3	333.5	330.8

<sup>1</sup> Data for January 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.  
<sup>2</sup> Prices for natural gas are lagged 1 month.  
<sup>3</sup> Includes only domestic production.

<sup>4</sup> Most prices for refined petroleum products are lagged 1 month.  
<sup>5</sup> Some prices for industrial chemicals are lagged 1 month.  
<sup>6</sup> Not available.  
r = revised.



**25. Producer Price Indexes, for special commodity groupings**

[1967=100 unless otherwise specified]

Commodity grouping	Annual average 1981	1981								1982				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. <sup>1</sup>	Feb.	Mar.	Apr.	May
<b>All commodities — less farm products</b>	295.7	296.1	296.7	298.0	298.7	298.5	299.5	299.4	300.0	302.0	301.8	301.4	300.9	301.1
<b>All foods</b>	251.9	250.3	252.2	255.2	253.7	251.7	249.1	247.4	247.6	251.6	253.5	251.5	254.4	257.9
<b>Processed foods</b>	252.2	250.5	253.1	256.0	255.0	252.8	250.0	247.6	246.5	250.5	252.2	252.1	254.9	259.0
Industrial commodities less fuels		262.9	263.5	265.0	266.1	266.4	268.7	269.0	269.4	271.1	271.4	271.6	272.2	272.8
Selected textile mill products (Dec. 1975 = 100)	135.9	135.7	135.9	136.8	137.2	138.1	138.2	138.4	137.9	139.3	140.0	139.0	138.9	138.9
Hosiery	134.3	134.6	135.7	135.8	135.3	135.5	136.5	136.5	136.7	136.9	137.0	137.5	138.1	138.5
Underwear and nightwear	203.5	202.3	203.5	204.7	204.7	204.7	204.7	205.7	206.3	213.9	216.0	216.4	216.4	216.3
Chemicals and allied products, including synthetic rubber and fibers and yarns	278.6	279.0	281.2	282.3	284.0	284.4	283.8	283.2	283.1	284.3	286.0	285.8	285.7	287.3
Pharmaceutical preparations	186.8	185.7	186.6	189.0	188.4	191.6	192.8	192.5	193.3	196.8	198.0	200.0	204.4	205.3
Lumber and wood products, excluding millwork	303.1	311.5	312.2	308.7	306.2	298.0	290.1	286.4	290.7	289.9	288.3	288.6	289.9	287.2
Special metals and metal products	279.4	277.9	277.9	280.2	281.9	280.1	286.7	286.8	286.6	287.9	286.1	285.5	285.7	286.4
Fabricated metal products	280.0	278.5	279.0	281.7	283.1	283.9	286.0	287.0	287.1	289.4	290.4	291.5	292.5	294.3
Copper and copper products	204.0	206.6	203.7	202.5	206.2	205.1	201.9	198.9	195.4	194.5	194.1	191.0	190.5	191.6
Machinery and motive products	256.7	254.4	255.6	257.4	258.6	257.7	264.3	265.8	266.9	268.9	267.6	268.2	269.3	270.5
Machinery and equipment, except electrical	288.3	285.9	287.3	290.4	291.7	293.8	295.0	296.4	298.4	300.7	301.6	302.2	304.1	305.2
Agricultural machinery, including tractors	296.2	293.7	294.8	295.6	298.2	301.6	305.7	312.5	314.7	315.1	314.6	315.5	317.7	318.2
Metalworking machinery	329.4	327.1	328.3	330.1	331.4	333.9	336.7	338.3	341.2	343.8	343.3	346.4	348.8	349.4
Numerically controlled machine tools (Dec. 1971 = 100)	239.4	237.3	241.4	241.7	241.8	241.8	242.2	242.0	242.0	240.1	240.1	240.3	240.2	240.3
Total tractors	324.0	322.0	322.5	325.5	327.8	330.7	338.3	342.2	342.3	346.9	346.2	346.4	351.7	352.4
Agricultural machinery and equipment less parts	289.0	286.7	287.9	288.6	291.1	294.0	297.6	303.5	305.8	306.5	306.3	307.3	309.2	309.6
Farm and garden tractors less parts	298.9	297.7	298.0	298.0	301.4	305.5	313.0	319.6	319.7	319.7	318.5	318.8	322.3	322.9
Agricultural machinery, excluding tractors less parts	294.4	290.8	292.5	293.9	295.8	298.7	299.9	303.5	310.9	311.6	311.6	307.3	314.3	314.7
Industrial valves	314.8	314.3	315.3	317.5	319.8	322.7	322.4	323.4	325.3	328.6	326.8	327.1	327.7	327.9
Industrial fittings	302.1	303.0	303.0	303.0	303.0	304.3	304.1	304.1	304.1	304.1	304.1	304.1	309.1	309.1
Construction materials	283.0	284.2	285.0	285.7	285.5	284.4	284.6	284.1	285.2	286.6	286.9	287.4	288.1	287.9

<sup>1</sup> Data for January 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication. r= revised.

**26. Producer Price Indexes, by durability of product**

[1967=100]

Commodity grouping	Annual average 1981	1981								1982				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. <sup>1</sup>	Feb.	Mar.	Apr.	May
Total durable goods	269.8	268.6	269.1	270.8	271.9	271.8	275.0	275.4	276.0	277.6	277.3	277.3	278.1	278.4
Total nondurable goods	312.4	314.8	315.7	316.8	316.2	315.0	312.8	311.4	311.4	314.7	315.3	314.2	313.5	314.5
Total manufactures	285.9	286.2	286.9	288.0	288.6	288.3	289.8	289.7	289.9	291.9	291.9	291.9	290.9	291.3
Durable	269.6	268.2	268.9	270.6	271.7	271.7	275.1	275.8	276.5	278.0	277.7	277.8	278.7	279.1
Nondurable	303.6	305.7	306.4	306.9	306.9	306.3	305.5	304.5	304.3	306.8	307.2	305.8	303.9	304.1
Total raw or slightly processed goods	330.7	334.2	335.4	337.9	335.8	332.7	326.4	323.3	323.6	328.9	330.6	329.9	332.2	334.9
Durable	271.4	280.4	272.4	271.2	275.9	270.4	263.7	253.4	247.8	253.8	254.4	250.7	245.9	239.4
Nondurable	334.0	337.1	338.9	341.8	339.1	336.3	330.0	327.4	328.2	333.4	335.1	334.7	337.5	340.8

<sup>1</sup> Data for January 1982 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication. r= revised.

**27. Producer Price Indexes for the output of selected SIC industries**

[1967=100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1981	1981								1982				
			May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. <sup>1</sup>	Feb.	Mar.	Apr.	May
<b>MINING</b>															
1011	Iron ores (12/75 = 100)	167.3	168.1	168.1	168.1	168.1	168.1	168.1	171.3	171.3	171.3	171.3	171.3	171.3	
1092	Mercury ores (12/75 = 100)	346.0	347.9	352.0	358.3	365.4	364.5	354.1	354.1	343.7	347.9	313.7	325.0	327.0	
1211	Bituminous coal and lignite	493.9	484.5	488.4	502.1	503.4	506.0	506.2	507.8	510.3	520.9	524.7	521.9	527.2	
1311	Crude petroleum and natural gas	898.8	919.7	713.7	911.5	900.3	913.6	900.8	907.5	921.7	919.7	913.5	904.7	894.9	
1442	Construction sand and gravel	277.3	278.4	278.4	278.4	278.2	279.2	279.7	279.8	280.7	287.4	289.5	292.7	292.4	
1455	Kaolin and ball clay (6/76 = 100)	138.7	137.1	137.1	137.1	137.1	137.1	143.4	143.4	143.4	149.6	149.6	149.6	151.7	
<b>MANUFACTURING</b>															
2011	Meatpacking plants	243.1	243.6	245.9	252.6	250.9	252.7	244.1	237.0	234.1	237.6	243.8	247.0	253.3	
2013	Sausages and other prepared meats	241.3	230.4	238.1	246.0	254.0	253.9	252.2	248.9	247.0	245.6	250.5	248.2	253.4	
2016	Poultry dressing plants	192.0	196.2	198.3	203.6	201.2	188.8	175.5	172.8	166.7	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	
2021	Creamery butter	274.8	273.4	273.5	273.8	273.7	275.0	279.2	279.5	275.0	275.0	276.4	276.8	275.3	

See footnotes at end of table.

