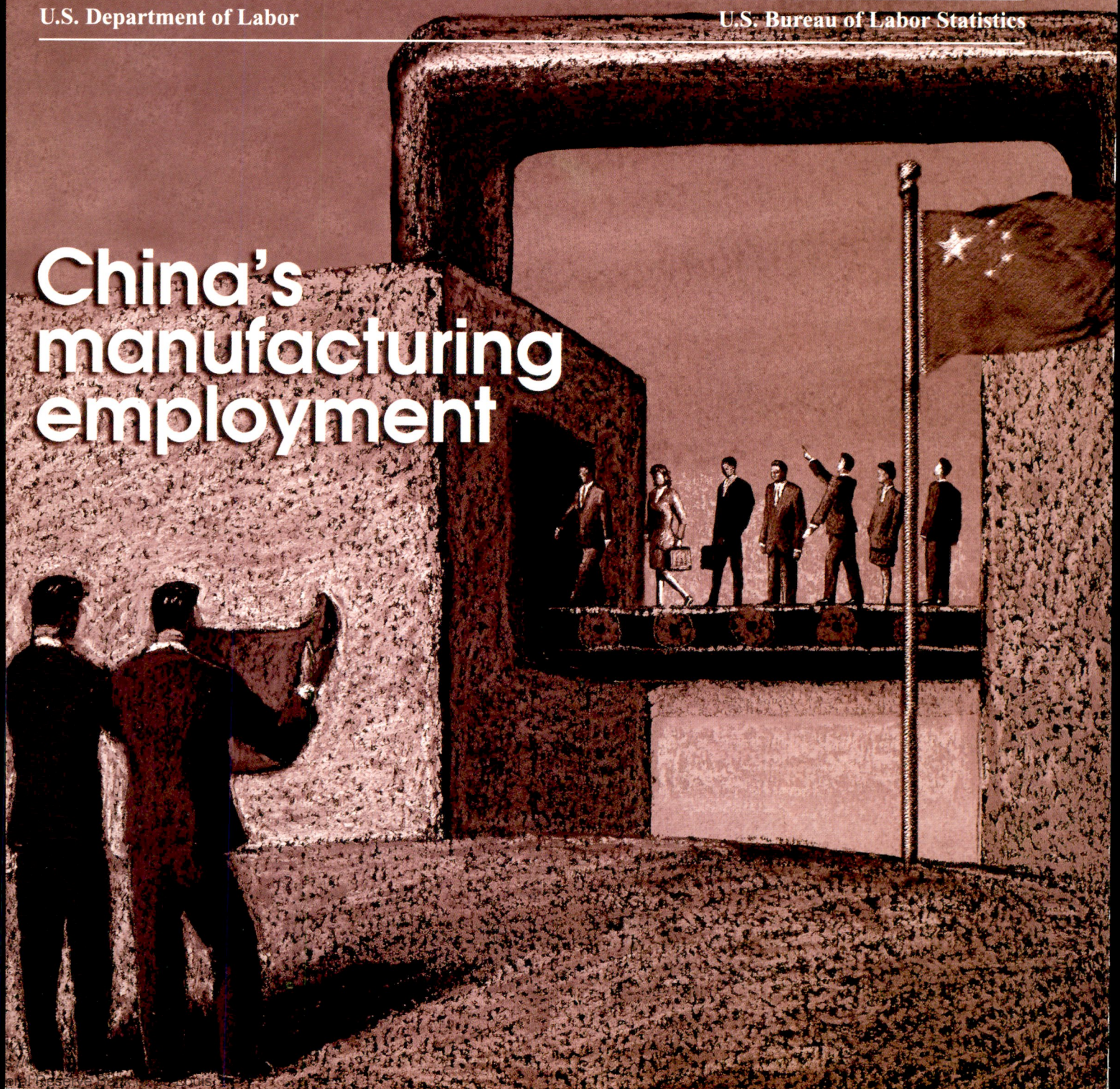
July 2005

MONTHLY LABOR REVIEW

U.S. Department of Labor

U.S. Bureau of Labor Statistics

China's manufacturing employment



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MONTHLY LABOR
REVIEW

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2005: the July *Review*

As anyone who has been to a gas station lately will attest, the price of imports is having an impact on the American economy. According to the lead article by Kristen Locatelli, two of the factors leading to a wide range of substantial import price movements are the growth in international demand and a weakening of the dollar against the currencies of several major trading partners.

One of the forces behind the rise in international demand has been China. According to Locatelli, China's demand for raw materials has tightened supplies and the concomitant rises in prices for industrial supplies and materials have put additional upward pressure on prices for manufactured goods.

Given the increasing presence of China in international markets, Judith Banister's report on manufacturing employment in China is especially timely. This detailed look at China's manufacturing sector and its deployment of labor will be continued in a forthcoming issue by a report on its wages.

The next two articles explore the issues arising in retail trade output and productivity measurement. Marilyn E. Manser surveys the alternate concepts for measuring retail output—sectoral output or sales, gross margins, and value added. As concepts, these are quite different. However, Manser finds that, while productivity measures based on these alternative concepts also differ somewhat, they all show a large increase in productivity in the late 1990s, compared with the first half of the decade.

Marcel P. Timmer, Robert Inklaar, and Bart Van Ark explore an experimental output measure for retail sales, the double-deflation method which uses a retailer's sales prices and purchase prices to calculate a margin price, and from that a margin sales volume to use as the output term in productivity calculations. Although this method may help solve some of the theoretical issues, the necessary purchase price data is, in practice, hard to find and often not of the requisite reliability.

H.O. Stekler and Rupin Thomas of George Washington University evaluate the employment projections BLS made in 1989 for the year 2000.

Daniel E. Hecker examines the matter of high-technology employment. While many readers will be looking at his methods for defining high-tech, it also is interesting to note that employment levels in several industries on his NAICS-based list are expected to grow relatively slowly. In fact, by 2012, employment is expected to decline in aerospace, semiconductors, computers, wired telecommunications, and instruments.

1915: the July *Review*

"With this issue the Bureau of Labor Statistics of the United States Department of Labor begins the publication of its MONTHLY REVIEW." Thus the editors began Volume I—Number 1 of this periodical 90 years ago. The first feature was a very short note, "Conciliation work of the Department of Labor," detailing efforts to resolve labor disputes during the year ended June 30, 1915. Of the 32 disputes the Department participated in, 22 were classified as amicably adjusted.

The other articles in our first issue covered immigrant employment, labor legislation, strikes and lockouts in the United States, regulations on women's employment, progress in a study of street railway employment, a summary of new studies the Bureau was engaged in, a note from Oregon on overtime in the packing industry, a note on child-labor laws in Connecticut, the effect of World War I on foreign food prices, the increase in coal prices in Britain, reports on increasing output in British coal mines and on British wage increases, employment in foreign countries, and strikes and lockouts abroad.