27. Continued—Producer Price Indexes for the output of selected SIC industries

[1967 = 100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1981	1981								1982				
			May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. 1	Feb.	Mar.	Apr.	May
<b>MANUFACTURING—Continued</b>															
2022	Cheese, natural and processed (12/72 = 100)	215.8	216.2	216.1	213.8	214.5	215.0	215.4	215.9	218.4	218.6	217.9	216.8	216.6	217.1
2024	Ice cream and frozen desserts (12/72 = 100)	211.9	212.4	212.4	212.7	212.7	212.5	212.7	212.5	212.8	212.8	212.8	210.9	214.2	214.2
2033	Canned fruits and vegetables	248.5	245.9	248.9	251.6	252.9	254.3	257.0	256.4	258.9	260.8	262.2	262.7	261.5	262.3
2034	Dehydrated food products (12/73 = 100)	177.6	175.3	175.0	180.5	178.7	183.4	182.1	181.4	182.1	184.0	181.8	181.5	181.5	178.5
2041	Flour mills (12/71 = 100)	195.9	199.4	199.3	196.5	191.0	195.3	191.1	191.5	189.2	191.5	187.4	187.3	192.5	188.4
2044	Rice milling	277.2	300.3	300.3	297.4	284.3	268.2	247.3	235.4	215.1	205.9	192.2	183.5	177.9	183.0
2048	Prepared foods, n.e.c. (12/75 = 100)	124.6	129.8	127.5	125.9	124.8	119.6	117.3	116.4	116.0	116.0	116.5	114.8	115.4	116.7
2061	Raw cane sugar	273.5	224.8	263.3	272.2	254.6	212.3	219.9	224.3	230.8	247.6	245.1	233.0	242.9	269.2
2063	Beet sugar	320.6	334.4	337.7	274.1	287.5	270.7	250.3	230.4	250.5	266.4	292.6	272.4	272.6	280.2
2067	Chewing gum	309.8	303.1	303.1	303.1	303.2	303.2	303.2	303.2	303.2	303.3	303.3	303.4	303.4	303.4
2074	Cottonseed oil mills	199.0	216.6	212.3	212.0	206.0	182.3	172.0	167.2	182.4	184.9	170.6	158.2	164.6	167.9
2075	Soybean oil mills	245.8	258.1	248.4	253.7	245.8	234.2	229.7	221.2	221.9	223.1	219.9	217.8	225.0	232.0
2077	Animal and marine fats and oils	288.1	304.3	291.3	288.8	294.1	281.2	274.0	272.3	266.6	260.4	262.6	271.8	273.3	271.5
2083	Malt	282.5	286.1	286.1	286.1	286.1	275.4	275.4	275.4	275.4	267.1	267.1	267.1	259.1	259.8
2085	Distilled liquor, except brandy (12/75 = 100)	134.7	134.3	134.6	134.6	135.5	135.5	135.5	137.9	137.9	140.1	137.9	140.2	140.2	139.8
2091	Canned and cured seafoods (12/73 = 100)	187.8	187.3	187.5	187.4	188.4	188.8	188.2	188.3	188.5	187.2	187.0	187.7	188.2	188.0
2092	Fresh or frozen packaged fish	369.6	378.2	375.5	367.6	347.1	353.5	356.9	360.8	369.5	396.8	390.8	420.7	433.8	427.5
2095	Roasted coffee (12/72 = 100)	238.0	238.6	238.6	236.4	235.7	237.3	238.2	230.2	240.4	245.1	247.1	248.7	250.7	247.9
2098	Macaroni and spaghetti	252.0	246.6	246.6	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5	259.5
2111	Cigarettes	277.7	278.3	278.3	278.3	278.3	284.2	288.4	288.4	288.4	288.4	319.7	319.7	319.7	319.8
2121	Cigars	169.1	168.5	168.5	169.7	169.7	174.5	174.5	174.5	174.5	174.5	175.6	175.6	176.8	176.6
2131	Chewing and smoking tobacco	320.9	320.8	320.8	321.0	321.3	325.3	326.1	326.1	326.1	326.1	349.4	349.4	349.4	353.6
2211	Weaving mills, cotton (12/72 = 100)	234.1	233.5	234.3	234.7	237.4	236.0	233.2	229.8	227.6	227.3	226.9	226.5	226.1	227.7
2221	Weaving mills, synthetic (12/77 = 100)	136.6	135.7	137.1	138.0	139.3	139.5	139.4	139.8	139.5	139.8	139.8	139.9	139.2	138.9
2251	Women's hosiery, except socks (12/75 = 100)	113.5	114.2	115.6	115.5	115.0	115.0	115.2	115.1	115.2	115.6	115.6	116.2	116.3	117.0
2254	Knit underwear mills	210.2	210.0	210.0	210.7	210.8	210.9	210.9	212.8	213.0	225.2	234.7	235.5	235.6	226.0
2257	Circular knit fabric mills (6/76 = 100)	110.8	110.5	110.4	111.0	112.0	111.9	112.0	112.4	111.8	112.4	112.3	110.6	110.1	109.7
2261	Finishing plants, cotton (6/76 = 100)	144.9	147.0	146.2	146.3	146.2	145.4	144.9	143.5	141.4	140.5	140.3	140.8	141.6	141.4
2262	Finishing plants, synthetics, silk (6/76 = 100)	126.5	126.6	126.6	127.1	127.8	129.0	129.1	129.1	128.6	129.4	129.7	128.3	128.1	128.2
2272	Tufted carpets and rugs	154.3	154.5	155.6	158.3	157.4	157.3	155.7	157.0	156.7	155.5	155.3	155.7	156.1	156.4
2281	Yarn mills, except wool (12/71 = 100)	221.8	224.1	225.8	225.1	225.4	223.8	222.4	219.9	217.2	216.3	215.3	215.6	214.6	214.9
2282	Throwing and winding mills (6/76 = 100)	138.6	139.1	139.3	142.7	146.8	148.0	154.5	145.6	146.0	145.7	135.2	150.8	150.9	152.6
2284	Thread mills (6/76 = 100)	151.4	150.9	151.1	151.1	151.1	154.8	157.0	157.0	156.8	156.8	156.8	156.8	156.7	156.6
2298	Cordage and twine (12/77 = 100)	134.8	134.3	134.3	134.3	134.3	139.3	139.3	139.3	140.7	141.0	141.0	141.0	141.0	141.0
2311	Men's and boys' suits and coats	223.9	220.4	224.6	225.9	226.2	226.5	227.4	228.4	230.5	233.7	232.1	233.9	234.3	234.6
2321	Men's and boys' shirts and nightwear	208.8	207.1	207.5	210.5	210.6	211.5	212.4	212.6	213.4	173.4	191.7	192.7	193.1	173.6
2322	Men's and boys' underwear	230.6	231.0	230.7	230.8	230.8	230.8	230.8	233.0	233.0	246.9	246.9	247.4	247.4	247.4
2323	Men's and boys' neckwear (12/75 = 100)	114.6	115.4	115.4	113.9	113.9	113.9	113.9	113.9	113.9	115.3	117.3	117.3	117.3	117.3
2327	Men's and boys' separate trousers	186.1	186.1	186.1	186.4	186.4	186.4	186.8	186.9	187.1	188.4	187.0	188.2	193.0	194.9
2328	Men's and boys' work clothing	248.4	248.2	248.3	250.8	251.1	251.2	253.1	253.2	253.3	252.5	251.8	252.9	253.8	253.7
2331	Women's and misses' blouses and waists (6/78 = 100)	119.8	118.4	118.5	121.0	121.2	121.3	126.4	126.7	126.7	126.5	123.8	123.9	123.8	123.7
2335	Women's and misses' dresses (12/77 = 100)	121.1	122.3	122.5	123.0	124.3	123.5	123.4	124.1	122.7	123.0	122.9	123.6	122.9	122.9
2341	Women's and children's underwear (12/72 = 100)	169.9	169.2	170.5	170.6	170.6	170.6	170.6	171.6	171.6	174.7	175.4	175.7	175.7	177.2
2342	Brassieres and allied garments (12/75 = 100)	136.8	135.0	136.9	138.8	138.8	138.8	138.8	138.9	140.1	145.1	149.2	149.2	149.2	148.5
2361	Children's dresses and blouses (12/77 = 100)	120.3	120.5	120.5	121.6	121.7	121.7	122.0	122.5	123.2	123.2	122.0	122.0	121.0	121.0
2381	Fabric dress and work gloves	289.3	292.1	292.1	289.2	289.2	289.2	289.2	289.2	289.2	289.2	297.4	295.5	295.5	295.5
2394	Canvas and related products (12/77 = 100)	132.1	130.0	130.1	130.1	133.1	134.6	137.6	137.6	139.7	144.9	145.5	147.8	146.3	146.5
2396	Automotive and apparel trimmings (12/77 = 100)	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0
2421	Sawmills and planing mills (12/71 = 100)	228.2	234.8	234.8	233.5	231.2	225.2	219.5	216.5	218.6	218.0	217.6	217.1	218.4	216.8
2436	Softwood veneer and plywood (12/75 = 100)	142.0	145.7	148.1	143.8	139.6	135.4	129.3	129.0	134.5	132.5	131.1	132.3	129.2	126.0
2439	Structural wood members, n.e.c. (12/75 = 100)	156.6	158.2	158.2	157.6	156.9	156.6	154.8	154.2	153.2	153.9	153.2	152.3	152.9	151.5
2448	Wood pallets and skids (12/75 = 100)	152.5	153.1	153.0	153.1	152.9	152.8	152.0	150.4	149.9	149.8	148.9	148.1	145.8	144.6
2451	Mobile homes (12/74 = 100)	156.8	155.9	156.1	158.1	158.3	158.7	159.2	159.3	160.3	160.4	160.7	162.7	162.9	163.1
2492	Particleboard (12/75 = 100)	172.8	184.5	182.3	179.6	173.6	150.8	168.0	166.9	170.3	172.6	170.2	173.4	176.8	176.7
2511	Wood household furniture (12/71 = 100)	197.4	196.2	197.5	198.6	199.2	200.1	201.0	202.0	202.8	203.6	204.2	204.8	207.0	207.3
2512	Upholstered household furniture (12/71 = 100)	174.9	169.7	173.9	175.1	175.1	175.3	175.6	179.5	182.1	184.4	182.0	182.0	184.6	185.1
2515	Mattresses and bedsprings	193.7	190.4	190.5	191.3	194.6	195.2	195.2	195.2	198.0	204.4	210.0	210.0	210.1	210.3
2521	Wood office furniture	254.6	255.4	254.6	254.7	254.7	257.1	257.1	257.0	257.6	261.9	271.8	271.9	271.9	271.9
2611	Pulp mills (12/73 = 100)	253.2	251.3	251.3	251.3	251.3	251.3	255.0	262.5	262.5	258.6	260.9	262.9	255.8	254.8
2621	Paper mills, except building (12/74 = 100)	156.3	154.3	155.7	157.0	157.4	158.8	159.8	159.7	159.6	162.0	162.0	161.9	161.8	160.5
2631	Paperboard mills (12/74 = 100)	151.8	152.1	152.3	151.7	152.4	153.7	153.6	153.5	152.7	152.5	153.6	153.2	153.0	151.5
2647	Sanitary paper products	343.8	344.3	344.4	344.2	344.3	344.3	344.0	344.1	344.6	344.6	345.6	345.6	345.5	344.7
2654	Sanitary food containers	245.3	239.2	242.2	246.0	252.9	253.2	253.4	253.3	253.3	254.0	258.3	261.4	261.4	261.4
2655	Fiber cans, drums, and similar products (12/75 = 100)	163.0	160.9	160.9	163.2	163.2	163.2	167.6	167.6	170.0	176.4	176.5	176.5		





## PRODUCTIVITY DATA

**PRODUCTIVITY DATA** are compiled by the Bureau of Labor Statistics from establishment data and from estimates of compensation and output supplied by the U.S. Department of Commerce and the Federal Reserve Board.

### Definitions

**Output** is the constant dollar gross domestic product produced in a given period. Indexes of **output per hour of labor input**, or labor productivity, measure the value of goods and services produced per hour of labor. **Compensation per hour** includes wages and salaries of employees plus employers' contributions for social insurance and private benefit plans. The data also include an estimate of wages, salaries, and supplementary payments for the self-employed, except for nonfinancial corporations, in which there are no self-employed. **Real compensation per hour** is compensation per hour adjusted by the Consumer Price Index for All Urban Consumers.

**Unit labor cost** measures the labor compensation cost required to produce one unit of output and is derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from the current dollar gross domestic product and dividing by output. In these tables, **unit nonlabor costs** contain all the components of unit nonlabor payments except unit profits. **Unit profits** include corporate profits and inventory valuation adjustments per unit of output.

The **implicit price deflator** is derived by dividing the current dollar estimate of gross product by the constant dollar estimate, making the deflator, in effect, a price index for gross product of the sector reported.

The use of the term "man hours" to identify the labor component of productivity and costs, in tables 28 through 31, has been discontinued. **Hours of all persons** is now used to describe the labor input of payroll workers, self-employed persons, and unpaid family workers. **Output per all-employee hour** is now used to describe labor productivity in nonfinancial corporations where there are no self-employed.

### Notes on the data

In the private business sector and the nonfarm business sector, the basis for the output measure employed in the computation of output per hour is Gross Domestic Product rather than Gross National Product. Computation of hours includes estimates of nonfarm and farm proprietor hours.

Output data are supplied by the Bureau of Economic Analysis, U.S. Department of Commerce, and the Federal Reserve Board. Quarterly manufacturing output indexes are adjusted by the Bureau of Labor Statistics to annual estimates of output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

Beginning with the September 1976 issue of the *Review*, the productivity tables were revised to reflect changeover to the new series—private business sector and nonfarm business sector—which differ from the previously published total private economy and nonfarm sector in that output imputed for owner-occupied dwellings and the household and institutions sectors, as well as the statistical discrepancy, are omitted. For a detailed explanation, see J. R. Norsworthy and L. J. Fulco, "New sector definitions for productivity series," *Monthly Labor Review*, October 1976, pages 40-42.

**28. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years, 1950-81**

[1977=100]