Mothers in the labor force

The labor force participation rate for mothers with children under age 18 was 70.4 percent in 2004, down by 0.7 percentage point from the prior year. In 2004, most of the over-the-year decline in the labor force participation rate of mothers with children under 18 occurred among mothers with children under 6; their rate declined by 1.0 percentage point to 61.8 percent. The participation rate of mothers whose youngest child was 6 through 17 declined slightly. The labor force participation rate for mothers with children under age 18 has been declining since 2000. To learn more about employment and unemployment in families, see "Employment Characteristics of Families in 2004," news release USDL 05-876.

The World According to TED

What is *TED*? It's shorthand for our Web-based daily, *Monthly Labor Review: The Editor's Desk* (**www.bls.gov/opub/ted**). Each business day, *TED* brings you facts and figures from somewhere in the full range of BLS programs, highlights reports you might otherwise have missed, and provides links to more detailed analyses. *The World According to TED*, a paper publication featuring 40 of *TED's* best pieces from 2004, is now available in print. To obtain a free copy, send e-mail to ted@bls.gov with your mailing address included in your request; or send postal mail to the *The Editor's Desk*, Office of Publications and Special Studies, U. S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. 20212. □

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U.S. import and export prices in 2004

Import and export prices increased at an accelerated rate in 2004, as each continued the upward trend that began in 2002; the increases for both indexes were driven by industrial supplies and materials, which trended upward because of higher fuel and raw material prices

Kristen Locatelli

The Bureau of Labor Statistics import and export price indexes both increased for a third consecutive year in 2004. Import prices were up 6.7 percent for the year, almost triple the 2.4-percent increase seen in 2003. Export prices saw the highest increase in 15 years with a 4.0-percent advance in 2004; the increase in the previous year was only 2.2 percent.

Prices within the industrial supplies and materials index had the most impact on the import side, increasing 22.0 percent for the year. The industrial supplies and materials price index comprises the fuel price index, which increased 31.5 percent, and the nonfuel industrial supplies and materials price index, which increased 13.4 percent. Import prices were up in all major categories, with the exception of the capital goods index. Downward movements for computer, peripheral, and semiconductor prices caused the contrasting trend in the capital goods index. On the export side, annual price increases were posted for each of the major indexes, except for the foods, feeds, and beverages price index, which decreased 4.5 percent. Similar to the import price index, the largest movement in the export price index was seen in the nonagricultural industrial supplies and materials price index, which posted a 16.6-percent increase in 2004. (See table 1.)

The key factor behind the substantial import and export price movements in 2004 was the growth in international demand, especially from China, for raw materials such as petroleum and steel. According to statistics from China's Customs Bureau, the total value of imports into China increased 36 percent. Import increases were most significant in iron ore and fine mine products (161.8 percent), crude oil (71.4 percent), unwrought copper (37.9 percent), and plastics (31.5 percent).[1] China's demand for these raw materials led to tight global supplies and higher international prices, which put additional upward pressure on prices for manufactured goods.

Changes in the exchange rate were also a factor behind the increases in import prices, as the U.S. dollar weakened against the currencies of several major trading partners. In 2004, the exchange rate decreased between the U.S. dollar and the United Kingdom (UK) pound (10.2 percent), the euro (9.1 percent), the Canadian dollar (7.8 percent), and the Japanese yen (3.8 percent). The U.S. dollar, which has been weakening for 2 years, put upward pressure on prices of goods imported from these countries, which in 2004 accounted for 45.5 percent of the total dollar value for goods imported into the United States.[2]

Other price measures

The Consumer Price Index (CPI) and the Producer Price Index (PPI) increased at an accelerated rate in 2004 because of higher energy costs. The CPI measures monthly changes in the prices paid by urban

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Table 1. U.S. import and export price indexes annual percent changes for selected categories of goods, 1995–2004

End use	Description	Relative importance November 2004[1]	Percent change for 12 months ended in December—									
			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Imports											
	All commodities	100.000	2.6	1.5	–5.2	–6.4	7.0	3.2	–9.1	4.2	2.4	6.7
	All imports, excluding petroleum	84.578	2.4	–1.8	–2.8	–3.3	.0	1.3	–4.5	.3	1.2	3.7
	All imports, excluding fuels	82.340	–	–	–	–	–	–	–	.0	1.0	3.0
0	Foods, feeds, and beverages	4.554	–2.7	–1.3	1.3	–3.1	–.3	–4.0	–4.7	5.9	3.0	8.0
1	Industrial supplies and materials	32.127	6.1	9.1	–10.4	–17.1	33.7	13.8	–24.6	21.9	9.5	22.0
	Excluding petroleum	16.705	6.4	–2.4	–1.7	–6.7	5.1	11.2	–14.6	5.8	7.2	16.4
	Excluding fuels.	14.467	–	–	–	–	–	–	–	3.6	6.3	13.4
10	Fuels and lubricants	17.661	5.7	34.4	–23.8	–36.5	114.7	27.1	–41.9	53.7	13.2	31.5
100	Petroleum and petroleum products	15.423	6.0	33.7	–25.5	–40.8	137.2	17.6	–39.5	56.9	12.8	30.3
2	Capital goods	22.031	1.1	–3.8	–7.4	–5.0	–3.3	–2.1	–2.7	–2.4	–1.1	–.8
	Excluding computers, peripherals, and semiconductors	14.947	2.1	–2.6	–4.7	–2.1	–1.8	–1.1	–1.0	–1.3	1.2	2.0
3	Automotive vehicles, parts and engines	16.703	2.3	.0	.5	.0	.7	.7	–.2	.5	.9	1.8
4	Consumer goods, excluding automotives	24.585	1.8	–.7	–.9	–1.3	–.4	–1.2	–.8	–.7	.1	.9
	Exports											
	All commodities	100.000	3.3	–1.1	–1.2	–3.4	.5	1.1	–2.5	1.0	2.2	4.0
	Agricultural commodities	8.753	17.3	–6.9	–2.9	–9.3	–6.8	3.1	–1.8	8.0	13.4	–5.9
	Nonagricultural commodities	91.247	1.7	–.4	–1.0	–2.7	1.2	.9	–2.5	.4	1.3	5.0
0	Foods, feeds, and beverages	8.034	19.9	–6.5	–3.3	–8.3	–5.7	1.7	–.5	7.9	12.6	–4.5
1	Industrial supplies and materials	27.940	1.5	–2.3	–1.4	–7.1	5.3	3.6	–8.6	5.0	6.8	15.1
	Nonagricultural industrial supplies and materials	26.456	1.6	–2.2	–1.3	–6.9	6.3	3.3	–8.4	4.8	6.3	16.6
2	Capital goods	40.721	1.8	.1	–1.6	–1.8	–1.1	.3	–.8	–1.3	–.6	.7
	Excluding computers, peripherals and semiconductors	30.254	2.8	1.4	–.3	–.7	–.4	.8	.0	.5	.9	2.1
3	Automotive vehicles, parts, and engines	11.379	1.6	.4	.8	.5	1.0	.5	.4	.8	.5	1.1
4	Consumer goods, excluding automotives	11.877	1.6	1.4	.8	–.8	.6	–.4	.2	–.6	.6	1.3

[1] Relative importance figures are based on 2002 trade values.