Item	1950	1955	1960	1965	1970	1974	1975	1976	1977	1978	1979	1980	1981
<b>Private business sector:</b>													
Output per hour of all persons .....	50.3	58.2	65.1	78.2	86.1	92.7	94.8	97.9	100.0	99.8	99.5	99.3	100.4
Compensation per hour .....	20.0	26.3	33.9	41.7	58.2	78.0	85.5	92.9	100.0	108.4	119.3	131.5	144.6
Real compensation per hour .....	50.4	59.6	69.4	80.0	90.8	95.9	96.3	98.8	100.0	100.7	99.6	96.7	96.3
Unit labor cost .....	39.8	45.2	52.1	53.3	67.6	84.2	90.2	94.8	100.0	108.6	119.9	132.4	144.0
Unit nonlabor payments .....	43.5	47.8	50.8	57.8	63.4	78.9	90.7	94.4	100.0	105.1	110.9	118.3	130.6
Implicit price deflator .....	41.0	46.1	51.7	54.8	66.2	82.4	90.4	94.7	100.0	107.4	116.9	127.6	139.4
<b>Nonfarm business sector:</b>													
Output per hour of all persons .....	56.2	62.7	68.2	80.4	86.7	93.1	95.0	98.1	100.0	99.8	99.1	98.8	99.7
Compensation per hour .....	21.8	28.3	35.6	42.8	58.6	78.4	86.0	93.0	100.0	108.5	119.0	130.8	143.9
Real compensation per hour .....	55.0	63.9	73.0	82.2	91.5	96.4	96.8	99.0	100.0	100.7	99.3	96.2	95.9
Unit labor cost .....	38.8	45.1	52.3	53.2	67.6	84.3	90.5	94.8	100.0	108.7	120.0	132.4	144.3
Unit nonlabor payments .....	42.8	47.9	50.5	58.2	64.0	76.1	88.9	94.0	100.0	103.6	108.5	117.6	130.4
Implicit price deflator .....	40.2	46.0	51.7	54.9	66.4	81.6	89.9	94.5	100.0	107.0	116.2	127.4	139.7
<b>Nonfinancial corporations:</b>													
Output per hour of all employees .....	( <sup>1</sup> )	( <sup>1</sup> )	66.3	79.9	85.4	91.3	94.4	97.4	100.0	100.4	100.4	101.0	103.5
Compensation per hour .....	( <sup>1</sup> )	( <sup>1</sup> )	36.3	43.0	58.3	77.6	85.5	92.5	100.0	108.2	118.7	130.7	143.9
Real compensation per hour .....	( <sup>1</sup> )	( <sup>1</sup> )	74.2	82.6	91.0	95.4	96.3	98.5	100.0	100.5	99.1	96.2	95.9
Unit labor cost .....	( <sup>1</sup> )	( <sup>1</sup> )	54.7	53.8	68.3	85.1	90.6	95.0	100.0	107.8	118.2	129.4	139.0
Unit nonlabor payments .....	( <sup>1</sup> )	( <sup>1</sup> )	54.6	60.8	63.1	75.7	90.9	95.0	100.0	103.8	108.3	117.3	132.3
Implicit price deflator .....	( <sup>1</sup> )	( <sup>1</sup> )	54.7	56.2	66.5	81.8	90.7	95.0	100.0	106.4	114.8	125.2	136.7
<b>Manufacturing:</b>													
Output per hour of all persons .....	49.5	56.5	60.1	74.6	79.2	90.9	93.5	97.7	100.0	100.9	102.0	101.7	104.0
Compensation per hour .....	21.5	28.8	36.7	42.9	57.6	76.4	85.5	92.4	100.0	108.2	118.8	131.6	146.2
Real compensation per hour .....	54.1	65.2	75.1	82.3	89.9	93.9	96.3	98.3	100.0	100.5	99.2	96.8	97.4
Unit labor cost .....	43.4	51.0	61.1	57.4	72.7	84.1	91.4	94.6	100.0	107.3	116.5	129.4	140.6
Unit nonlabor payments .....	55.1	59.4	62.0	70.3	66.0	70.4	88.5	95.1	100.0	104.7	105.7	108.7	122.6
Implicit price deflator .....	46.8	53.4	61.3	61.2	70.7	80.1	90.6	94.7	100.0	106.5	113.4	123.4	135.4

<sup>1</sup> Not available.

**29. Annual changes in productivity, hourly compensation, unit costs, and prices, 1971-81**

Item	Year											Annual rate of change	
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1950-81	1960-81
<b>Private business sector:</b>													
Output per hour of all persons	3.6	3.5	2.7	-2.3	2.3	3.3	2.1	-0.2	-0.3	-0.2	1.1	2.4	2.1
Compensation per hour	6.6	6.5	8.0	9.4	9.6	8.6	7.7	8.4	10.1	10.2	10.0	6.2	7.2
Real compensation per hour	2.2	3.1	1.7	-1.4	0.4	2.7	1.2	0.7	-1.1	-2.9	-0.3	2.3	1.7
Unit labor cost	2.9	2.9	5.2	11.9	7.2	5.1	5.5	8.6	10.4	10.4	8.8	3.6	5.0
Unit nonlabor payments	7.6	4.5	5.9	4.4	15.0	4.1	5.9	5.1	5.5	6.6	10.4	3.3	4.5
Implicit price deflator	4.4	3.4	5.4	9.4	9.7	4.7	5.6	7.4	8.8	9.2	9.3	3.5	4.9
<b>Nonfarm business sector:</b>													
Output per hour of all persons	3.3	3.7	2.5	-2.4	2.1	3.2	2.0	-0.2	-0.7	-0.3	0.9	2.1	1.8
Compensation per hour	6.6	6.7	7.6	9.4	9.6	8.1	7.6	8.5	9.7	9.9	10.0	5.9	7.0
Real compensation per hour	2.2	3.3	1.3	-1.4	0.4	2.2	1.0	0.7	-1.4	-3.2	-0.3	2.0	1.5
Unit labor cost	3.1	2.8	4.9	12.1	7.4	4.7	5.5	8.7	10.4	10.3	9.0	3.7	5.0
Unit nonlabor payments	7.4	3.2	1.3	5.9	16.7	5.7	6.4	3.6	4.8	8.4	10.9	3.3	4.4
Implicit price deflator	4.5	3.0	3.7	10.1	10.3	5.1	5.8	7.0	8.6	9.7	9.6	3.6	4.8
<b>Nonfinancial corporations:</b>													
Output per hour of all employees	4.8	3.0	2.6	-3.4	3.4	3.2	2.7	0.4	0.0	0.6	2.4	( <sup>1</sup> )	2.0
Compensation per hour	6.5	5.8	7.7	9.7	10.1	8.2	8.1	8.2	9.7	10.1	10.0	( <sup>1</sup> )	6.9
Real compensation per hour	2.1	2.5	1.4	-1.1	0.9	2.3	1.5	0.5	-1.4	-3.0	-0.3	( <sup>1</sup> )	1.4
Unit labor cost	1.6	2.8	4.9	13.6	6.5	4.9	5.3	7.8	9.7	9.5	7.4	( <sup>1</sup> )	4.8
Unit nonlabor payments	7.4	2.7	1.5	7.1	20.1	4.6	5.2	3.8	4.4	8.3	12.8	( <sup>1</sup> )	4.0
Implicit price deflator	3.5	2.8	3.8	11.4	10.9	4.8	5.2	6.4	7.9	9.1	9.2	( <sup>1</sup> )	4.5
<b>Manufacturing:</b>													
Output per hour of all persons	6.1	5.0	5.4	-2.4	2.9	4.4	2.4	0.9	1.1	-0.3	2.2	2.6	2.6
Compensation per hour	6.1	5.4	7.2	10.6	11.9	8.0	8.3	8.2	9.8	10.7	11.1	5.8	6.9
Real compensation per hour	1.8	2.0	0.9	-0.3	2.5	2.1	1.7	0.5	-1.3	-2.5	0.7	2.0	1.4
Unit labor cost	0.0	0.3	1.7	13.3	8.8	3.4	5.7	7.3	8.6	11.0	8.7	3.1	4.1
Unit nonlabor payments	11.2	0.8	-3.3	-1.8	25.9	7.4	5.2	4.7	0.9	2.9	12.7	2.3	3.0
Implicit price deflator	3.1	0.5	0.3	9.0	13.1	4.6	5.6	6.5	6.4	8.8	9.7	2.8	3.8

<sup>1</sup> Not available.

r = revised.

**30. Quarterly indexes of productivity, hourly compensation, unit costs, and prices, seasonally adjusted**

[1977=100]

Item	Annual average		Quarterly indexes										
			1979		1980				1981				1982
	1980	1981	III	IV	I	II	III	IV	I	II	III	IV	I
<b>Private business sector:</b>													
Output per hour of all persons	99.3	100.4	99.4	99.1	99.5	99.1	99.4	99.1	100.3	101.2	100.9	99.2	98.9
Compensation per hour	131.5	144.6	120.7	123.2	126.4	130.1	133.1	135.9	139.8	143.3	146.5	148.5	151.2
Real compensation per hour	96.7	96.3	99.2	98.0	96.7	96.6	96.9	96.0	96.1	96.9	96.3	95.8	96.8
Unit labor cost	132.4	144.0	121.4	124.3	127.0	131.3	133.9	137.1	139.4	141.6	145.2	149.7	152.8
Unit nonlabor payments	118.3	130.6	111.5	112.2	115.2	116.0	119.7	122.7	127.6	129.3	132.4	132.6	129.2
Implicit price deflator	127.6	139.4	118.1	120.2	123.0	126.1	129.1	132.2	135.4	137.5	140.9	143.9	144.9
<b>Nonfarm business sector:</b>													
Output per hour of all persons	98.8	99.7	98.9	98.8	98.9	98.2	99.0	99.0	100.0	100.4	99.9	98.2	98.3
Compensation per hour	130.8	143.9	120.2	123.0	126.0	129.4	132.3	135.4	139.2	142.4	145.7	147.9	150.8
Real compensation per hour	96.2	95.9	98.8	97.8	96.4	96.0	96.3	95.7	95.7	96.3	95.8	95.4	96.5
Unit labor cost	132.4	144.3	121.5	124.4	127.4	131.8	133.6	136.8	139.1	141.9	145.8	150.7	153.3
Unit nonlabor payments	117.6	130.4	109.2	110.1	113.9	115.1	119.2	122.0	127.8	128.7	132.2	132.8	129.7
Implicit price deflator	127.4	139.7	117.4	119.7	122.9	126.3	128.8	131.9	135.3	137.5	141.2	144.7	145.4
<b>Nonfinancial corporations:</b>													
Output per hour of all employees	101.0	103.5	100.5	99.9	100.2	100.1	101.8	101.8	103.4	104.0	103.8	102.4	102.3
Compensation per hour	130.7	143.9	120.1	122.7	125.7	129.3	132.5	135.5	139.3	142.4	145.5	148.0	151.1
Real compensation per hour	96.2	95.9	98.7	97.5	96.2	95.9	96.5	95.7	95.8	96.3	95.7	95.5	96.7
Total unit costs	129.7	140.9	118.2	121.3	124.2	129.2	131.1	134.1	136.0	138.7	142.2	147.0	150.0
Unit labor cost	129.4	139.0	119.5	122.8	125.4	129.1	130.2	133.1	134.7	137.0	140.2	144.6	147.7
Unit nonlabor costs	130.2	146.1	114.6	117.2	120.9	129.3	133.8	136.9	139.5	143.6	147.7	153.8	156.3
Unit profits	90.2	103.6	97.5	92.2	95.5	83.4	89.1	92.4	106.8	102.8	106.7	96.6	80.7
Implicit price deflator	125.2	136.7	115.9	118.1	121.0	124.1	126.4	129.5	132.7	134.7	138.2	141.4	142.2
<b>Manufacturing:</b>													
Output per hour of all persons	101.7	104.0	102.0	102.1	102.1	100.8	100.7	103.1	103.9	104.8	105.0	102.0	100.7
Compensation per hour	131.6	146.2	119.8	122.3	125.4	130.0	133.9	137.3	141.1	144.8	148.0	150.8	154.7
Real compensation per hour	96.8	97.4	98.5	97.2	96.0	96.5	97.5	97.0	97.1	97.9	97.3	97.3	99.0
Unit labor cost	129.4	140.6	117.5	119.8	122.8	129.0	133.0	133.2	135.8	138.2	141.0	147.8	153.5

r = revised.

**31. Percent change from preceding quarter and year in productivity, hourly compensation, unit costs, and prices, seasonally adjusted at annual rate**

[1977=100]

Item	Quarterly percent change at annual rate						Percent change from same quarter a year ago					
	III 1980 to IV 1980	IV 1980 to I 1981	I 1981 to II 1981	II 1981 to III 1981	III 1981 to IV 1981	IV 1981 to I 1982	IV 1979 to IV 1980	I 1980 to I 1981	II 1980 to II 1981	III 1980 to III 1981	IV 1980 to IV 1981	I 1981 to I 1982
<b>Private business sector:</b>												
Output per hour of all persons	-1.1	4.7	3.5	-1.1	r -6.6	r -0.9	0.0	0.8	2.1	1.5	0.0	-1.4
Compensation per hour	8.6	11.9	10.4	9.3	r 5.5	r 7.6	10.3	10.6	10.1	10.1	9.3	r 8.2
Real compensation per hour	-3.8	0.5	3.2	-2.3	-2.1	r 4.2	-2.0	-0.6	0.3	-0.6	-0.2	r 0.7
Unit labor costs	9.8	6.9	6.6	10.6	r 13.0	r 8.6	10.3	9.7	7.8	8.5	r 9.3	r 9.7
Unit nonlabor payments	10.2	17.1	5.3	10.1	r 4.0	-9.7	9.3	10.8	11.5	10.6	8.1	r 1.3
Implicit price deflator	9.9	10.0	6.2	10.4	r 8.9	2.6	10.0	10.1	9.0	9.1	8.9	7.0
<b>Nonfarm business sector:</b>												
Output per hour of all persons	-0.2	4.4	1.4	-1.7	r -6.9	r 0.5	0.2	1.2	2.3	0.9	-0.8	r -1.7
Compensation per hour	9.8	11.7	9.6	9.5	r 6.3	r 7.9	10.1	10.5	10.0	10.2	9.3	r 8.3
Real compensation per hour	-2.7	0.3	2.5	-2.2	r -1.4	r 4.5	-2.2	-0.7	0.3	-0.6	-0.2	r 0.8
Unit labor costs	10.1	7.0	8.1	11.5	r 14.1	r 7.3	9.9	9.2	7.6	9.2	10.1	r 10.2
Unit nonlabor payments	9.9	20.2	3.0	11.3	r -1.8	r -9.0	10.8	12.2	11.8	10.9	8.8	r 1.5
Implicit price deflator	10.0	11.0	6.5	11.4	r 10.1	r 2.1	10.2	10.1	8.9	9.7	9.7	7.5
<b>Nonfinancial corporations:</b>												
Output per hour of all employees	0.0	6.6	2.2	-0.5	-5.5	<sup>P</sup> -0.3	1.9	3.2	3.8	2.0	0.6	<sup>P</sup> -1.1
Compensation per hour	9.4	11.7	9.3	9.1	6.9	<sup>P</sup> 8.6	10.4	10.8	10.1	9.9	9.2	<sup>P</sup> 8.5
Real compensation per hour	-3.1	0.3	2.1	-2.5	0.8	<sup>P</sup> 5.2	-1.9	-0.4	0.4	-0.8	-0.3	<sup>P</sup> 0.9
Total unit costs	9.4	5.6	8.4	10.3	14.4	<sup>P</sup> 8.3	10.5	9.5	7.4	8.4	9.6	<sup>P</sup> 10.3
Unit labor costs	9.4	4.8	7.0	9.7	13.2	<sup>P</sup> 8.9	8.4	7.4	6.1	7.7	8.6	<sup>P</sup> 9.7
Unit nonlabor costs	9.5	7.9	12.3	11.8	17.6	<sup>P</sup> 6.7	16.8	15.4	11.1	10.4	12.3	<sup>P</sup> 12.0
Unit profits	15.7	77.9	-13.9	15.7	-32.6	<sup>P</sup> 51.4	0.3	11.8	23.3	19.7	4.5	<sup>P</sup> -24.4
Implicit price deflator	9.9	10.4	6.2	10.7	9.6	<sup>P</sup> 2.4	9.6	9.7	8.6	9.3	9.2	<sup>P</sup> 7.2
<b>Manufacturing:</b>												
Output per hour of all persons	r 9.8	r 3.1	r 3.5	r 0.9	r -11.0	r -4.9	1.0	r 1.8	r 4.0	r 4.3	-1.1	-3.0
Compensation per hour	10.5	11.6	10.8	9.3	7.6	r 10.7	12.3	12.5	11.4	10.5	9.8	9.6
Real compensation per hour	-2.2	-0.2	3.5	-2.4	-0.2	r 7.2	-0.2	1.1	1.5	-0.2	0.3	2.0
Unit labor costs	0.6	r 8.2	r 7.0	r 8.3	r 20.9	r 16.5	11.2	r 10.6	r 7.1	6.0	r 11.0	13.0

r= revised.



## WAGE AND COMPENSATION DATA

Data for the Employment Cost Index are reported to the Bureau of Labor Statistics by a sample of 2,000 private nonfarm establishments and 750 State and local government units selected to represent total employment in those sectors. On average, each reporting unit provides wage and compensation information on five well-specified occupations.