NOTE: Dash indicates data not available.

consumers for a representative basket of goods and services. After posting an increase of 1.9 percent in 2003, the CPI for All Urban Consumers (CPI–U) rose 3.3 percent in 2004, the largest increase since 2000. The increase was driven by a 16.6-percent gain in energy prices and a 2.7-percent gain in food prices. Excluding food and energy prices, the index increased at a lesser rate of 2.2 percent.

The PPI measures monthly changes in the selling prices received by domestic producers for their output. The PPI for finished goods increased 4.2 percent in 2004, slightly above the 4.0-percent advance in 2003. The 4.2-percent advance in the PPI was the largest movement published since 1990, when the index gained 5.7 percent.[3] The increase in 2004 was boosted by a 13.4-percent increase in energy prices and a 3.1-percent increase in food prices. Excluding food and energy prices, overall producer prices increased a more modest 2.3 percent. (See chart 1.)

Import price trends

Energy. Increases in energy prices were the most significant factor in import prices in 2004. The price index for petroleum and petroleum products increased 30.3 percent for the year, following a 12.8-percent increase in 2003 and a 56.9-percent increase in 2002. Crude oil prices started out strong in January at just more than 34 dollars per barrel,

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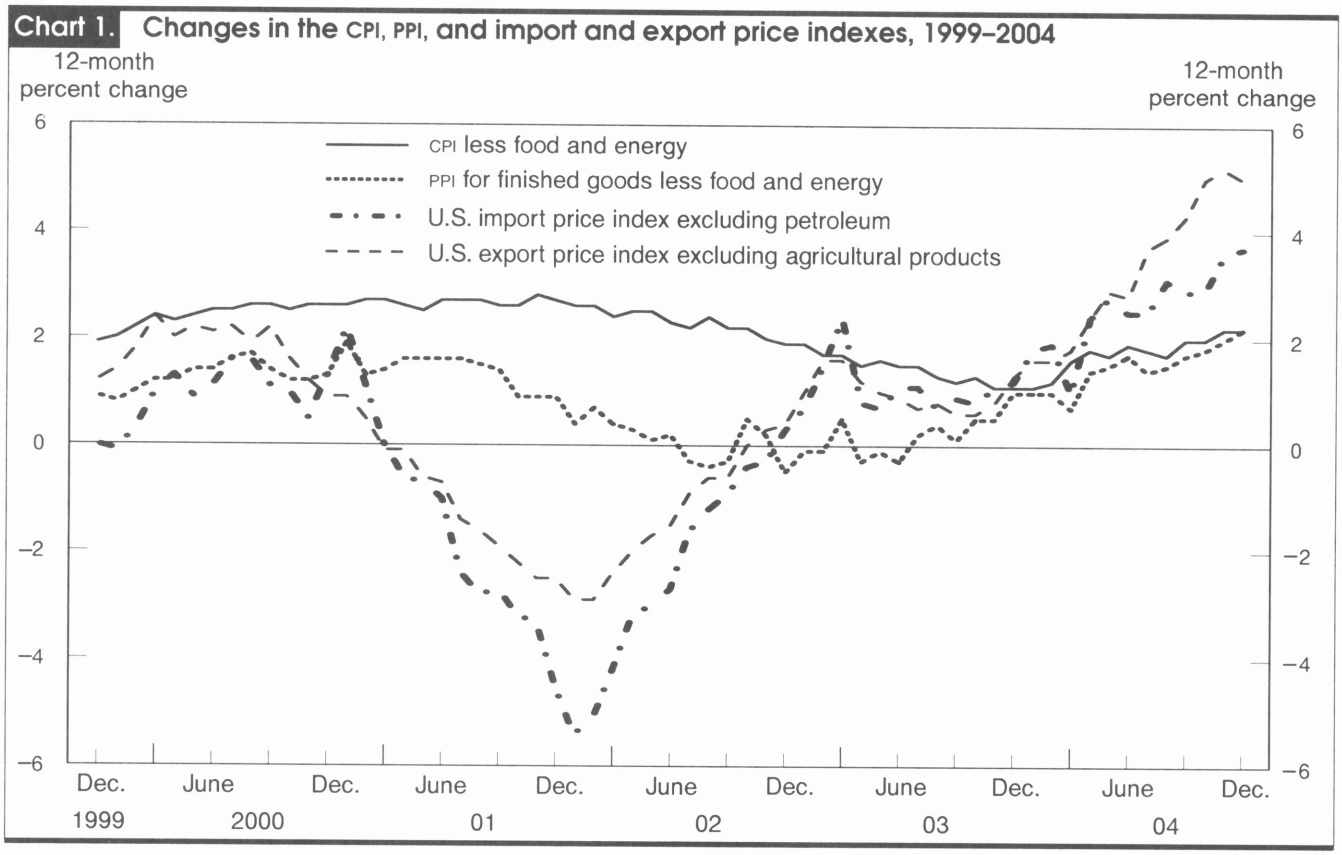

peaked in October at 53.32 dollars per barrel, and eased back at the end of the year to 43.12 dollars per barrel.[4] While concerns about potential supply interruptions continued to play a role in these price movements, demand factors were also prominent in 2004.

Total world oil demand increased by 2.5 million barrels per day (mb/d), or slightly more than 3.0 percent, representing the largest increase in demand in 28 years. Increased demand brought excess capacity (the volume over that which is needed to meet expected demand) to the lowest level since the conclusion of the Gulf War in 1991. The largest change in demand was witnessed in China, where demand increased 15.5 percent over 2003 because of an expanding economy and rapid industrial development. In 2004, China surpassed Japan to become the second largest consumer of oil behind the United States. Oil demand was also up in the United States and Western Europe, increasing 2.0 percent and 1.5 percent, respectively.[5]

With demand at such high levels, perceived threats to supply affected oil prices. Toward the end of 2003, a strike in Venezuela halted oil production, refining, and export at the State oil company, Petroleos de Venezuela, S.A. The situation improved by the beginning of 2004, but supplies on the world market were still recovering from the loss of some 200 million barrels of oil and gasoline. Additional threats to oil supplies developed during 2004, such as Hurricane Ivan and labor conflicts in Nigeria and Norway. Hurricane Ivan caused major delays in oil shipments, resulting in many U.S refineries shutting down or cutting back production. The hurricane initially cut production of approximately 1.0 mb/d at the refinery level because of damages in the oil infrastructure in the Gulf. By the end of 2004, production had yet to fully recover in the Gulf.[6] Responding to the surge in demand and the supply concerns, the Organization of the Petroleum Exporting Countries (OPEC) increased its production of oil 15 percent by the end of 2004. These changes to the OPEC supply ceiling led to a positive world oil demand/supply balance, reversing the negative balances witnessed in 2002 and 2003. Concurrently, the import petroleum and petroleum products price index decreased in November and December, down 6.0 percent and 11.4 percent, respectively.[7] (See chart 2.)