**Data on negotiated wage and benefit changes** are obtained from contracts on file at the Bureau, direct contact with the parties, and secondary sources.

### Definitions

The **Employment Cost Index (ECI)** is a quarterly measure of the average change in the cost of employing labor. The rate of total compensation, which comprises wages, salaries, and employer costs for employee benefits, is collected for workers performing specified tasks. Employment in each occupation is held constant over time for all series produced in the ECI, except those by region, bargaining status, and area. As a consequence, only changes in compensation are measured. Industry and occupational employment data from the 1970 Census of Population are used in deriving constant weights for the ECI. While holding total industry and occupational employment fixed, in the estimation of indexes by region, bargaining status, and area, the employment in those measures is allowed to vary over time in accord with changes in the sample. The rate of change (in percent) is available for wages and salaries, as well as for total compensation. Data are collected for the pay period including the 12th day of the survey months of March, June, September, and December. The statistics are neither annualized nor adjusted for seasonal influence.

**Wages and salaries** consist of earnings before payroll deductions, excluding premium pay for overtime, work on weekends and holidays, and shift differentials. Production bonuses, incentive earnings, commissions, and cost-of-living adjustments are included; nonproduction bonuses are included with other supplemental pay items in the benefits category; and payments-in-kind, free room and board, and tips are excluded. **Benefits** include supplemental pay, insurance, retirement and savings plans, and hours-related and legally required benefits.

**Data on negotiated wage changes** apply to private nonfarm industry collective bargaining agreements covering 1,000 workers or more. Data on compensation changes apply only to those agreements covering 5,000 workers or more. *First-year* wage or compensation changes refer to average negotiated changes for workers covered by settlements reached in the period and implemented within the first 12 months after the effective date of the agreement. *Changes over the life*

*of the agreement* refer to all adjustments specified in the contract, expressed as an average annual rate. These measures exclude wage changes that may occur under cost-of-living adjustment clauses, that are triggered by movements in the Consumer Price Index. *Wage-rate changes* are expressed as a percent of straight-time hourly earnings; *compensation changes* are expressed as a percent of total wages and benefits.

**Effective wage adjustments** reflect all negotiated changes implemented in the reference period, regardless of the settlement date. They include changes from settlements reached during the period, changes deferred from contracts negotiated in an earlier period, and cost-of-living adjustments. The data also reflect contracts providing for no wage adjustment in the period. Effective adjustments and each of their components are prorated over all workers in bargaining units with at least 1,000 workers.

### Notes on the data

The Employment Cost Index data series began in the fourth quarter of 1975, with the quarterly percent change in wages and salaries in the private nonfarm sector. Data on employer costs for employee benefits were included in 1980, to produce a measure of the percent change in employers' cost for employees' total compensation. State and local government units were added to the ECI coverage in 1981, providing a measure of total compensation change in the civilian nonfarm economy.

Data for the broad white-collar, blue-collar, and service worker groups, and the manufacturing, nonmanufacturing, and service industry groups are presented at the ECI. Additional occupation and industry detail are provided for the wages and salaries component of total compensation in the private nonfarm sector. For State and local government units, additional industry detail is shown for both total compensation and its wages and salaries component.

Historical indexes (June 1981=100) of the quarterly rates of changes presented in the ECI are also available.

For a more detailed discussion of the ECI, see chapter 25, "The Employment Cost Index," of the BLS *Handbook of Methods* (Bulletin 1910), and the *Monthly Labor Review* articles: "Employment Cost Index: a measure of change in the 'price of labor,'" July 1975; "How benefits will be incorporated into the Employment Cost Index," January 1978; and "The Employment Cost Index: recent trends and expansion," May 1982.

Additional data for the ECI and other measures of wage and compensation changes appear in *Current Wage Developments*, a monthly periodical of the Bureau.

### 32. Employment Cost Index, total compensation

[June 1981 = 100]

Series	1980				1981				1982	Percent change	
	March	June	Sept.	Dec.	March	June	Sept.	Dec.	March	3 months ended	12 months ended
										March 1982	
<b>Civilian nonfarm workers<sup>1</sup></b> .....	—	—	—	—	—	100.0	102.6	104.5	106.3	1.7	—
Workers, by occupational group											
White-collar workers .....	—	—	—	—	—	100.0	102.7	104.9	106.5	1.5	—
Blue-collar workers .....	—	—	—	—	—	100.0	102.3	104.1	105.7	1.5	—
Service workers .....	—	—	—	—	—	100.0	102.8	104.2	107.2	2.9	—
Workers, by industry division											
Manufacturing .....	—	—	—	—	—	100.0	102.1	104.0	106.0	1.9	—
Nonmanufacturing .....	—	—	—	—	—	100.0	102.8	104.8	106.4	1.5	—
Services .....	—	—	—	—	—	100.0	104.4	107.1	108.2	1.0	—
Public administration <sup>2</sup> .....	—	—	—	—	—	100.0	104.3	106.0	108.1	2.0	—
<b>Private nonfarm workers</b> .....	88.6	90.7	92.8	94.7	98.1	100.0	102.0	104.0	105.8	1.7	7.8
Workers, by occupational group											
White-collar workers .....	88.7	90.8	92.6	94.5	98.3	100.0	101.8	104.0	105.8	1.7	7.6
Blue-collar workers .....	88.3	90.5	93.0	94.9	97.8	100.0	102.2	104.0	105.6	1.5	8.0
Service workers .....	89.9	90.8	92.7	94.3	99.3	100.0	101.9	103.1	106.7	3.5	7.5
Workers, by industry division											
Manufacturing .....	88.7	90.5	92.6	94.7	98.0	100.0	102.1	104.0	106.0	1.9	8.2
Nonmanufacturing .....	88.6	90.8	92.9	94.7	98.2	100.0	102.0	103.9	105.7	1.7	7.6
<b>State and local government workers</b> .....	—	—	—	—	—	100.0	105.3	107.4	108.8	1.3	—
Workers, by occupational group											
White-collar workers .....	—	—	—	—	—	100.0	105.7	107.8	109.1	1.2	—
Blue-collar workers .....	—	—	—	—	—	100.0	104.2	105.9	108.2	2.2	—
Workers, by industry division											
Services .....	—	—	—	—	—	100.0	105.8	107.9	109.0	1.0	—
Schools .....	—	—	—	—	—	100.0	106.0	107.9	108.9	.9	—
Elementary and secondary .....	—	—	—	—	—	100.0	106.3	108.3	109.3	.9	—
Hospitals and other services <sup>3</sup> .....	—	—	—	—	—	100.0	105.0	107.8	109.5	1.6	—
Public administration <sup>2</sup> .....	—	—	—	—	—	100.0	104.3	106.0	108.1	2.0	—

<sup>1</sup>Excludes private household and Federal workers.

<sup>2</sup>Consists of legislative, judicial, administrative, and regulatory activities.

<sup>3</sup>Includes, for example, library, social, and health services.

NOTE: Dashes indicate data not available.