Nonfuel industrial supplies and materials. The nonfuel industrial supplies and materials import price index increased 13.4 percent in 2004, more than double the 6.3-percent increase in 2003 and more than triple the 3.6-percent increase in 2002. The index was affected chiefly by higher metal, chemical, and lumber prices. As previously mentioned, world

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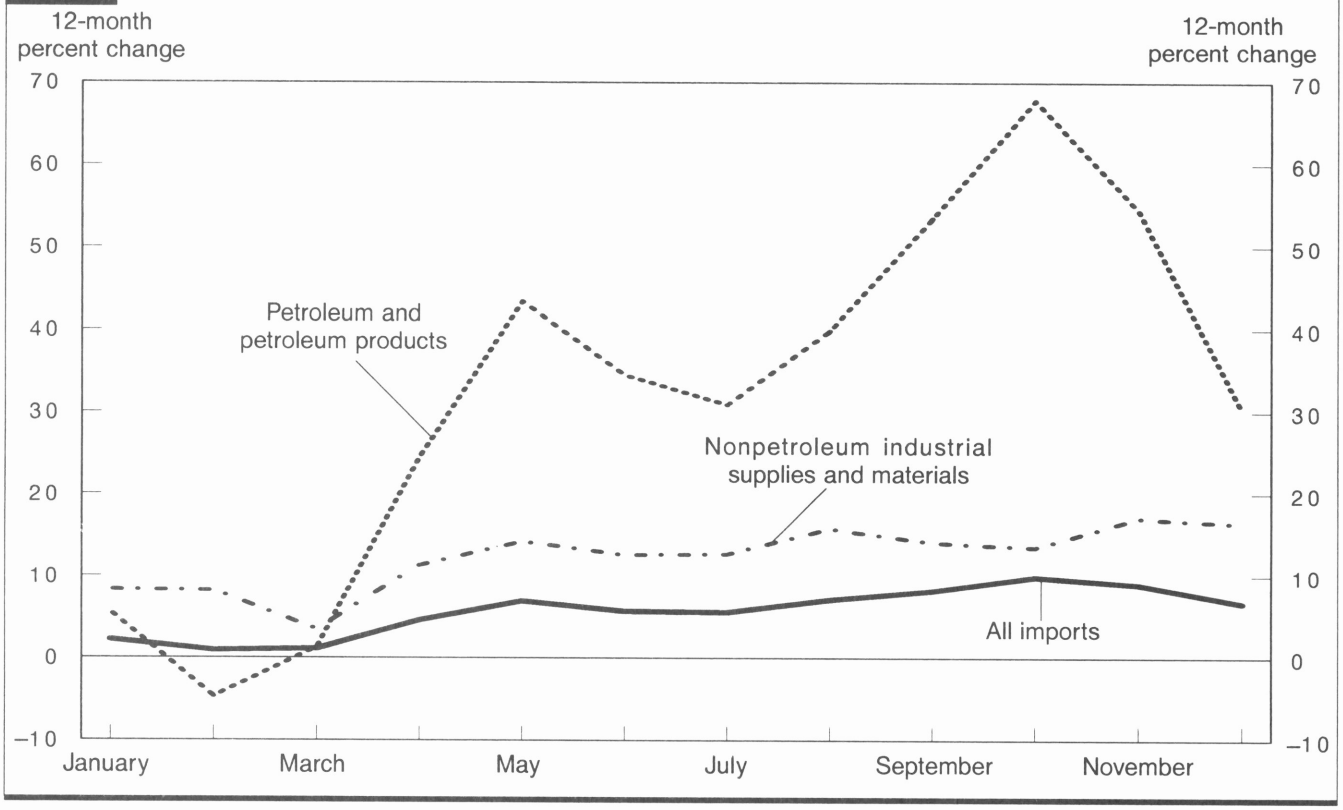
Chart 2. Import price trends, 2004



demand and Chinese industrial expansion were major factors for these price increases.

The unfinished metals index increased 39.6 percent in 2004, the highest annual increase since 1982 when the index was first published. Within this index, steelmaking and ferroalloying materials prices increased 56.2 percent; iron and steel mill product prices increased 69.1 percent; and nonferrous metals prices increased 23.5 percent. Strong Chinese and international demand raised concerns about commodity shortages for steel products, such as pig iron and scrap. According to the International Iron and Steel Institute, China accounted for 56.4 percent of the increase in global steel consumption between 2001 and 2004 because of expansion in its construction and manufacturing industries.[8]

Chemical prices rose 5.3 percent because of higher fuel feedstock costs, strong demand, and tight global supplies for products such as fertilizers, insecticides, and plastics. The industry has faced higher energy feedstock prices since the spring of 2003 when oil prices began a steady upward climb. Strong demand from end-users also placed upward pressure on chemical prices. According to the Purchasing Manager's Index published by the Institute for Supply Management, both the manufacturing economy and overall economy expanded throughout 2004.[9] Strength in the manufacturing economy tends to drive up demand for chemicals, which are primary inputs into the consumer goods industry and the automobile industry.