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**33. Employment Cost Index, wages and salaries, by bargaining status, region, and area size**

[June 1981 = 100]

Series	March 1981	December 1981	March 1982	Percent change					
				3 months ended			12 months ended		
				March 1981	December 1981	March 1982	March 1981	December 1981	March 1982
<b>COMPENSATION</b>									
Workers, by bargaining status <sup>1</sup>									
Union .....	97.6	104.8	106.5	3.1	2.2	1.6	11.8	10.7	9.1
Manufacturing .....	—	104.6	106.3	—	2.2	1.6	—	—	—
Nonmanufacturing .....	—	105.0	106.8	—	2.2	1.7	—	—	—
Nonunion .....	98.4	103.5	105.3	4.0	1.8	1.7	10.2	9.4	7.0
Manufacturing .....	—	103.5	105.7	—	1.7	2.1	—	—	—
Nonmanufacturing .....	—	103.5	105.2	—	1.8	1.6	—	—	—
Workers, by area size <sup>1</sup>									
Metropolitan areas .....	98.1	104.1	105.7	3.6	2.0	1.5	10.9	9.9	7.7
Other areas .....	98.1	103.2	106.2	4.1	1.4	2.9	10.4	9.6	8.3
<b>WAGES AND SALARIES</b>									
Workers, by bargaining status <sup>1</sup>									
Union .....	97.4	105.0	106.5	1.7	2.2	1.4	10.2	9.6	9.3
Manufacturing .....	97.7	104.7	105.9	1.7	2.0	1.1	10.1	8.9	8.4
Nonmanufacturing .....	97.1	105.2	107.0	1.7	2.3	1.7	10.4	10.2	10.2
Nonunion .....	98.2	103.2	105.6	3.3	1.6	2.3	8.9	8.5	7.5
Manufacturing .....	97.9	103.3	105.9	2.7	1.6	2.5	7.6	8.3	8.2
Nonmanufacturing .....	98.3	103.2	105.5	3.5	1.6	2.2	9.4	8.6	7.3
Workers, by region <sup>1</sup>									
Northeast .....	98.3	104.4	106.1	2.4	2.7	1.6	8.5	8.8	7.9
South .....	98.0	102.8	105.7	3.3	.9	2.8	9.3	8.3	7.9
North Central .....	98.1	103.3	104.7	3.0	1.7	1.4	9.4	8.4	6.7
West .....	97.9	105.1	107.9	2.7	1.8	2.7	10.9	10.3	10.2
Workers, by area size <sup>1</sup>									
Metropolitan areas .....	97.9	104.0	105.9	2.6	1.9	1.8	9.5	9.0	8.2
Other areas .....	98.3	103.1	106.0	3.3	1.3	2.8	9.1	8.4	7.8

<sup>1</sup>The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see BLS *Handbook of Methods*, Bulletin 1910.



### 34. Employment Cost Index, wages and salaries, by occupation and industry group

[June 1981 = 100]

Series	1980				1981				1982	Percent change	
	March	June	Sept.	Dec.	March	June	Sept.	Dec.	March	3 months ended	12 months ended
										March 1982	
<b>Civilian nonfarm workers<sup>1</sup></b> .....	—	—	—	—	—	100.0	102.5	104.4	106.3	1.8	—
Workers, by occupational group											
White-collar workers .....	—	—	—	—	—	100.0	102.6	104.7	106.7	1.9	—
Blue-collar workers .....	—	—	—	—	—	100.0	102.4	104.0	105.5	1.4	—
Service workers .....	—	—	—	—	—	100.0	102.5	103.6	106.8	3.1	—
Workers, by industry division											
Manufacturing .....	—	—	—	—	—	100.0	102.1	104.0	105.9	1.8	—
Nonmanufacturing .....	—	—	—	—	—	100.0	102.7	104.5	106.5	1.9	—
Services .....	—	—	—	—	—	100.0	104.4	106.6	108.6	1.9	—
Public administration <sup>2</sup> .....	—	—	—	—	—	100.0	103.8	105.5	107.5	1.9	—
<b>All private nonfarm workers<sup>3</sup></b> .....	89.6	91.5	93.5	95.4	98.0	100.0	102.0	103.8	105.9	2.0	8.1
Workers, by occupational group											
White-collar workers .....	89.7	91.4	93.3	95.2	98.1	100.0	101.8	103.9	106.2	2.2	8.3
Professional and technical workers .....	89.2	90.8	93.2	95.3	98.2	100.0	103.3	105.5	108.0	2.4	10.0
Managers and administrators .....	90.6	92.0	93.5	94.7	98.6	100.0	101.6	102.8	105.8	2.9	7.3
Salesworkers .....	88.5	90.7	92.2	94.8	96.2	100.0	98.0	101.9	102.2	.3	6.2
Clerical workers .....	90.3	91.9	93.8	95.7	98.6	100.0	102.7	104.2	107.0	2.7	8.5
Blue-collar workers .....	89.3	91.6	93.8	95.7	97.7	100.0	102.3	103.9	105.4	1.4	7.9
Craft and kindred workers .....	89.3	91.4	94.0	96.1	97.8	100.0	102.9	104.3	106.2	1.8	8.6
Operatives, except transport .....	89.4	91.5	93.6	95.5	97.8	100.0	102.1	104.1	105.4	1.2	7.8
Transport equipment operatives .....	89.1	92.2	93.5	95.3	96.8	100.0	101.0	102.7	103.2	.5	6.6
Nonfarm laborers .....	89.6	91.8	93.9	95.7	97.5	100.0	101.5	103.3	104.1	.8	6.8
Service workers .....	90.8	91.9	93.4	94.8	99.2	100.0	101.8	102.7	106.7	3.9	7.6
Workers, by industry division											
Manufacturing .....	89.9	91.8	93.6	95.7	97.9	100.0	102.1	104.0	105.9	1.8	8.2
Durables .....	89.3	91.2	93.5	95.7	97.9	100.0	102.1	104.5	106.3	1.7	8.6
Nondurables .....	91.0	92.7	93.8	95.7	97.8	100.0	102.0	103.1	105.3	2.1	7.7
Nonmanufacturing .....	89.5	91.3	93.4	95.2	98.1	100.0	102.0	103.8	105.9	2.0	8.0
Construction .....	89.3	91.9	94.5	95.9	97.6	100.0	103.0	104.3	105.9	1.5	8.5
Transportation and public utilities .....	88.2	90.2	93.1	95.6	97.7	100.0	102.0	103.6	105.7	2.0	8.2
Wholesale and retail trade .....	90.5	92.2	93.6	95.1	98.2	100.0	101.3	102.3	103.9	1.6	5.8
Wholesale trade .....	89.7	92.1	93.0	95.9	98.5	100.0	102.0	103.4	106.3	2.8	7.9
Retail trade .....	90.8	92.2	93.8	94.8	98.1	100.0	101.0	101.9	103.0	1.1	5.0
Finance, insurance, and real estate .....	87.1	89.4	91.2	93.1	95.7	100.0	98.3	102.3	103.7	1.4	8.4
Services .....	90.5	91.9	94.2	95.7	99.6	100.0	103.6	105.8	108.8	2.8	9.2
<b>State and local governments</b> .....	—	—	—	—	—	100.0	105.0	107.0	108.2	1.1	—
Workers, by occupational group											
White-collar workers .....	—	—	—	—	—	100.0	105.4	107.5	108.5	.9	—
Blue-collar workers .....	—	—	—	—	—	100.0	103.9	105.5	107.5	1.9	—
Workers, by industry division											
Services .....	—	—	—	—	—	100.0	105.5	107.6	108.4	.7	—
Schools .....	—	—	—	—	—	100.0	105.7	107.7	108.3	.6	—
Elementary and secondary .....	—	—	—	—	—	100.0	106.0	107.9	108.7	.7	—
Hospitals and other services <sup>4</sup> .....	—	—	—	—	—	100.0	104.6	107.3	108.8	1.4	—
Public administration <sup>2</sup> .....	—	—	—	—	—	100.0	103.3	105.5	107.5	1.9	—

<sup>1</sup>Excludes private household and Federal workers.

<sup>2</sup>Consists of legislative, judicial, administrative, and regulatory activities.

<sup>3</sup>Excludes private household workers.

<sup>4</sup>Includes, for example, library, social, and health services.

NOTE: Dashes indicate data not available.