The lumber import price index gained 11.4 percent also because of strong Chinese and international demand. A shortage of available space onboard shipping vessels placed upward pressure on lumber prices for U.S. importers. China's demand for raw materials strained the availability of shipping vessels as additional capacity was needed to bring the large quantities of lumber, iron ore, and other materials to Chinese ports.[10]

Capital goods. The capital goods import price index recorded a downward movement of 0.8 percent in 2004, the index's ninth consecutive annual decrease. The decline was led by computer prices, which continued to trend downward in 2004 as weak demand and oversupply led companies to continue competitive pricing mechanisms. In recent years, computer companies have been lowering prices through innovation and by shifting manufacturing locations, in an effort to offset a decline in sales.[11] A significant amount of production in this industry was shifted to China, which has become a major exporter of computers, peripherals, and

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semiconductors into the United States. The value of imports of these goods from China accounted for 8.2 percent of the value of total imports in 2000 and 30.5 percent in 2004.[12]

In contrast, the capital goods price index excluding computers, peripherals, and semiconductors posted an increase of 2.0 percent in 2004 following a 1.2-percent increase in 2003. Price increases were published in 2004 for the electric generating equipment price index, the nonelectrical machinery price index, and the transportation equipment excluding motor vehicles price index. Higher steel prices had a large effect on the manufacturing costs of machinery, especially industrial and service machinery, which posted a 4.1-percent annual increase. Prices were also affected by exchange rate increases as the dollar weakened against the currencies of Japan, Canada, Mexico, and Germany, which were the top exporters to the United States of the capital goods included in this category.[13]

Automotive vehicles, parts, and engines. Import prices for automotive vehicles, parts, and engines increased 1.8 percent in 2004, as compared with the 0.9-percent increase published in 2003. Canada and Japan were the top two exporters of automotive vehicles, parts, and engines to the United States, representing 30 percent and 21 percent of the total value of export trade, respectively. As the dollar weakened against the Canadian dollar and the Japanese yen, exports from those countries became relatively more expensive.[14]

Consumer goods. After posting a 0.1-percent increase in 2003, the consumer goods import price index increased 0.9 percent in 2004. The 2-year upward trend in the index is a reversal of the downward trend that occurred between the years 1996 and 2002. Higher jewelry and medical supplies prices were contributing factors to the index movement in 2004. The jewelry price index increased 6.2 percent, greater than the 3.5-percent increase published in 2003. Higher precious metals prices, such as silver and gold, increased the manufacturing costs for jewelry. As the dollar weakened throughout most of 2004, demand for precious metals strengthened as precious metals became a better option for investors and fund managers seeking higher rates of return.[15]

An increase of 4.2 percent for the medical supplies price index was also a significant factor in the consumer goods price index. The movement was the third consecutive increase in the index and the largest published increase since 1993. The research and development of new medicines requires an enormous amount of time and money, and unsuccessful research attempts dip further into the company's profits. Development of major drugs takes 7 to 10 years with costs ranging between $200 million and $1 billion. New pharmaceuticals brought to the market, both over-the-counter and prescription, have been met with strong demand from consumers.[16]

Foods, feeds, and beverages. The foods, feeds, and beverages import price index increased 8.0 percent in 2004, more than double the 3.0-percent increase in 2003. The vegetable price index recorded the largest movement with an annual increase of 21.6 percent. Hurricanes and tropical storms brought winds and heavy rains to tomato producers in Florida, destroying crops and postponing early fall plantings. By November, there was a severe shortage of U.S. grown tomatoes as total shipments of Florida tomatoes declined 42 percent in 2004. The decrease in domestic tomato production led to an increase in the demand for imported tomatoes, putting upward pressure on prices. Pest infestation in the Baja region of Mexico and wet California weather also added to the higher tomato prices.[17] The meat and poultry price index increased 10.8 percent in 2004 because of strong demand for pork products. Mad cow disease (Bovine Spongiform Encephalopathy, or BSE) and the avian flu curtailed demand for beef and chicken, respectively, creating a strong demand for pork.[18]

The price index for green coffee, cocoa beans, and sugar gained 19.3 percent in 2004 because of global shortages and strong demand. In 2002, green coffee prices were one-third the 1998 price levels because of excess supply overloading the market. However, the situation changed by 2003, and in 2004 coffee demand exceeded supply for the second consecutive year because of production cutbacks in a number of exporting countries as a result of the previous lower prices. Poor weather conditions in Brazil also added supply pressure.[19] The price index for fish and shellfish increased 7.0 percent. An ongoing trade dispute regarding imported shrimp led to higher prices as importers stocked up on shrimp in the beginning of 2004 prior to the implementation of tariffs later in 2004.[20]

Locality of Origin price index. In order to better delineate and analyze price trends in U.S. trade, BLS publishes import price indexes by Locality of Origin. These price indexes include imports from Industrialized Countries, Other Countries, Canada, the European Union (EU), France, Germany, the UK, Latin America, Mexico, the Pacific Rim, China, Japan, the Asian Newly Industrialized Countries, the Association of Southeast Asian Nations (ASEAN), and Asia Near East.[21] All of the above indexes, except those for China and the Asian newly industrialized countries, increased at an accelerated rate in 2004 when compared with 2003 price movements. The Canadian price index had the largest price change with an 11.7-percent increase, followed by the EU price index with a 7.0-percent increase, the Mexican price index with a 4.0-percent increase, and the Japanese price index with a 1.3-percent increase. Overall, import prices from the Industrialized Countries increased 7.5 percent, while import prices from the Other Countries increased 6.0 percent. The two

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main factors behind these upward price movements were higher petroleum prices and exchange rate movements between the U.S. dollar and several major trading partners. Meanwhile, import prices from China decreased 1.0 percent in 2004.

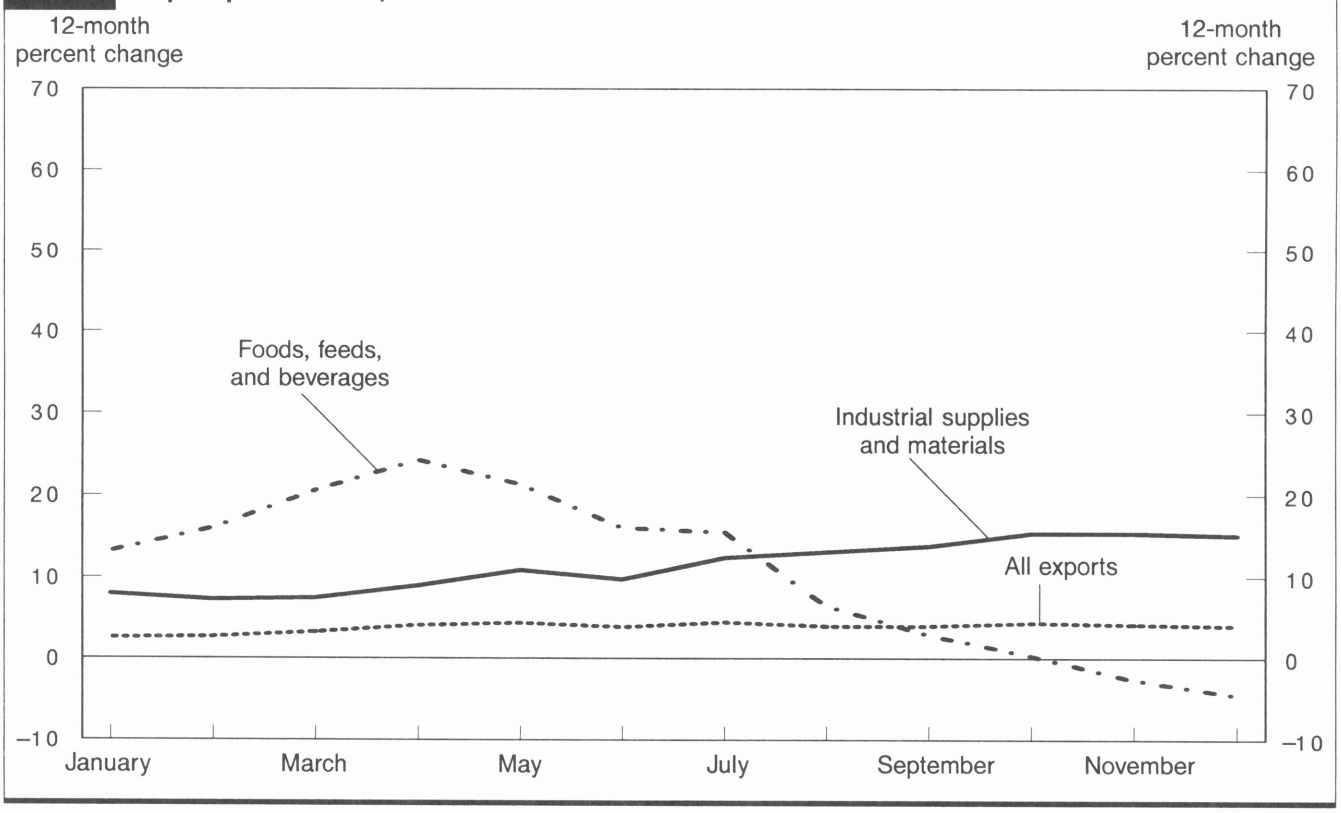
Export price trends

Foods, feeds, and beverages. The agricultural goods price index decreased 4.5 percent in 2004, reversing the 12.6-percent increase observed in the previous year. The upward movement in the agricultural goods price index in 2003 was led by increases in the soybean price index and the corn price index. After gaining 33.0 percent in 2003, soybean prices remained strong in the beginning of 2004 because of export demand and harvest shortages. As a result of favorable weather conditions and higher market prices, farmers increased soybean plantings ahead of schedule. In June, soybean prices began to trend downward, because of a rebound in both United States and global supplies, and ended the year with a 28.4-percent annual price decline. According to U.S. Department of Agriculture figures, world soybean production rose 16 percent in 2004, with North American soybean production rising a record high 28 percent over the previous year's production. High prices and favorable weather conditions similarly affected corn plantings, as U.S. corn production increased 16.8 percent. The price index for corn decreased 16.3 percent overall, reversing the 3.8-percent increase published in 2003.[22] (See chart 3.)

Industrial supplies and materials. The export price index for industrial supplies and materials increased 15.1 percent in 2004, more than double the 6.8-percent increase in 2003. Price movements on the export side displayed trends similar to those previously noted on the import side. The fuels and lubricants index increased 26.7 percent because of low crude oil, gasoline, and coking coal stocks. High crude oil prices and low crude oil inventories led to lower petroleum product stocks and put upward pressure on prices, especially gasoline prices. Damage caused by Hurricane Ivan in September led to further inventory declines for gasoline and distillate fuels. As a result, the U.S. national average price for regular gasoline set a record in October, reaching 1.55 dollars per gallon (excluding taxes). Coking coal prices were also high in 2004 because of strong demand from the steel industry.[23] Higher prices for petroleum products also impacted the U.S. chemical industry. Increases in energy feedstock prices were the largest factor behind the 18.5-percent advance for the chemicals price index.

Significant price increases occurred in the iron and steel

Chart 3. Export price trends, 2004



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products price index and the nonferrous and other metals price index, which increased 53.1 percent and 24.8 percent, respectively. Strong demand from the construction and manufacturing industries, coupled with higher transportation and raw material costs, put upward pressure on prices. Chinese demand for U.S. metals increased significantly. For instance, the value of U.S. exports to China increased 78 percent for nonferrous metals, 57 percent for aluminum, and 38 percent for steelmaking materials.[24]

Capital goods. The capital goods price index, which includes machinery and transportation equipment not included in the automotive index, increased 0.7 percent, rebounding from a 3-year decline. Excluding computers, peripherals, and semiconductors from the index, the increase was up by a more significant 2.1 percent. Similar to price trends on the import side, higher prices were attributed to the increases in raw material costs for steel, copper, and energy. The transportation equipment price index increased 3.6 percent.

The computers, peripherals, and semiconductors index declined 3.0 percent, continuing a downward trend that began in 1989. High inventories and soft market demand conditions led to competitive pricing, as companies tried to keep costs and prices down. Prices for telecommunication equipment also put some downward pressure on the capital goods index. This index decreased 2.2 percent because of low demand and high competition, factors similar to those influencing the computer industry.

Automotive vehicles, parts, and engines. The automotive vehicles, parts, and engines price index increased 1.1 percent in 2004, higher than the 0.5-percent increase published in 2003. The primary factor behind the increase was the higher costs of raw materials, especially steel, aluminum, plastic, and rubber. Producer prices for these goods, as measured by the PPI, increased in 2004 because of strong demand and restrictive supplies, putting upward pressure on automobile prices. Producer prices increased 40.7 percent for iron and steel, 14.6 percent for aluminum, 6.1 percent for plastic, and 3.0 percent for rubber.

Consumer goods. The export consumer goods price index increased 1.3 percent in 2004 because of price increases for medical supplies and household goods. As in the import market, export medical supply prices were up because of continued high manufacturing costs and increases in demand for pharmaceuticals. The household goods index, which includes furniture, cookware, and textile floorcoverings, increased 1.8 percent because of higher raw material costs. The 1.3-percent increase in 2004 for the consumer goods price index is more than double the 0.6-percent increase published in 2003.

These increases more than offset lower textile apparel and footwear prices, which decreased 0.5 percent. An increase in import volumes, especially from China, and a decline in international demand led to competitive pricing within the United States and the international textile industry.[25] The value of textile and apparel imports into the United States from China increased 23 percent in 2004 and has increased 86 percent since 2001, the year China formally entered the World Trade Organization (WTO). The influx of imports from China put downward pressure on U.S. domestic and export apparel prices.