**35. Wage and compensation change, major collective bargaining settlements, 1977 to date**

[In percent]

Measure	Annual average				Quarterly average									
	1978	1979	1980	1981	1980				1981				1982 <sup>P</sup>	
					I	II	III	IV	I	II	III	IV		
Total compensation changes covering 5,000 workers or more, all industries:														
First year of contract . . . . .	8.3	9.0	10.4	10.2	8.8	10.2	11.4	8.5	7.7	11.6	10.5	11.0	1.8	
Annual rate over life of contract . . .	6.3	6.6	7.1	8.3	6.7	7.4	7.2	6.1	7.2	10.8	8.1	5.8	1.1	
Wage rate changes covering at least 1,000 workers, all industries:														
First year of contract . . . . .	7.6	7.4	9.5	9.8	8.2	9.1	10.5	8.3	7.1	11.8	10.8	9.0	2.2	
Annual rate over life of contract . . .	6.4	6.0	7.1	7.9	6.5	7.3	7.4	6.5	6.2	9.7	8.7	5.7	2.0	
Manufacturing:														
First year of contract . . . . .	8.3	6.9	7.4	7.2	7.2	6.7	8.4	7.8	6.4	8.2	9.0	6.6	1.9	
Annual rate over life of contract . . .	6.6	5.4	5.4	6.1	5.7	5.1	5.6	5.8	5.5	6.7	7.5	5.4	1.8	
Nonmanufacturing (excluding construction):														
First year of contract . . . . .	8.0	7.6	9.5	9.8	9.4	10.3	9.5	8.2	8.0	11.8	8.6	9.6	1.8	
Annual rate over life of contract . . .	6.5	6.2	6.6	7.3	7.6	8.5	5.9	6.8	7.3	9.1	7.2	5.6	1.4	
Construction:														
First year of contract . . . . .	6.5	8.8	13.6	13.5	10.8	12.2	15.4	14.3	11.4	12.9	16.4	11.4	9.3	
Annual rate over life of contract . . .	6.2	8.3	11.5	11.3	9.1	10.4	13.0	12.0	10.3	11.1	12.4	11.7	8.9	

**36. Effective wage adjustments in collective bargaining units covering 1,000 workers or more, 1977 to date**

Measure	Year					Year and quarter									
	1977	1978	1979	1980	1981	1980				1981				1982 <sup>P</sup>	
						I	II	III	IV	I	II	III	IV		
Average percent adjustment (including no change):															
All industries . . . . .	8.0	8.2	9.1	9.9	9.5	1.6	3.3	3.5	1.3	1.7	3.2	3.3	1.5	.9	
Manufacturing . . . . .	8.4	8.6	9.6	10.2	9.4	2.0	3.4	2.9	1.7	2.3	2.4	3.1	1.9	.8	
Nonmanufacturing . . . . .	7.6	7.9	8.8	9.7	9.5	1.3	3.2	4.0	1.1	1.2	3.8	3.4	1.1	1.0	
From settlements reached in period . . . . .	3.0	2.0	3.0	3.6	2.5	.4	1.0	1.7	.5	.4	1.1	.5	.4	.1	
Deferred from settlements reached in earlier period . . .	3.2	3.7	3.0	3.5	3.8	.5	1.4	1.2	.3	.5	1.4	1.5	.4	.5	
From cost-of-living clauses . . . . .	1.7	2.4	3.1	2.8	3.2	.7	.8	.7	.6	.7	.7	1.2	.6	.2	
Total number of workers receiving wage change (in thousands) <sup>1</sup> . . . . .	—	—	—	—	8,648	—	—	—	—	3,855	4,701	4,364	3,225	2,713	
From settlements reached in period . . . . .	—	—	—	—	2,270	—	—	—	—	579	909	540	604	153	
Deferred from settlements reached in earlier period . . . . .	—	—	—	—	6,267	—	—	—	—	888	2,055	3,023	882	1,033	
From cost-of-living clauses . . . . .	—	—	—	—	4,593	—	—	—	—	2,639	2,669	2,934	2,179	1,750	
Number of workers receiving no adjustments (in thousands) . . . . .	—	—	—	—	145	—	—	—	—	4,937	4,092	4,428	5,568	6,176	

<sup>1</sup> The total number of workers who received adjustments does not equal the sum of workers that received each type of adjustment, because some workers received more than one type of adjustment during the period.

## WORK STOPPAGE DATA

Work stoppages include all known strikes or lockouts involving 1,000 workers or more and lasting a full shift or longer. Data are based largely on newspaper accounts and cover all workers idle one shift or more in establishments directly involved in a stoppage. They do not measure the indirect or secondary effect on other establishments whose employees are idle owing to material or service shortages.

Estimates of days idle as a percent of estimated working time measures only the impact of larger strikes (1,000 workers or more). Formerly, these estimates measured the impact of strikes involving 6 workers or more; that is, the impact of virtually *all* strikes. Due to budget stringencies, collection of data on strikes involving 6 workers or more was discontinued with the December 1981 data.

Month and year	Number of stoppages		Workers involved		Days idle	
	Beginning in month or year	In effect during month or year	Beginning in month or year (in thousands)	In effect during month (in thousands)	Number (in thousands)	Percent of estimated working time
1947	270		1,629		25,720	
1948	245		1,435		26,127	.22
1949	262		2,537		43,420	.38
1950	424		1,698		30,390	.26
1951	415		1,462		15,070	.12
1952	470		2,746		48,820	.38
1953	437		1,623		18,130	.14
1954	265		1,075		16,630	.13
1955	363		2,055		21,180	.16
1956	287		1,370		26,840	.20
1957	279		887		10,340	.07
1958	332		1,587		17,900	.13
1959	245		1,381		60,850	.43
1960	222		896		13,260	.09
1961	195		1,031		10,140	.07
1962	211		793		11,760	.08
1963	181		512		10,020	.07
1964	246		1,183		16,220	.11
1965	268		999		15,140	.10
1966	321		1,300		16,000	.10
1967	381		2,192		31,320	.18
1968	392		1,855		35,567	.20
1969	412		1,576		29,397	.16
1970	381		2,468		52,761	.29
1971	298		2,516		35,538	.19
1972	250		975		16,764	.09
1973	317		1,400		16,260	.08
1974	424		1,796		31,809	.16
1975	235		965		17,563	.09
1976	231		1,519		23,962	.12
1977	298		1,212		21,258	.10
1978	219		1,006		23,774	.11
1979	235		1,021		20,409	.09
1980	187		795		20,844	.09
1981	145		729		16,908	.07
1981: January	6	12	12.0	29.6	257.9	.01
February	7	10	10.7	20.9	118.5	.01
March	16	20	201.6	207.8	861.8	.04
April	17	27	48.0	223.5	4,085.2	.20
May	18	27	85.1	259.0	4,454.0	.24
1982 P: January	2	4	6.1	11.4	199.9	.01
February	2	6	2.5	13.9	236.9	.01
March	3	8	8.3	21.3	352.2	.02
April	8	15	34.7	54.3	478.3	.02
May	13	19	42.7	58.3	599.1	.03

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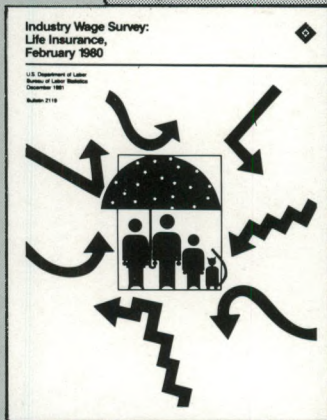
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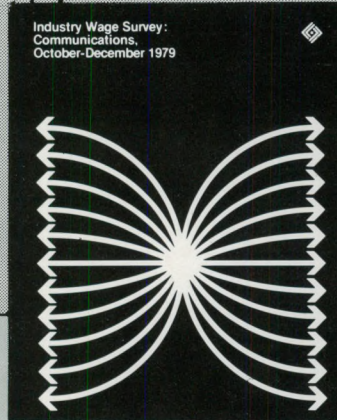
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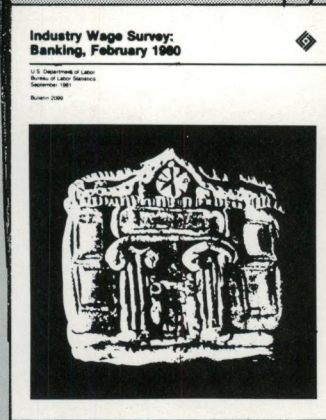
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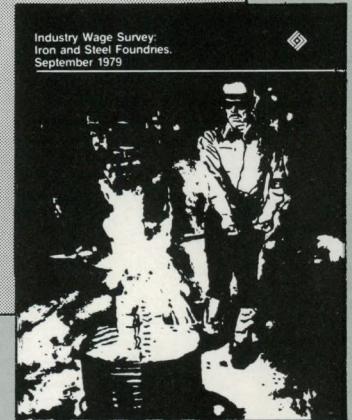
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