Services price trends

BLS publishes a limited number of international services price indexes, and the majority of those showed increases in 2004. Each of the major BLS services indexes increased in 2004. Import air passenger fares increased 4.4 percent in 2004, reversing the 0.2-percent decline published in 2003. Fares for flights destined to the Latin American and Caribbean region increased 6.0 percent, followed by the European region with a 5.6-percent increase in fares. On the export side, prices rose for the fourth consecutive year with a 13.2-percent increase, slightly lower than the 14.7-percent increase in 2003. The European index and the Asian index drove the upward movement, gaining 13.6 percent and 13.5 percent, respectively.[26] The import air freight price index rose 10.4 percent, and the export air freight price index rose 11.2 percent. Those price movements followed increases in 2003 of 7.5 percent on the import side and 0.2 percent on the export side.[27] The upward movements in the air passenger fares indexes and the air freight indexes were both affected by fuel cost increases. Fuel consumption by U.S. airlines increased 4.2 percent, while the cost of fuel increased 39.7 percent.[28]

After increasing 26.3 percent in 2003, the inbound ocean liner freight price index increased at a lesser rate of 4.2 percent. After 2 years of lackluster demand, the industry rebounded in 2003 and continued to strengthen throughout 2004. The inbound crude oil tanker freight price index increased 107.2 percent, the largest price increase published since 2000, when the index increased 130.5 percent. Inbound ocean liner freight prices and crude oil tanker freight prices continued their upward trends because of robust demand from China, Southeast Asia, and the United States for the shipment of goods. In 2004, both industries were characterized by vessel shortages and limited capacity. The increased costs witnessed in these indexes factored into the upward price movements previously mentioned in the import and export product price indexes. □

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Notes

ACKNOWLEDGMENTS: The author thanks Brian Costello and David Mead for their assistance in the preparation of this article.

[1] Chinese data obtained from the Ministry of Commerce of the People's Republic of China, on the Internet at **http://english. mofcom.gov.cn** (visited June 3, 2005).

[2] Trade data obtained from the Foreign Trade Statistics Division of the U.S. Census Bureau.

[3] The 5.7-percent gain in 1990 was largely attributable to a 30.7-percent gain in energy, which coincided with the Iraqi invasion of Kuwait in August 1990.

[4] Prices are based on West Texas Intermediate (WTI) crude oil, which is the U.S. benchmark grade. WTI crude oil is a light sweet crude; therefore, it is generally more expensive than the OPEC basket, which is an average of light sweet crude oils and heavier sour crude oils.

[5] See *OPEC Monthly Oil Market Report* (Organization of the Petroleum Exporting Countries, January 2005), pp. 1, 20–22) on the Internet at **http://www.opec.org/home/Monthly%20Oil%20Market%20Reports/2005/MR062005.htm** (visited Mar. 16, 2005).

[6] *OPEC Monthly Oil Market Report*, pp. 2–4.

[7] On July 1, the ceiling was increased from 23.5 mb/d to 25.5 mb/d; on August 1, it was increased to 26 mb/d; and on November 1, to 27 mb/d. See *EIA Country Analysis Briefs: OPEC* (U.S. Department of Energy, Energy Information Administration, Last updated Mar. 8, 2005), on the Internet at **http://www.eia.doe.gov/emeu/cabs/opec.html** (visited Mar. 16, 2005).

[8] *World Steel in Figures: 2005* (International Iron and Steel Institute, 2005), p. 20, on the Internet at **http://www.worldsteel.org/media/wsif/wsif2005.pdf** (visited June 15, 2005).

[9] *ISM Manufacturing Report on Business* (Institute for Supply Management), on the Internet at **http://www.ism.ws/ISMReport/PMIndex.cfm** (visited June 15, 2005).

[10] "Ocean freight issues a growing factor in overseas trading," *Random Lengths International* (Random Lengths Publications, Inc., Apr. 14, 2004), pp. 1–2.

[11] Andrew Park, "Computers Get Their Groove Back," *Business Week*, Jan. 20, 2004, pp. 96–97.

[12] Trade data obtained from the Foreign Trade Statistics Division of the U.S. Census Bureau.

[13] In 2004, Japan accounted for 15.7 percent of the imports of capital goods, excluding computers, peripherals, and semiconductors into the United States; Canada for 12.5 percent; Mexico for 12.3 percent; and Germany for 10.0 percent.

[14] Product trade data were obtained from the Foreign Trade Statistics Division of the U.S. Census Bureau.

See Peter Coy, "The Auto Deficit: Stuck in Neutral," *Business Week*, Dec. 6, 2004, pp. 39–40.

[15] See Amey Stone, "Gold is Flashing Warnings," *Business Week Online*, Oct. 21, 2004, on the Internet at **http://www.businessweek.com/bwdaily/dnflash/oct2004/nf20041021_1307_db035.htm** (visited Jan. 20, 2005).

[16] See Samuel Greengard, "No Quick Fixes for the Spiraling Costs of Prescription Drugs," *Workforce Management*, August 2004; and Arnold S. Relman, "A Prescription for Controlling Drug Costs," *Newsweek*, December 2004, p. 74.

[17] *Vegetables and Melons Outlook* (U.S. Department of Agriculture, Economic Research Service, Dec. 16, 2004), on the Internet at **http://www.ers.usda.gov/Publications/vgs/** (visited Jan. 20, 2005).

[18] *Livestock and Poultry: World Markets and Trade* (U.S. Department of Agriculture, Foreign Agricultural Service, November 2004), pp. 1, 5, on the Internet at **http://www.fas.usda.gov/dlp/circular/2004/04-10LP/toc.htm** (visited Jan. 20, 2005).

[19] *Coffee Market Reports* (International Coffee Organization, January, June, and December 2004).

[20] In July, the Commerce Department imposed anti-dumping duties of up to 93.1 percent on shrimp from Vietnam, and up to 112.8 percent on shrimp from China. See "Shrimp Wars," *The Economist*, July 10, 2004, p. 26. Note: BLS import price indexes do not include duties to ensure comparability with similar statistics published by other countries.

[21] The following import price indexes by Locality of Origin were first published in 2004: France, Germany, the UK, Mexico, the Pacific Rim, China, ASEAN, and Asia Near East.

The Other Countries Locality of Origin (LOO) price index includes countries that are not included in the Industrialized Countries LOO price index. The following countries are excluded: Andorra, Australia, Austria, Belgium, Canada, Denmark, Faroe Islands, Finland, France, Germany, Gibraltar, Greece, Greenland, Iceland, Ireland, Italy, Japan, Liechtenstein, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Portugal, San Marino, South Africa, Spain, St. Pierre and Miquelon, Svalbard and Jan Mayen Island, Sweden, Switzerland, and the United Kingdom.

[22] *NASS Crop Production 2004 Summary* (National Agricultural Statistics Service, Jan. 2005), pp. 5–6, on the Internet at **http://usda.mannlib.cornell.edu/reports/nassr/field/pcp-bban/cropan05.pdf** (visited Jan. 20, 2005) and *Global Crop Production Review*, 2004 (U.S. Department of Agriculture's Joint Agricultural Weather Facility), pp. 5–6.

[23] Data were obtained from the Energy Information Association's (EIA) Petroleum Product Prices for the United States, on the Internet at **http://www.eia.doe.gov/emeu/states/oilprices/oilprices_us. html** (visited Mar. 23, 2005).

[24] Product trade data were obtained from the Foreign Trade Statistics Division of the U.S. Census Bureau.

[25] "Losing Their Shirts," *The Economist*, Oct. 16, 2004, pp. 59–60.

[26] The import air passenger fares index measures fares paid by U.S. residents flying out of the United States on foreign carriers. The export air passenger fares index measures fares paid by foreign residents flying internationally on U.S. carriers.

[27] The import air freight price index measures changes in rates paid for the transportation of freight from foreign countries into the United States on foreign air carriers. The export air freight price index measures changes in rates paid for the transportation of freight from the United States to foreign countries on U.S. carriers.

[28] *ATA Monthly Jet Fuel Report: U.S. Major, National, and Large Regional Passenger and Cargo Airlines* (Air Transport Association), on the Internet at **http://www.airlines.org/econ/d.aspx?nid=5806** (visited Mar. 24, 2005).

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Manufacturing employment in China

The scale of manufacturing employment in China dwarfs the numbers of manufacturing workers in other countries; China's manufacturing sector has shed surplus workers from inefficient state-owned factories, while increasing employment in the private sector

Judith Banister

In recent decades, China has become a manufacturing powerhouse. The country's official data showed 83 million manufacturing employees in 2002, but that figure is likely to be understated; the actual number was probably closer to 109 million. By contrast, in 2002, the Group of Seven (G7) major industrialized countries had a total of 53 million manufacturing workers. In the late 1990s through the year 2000, China saw declining numbers of manufacturing workers, caused by restructuring and the privatization of state-owned and urban collective-owned factories in the cities. Both massive layoffs of urban manufacturing workers and sharp increases in manufacturing labor productivity ensued. Since then, private-sector manufacturing has thrived in both urban and rural areas of China. The reorganized factories are more productive than state-owned and collective-owned factories and are competitive in the domestic and global economies. China's manufacturing employment began to rise again after 2000, regaining the upward trend of the period from 1980 to 1995.

This article begins with an overview of China's statistical system, including a description of the sources of data used in the analysis presented. Three main sources of statistics on China's manufacturing employment are compared and contrasted, and a hybrid data series is derived that helps evaluate Chinese manufacturing employment levels and trends from 1990 through 2002. The probable biases in China's statistics on the country's numbers of manufacturing workers are assessed, both at the national level and in the key export-manufacturing zones.

The analysis emphasizes issues of data quality and the remaining legacies of the command economy reflected in China's labor statistics. Among the factors included is the excessive focus of China's published statistics on city manufacturing employees, to the near exclusion of detailed data on the more numerous manufacturing employees working outside the administrative boundaries of cities. Even within the cities, data collection and reporting remain concentrated on the rapidly declining state-owned and urban collective-owned manufacturing enterprises, giving short shrift to the not yet adequately collected or published statistics on the thriving, growing, dynamic private manufacturing sector. A major reason for China's statistical neglect of the private sector is that the dominance of private and corporate businesses in today's economy does not fit easily into Marxist theory or Mao Zedong's ideology.

Because of the many data limitations, a great deal of uncertainty remains in the work presented here. A more exacting analysis awaits new and better data collection and more detailed metadata from China's statistical system.

This article is the first of a two-part series on China's manufacturing labor statistics. The second article, to be published in the next issue of the *Review,* will analyze manufacturing wages and labor compensation. A more detailed exposition

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of the analysis in the two articles is found on the Bureau of Labor Statistics (BLS) Web site.[1] The analysis in the current article refers to the People's Republic of China (mainland China; hereinafter, "China") and excludes statistics for Hong Kong, Macao, and Taiwan. Occasionally, Chinese terminology will be used, because the standard English translations of the terms are misleading or ambiguous and in some cases because there is no succinct, accurate English translation of the term.

Background

China's statistical system has been greatly strengthened during the most recent quarter century of economic reform.[2] Statisticians in China are steadily learning from international practice as promoted by the World Bank, the Asian Development Bank, the International Monetary Fund, and the United Nations system. China's statistical organizations endeavor to apply best practices from other countries—especially developed countries—to the Chinese economy. Their efforts have been particularly successful in China's population censuses and in some economic and demographic surveys—for example, the annual urban and rural household income and consumption surveys. Nevertheless, China's statistical system is still affected by categories and procedures that were established during the command economy period before 1978 and never revised. Those outdated categories hamper the analysis of levels and trends of economic growth, inflation or deflation, employment, wages, and economic change in the urban and rural economies. In addition, despite expanding its use of censuses and representative sample surveys, China continues to employ the method of regular (usually annual) statistical reporting by all production or administrative units as its primary data collection instrument.

Most statistics in China are recorded and collected under the central guidance of the National Bureau of Statistics (NBS). According to one source, "The NBS carries the responsibility for organizing, directing and coordinating the statistical work throughout the country."[3] However, as will be shown later, other ministries have certain statistical turf that is their particular responsibility for historical or bureaucratic reasons, and there seems to be little coordination among the relevant ministries. For instance, with regard to manufacturing employment statistics, the Ministry of Labor and Social Security (hereinafter, Labor Ministry) gathers data on most components of the city economies, leaving a small, but rapidly growing, segment to the State Administration for Industry and Commerce. However, the collection of data and the reporting of statistics on manufacturing in rural areas and in towns are left to a part of the Ministry of Agriculture.[4]

The analysis that follows is based as much as possible on information in Chinese sources published by official statistical organizations. The most useful sources turn out to be statistical yearbooks from various government ministries. Later sections of this article compile and compare data on China's manufacturing employment from the 1995 industrial census and the 2000 population census, as well as administrative data collected from manufacturing enterprises and reported annually. The article explains discrepancies among the data sets, to the extent possible, and discusses the effects of definitional changes on the available official series of manufacturing employment statistics. Strengths and weaknesses in the published statistics are highlighted.

Recent employment statistics

Employment figures for China are usually confusing and nonstandard. They reflect, in part, conventions from the Maoist command economy period from 1949 to 1978, as well as new conventions for the semimarket economy of the economic reform period since 1978. The available data also reflect China's attempts to make its economic statistics more internationally comparable. Recent employment statistics are pieced together primarily from annual enterprise data. Each enterprise, economic unit, small business, or self-employed individual or group is supposed to report employment data each year according to its "labor situation" in the previous year and at the previous year's end. The data are then compiled upward in a statistical reporting chain to the national government.

Enterprise data refer to who is working in what kind of work at the end of the relevant year (end of December). The urban enterprise statistical reporting form that is required to be submitted to authorities early in a calendar year and that refers to the previous calendar year asks enterprises for the "labor situation" (in particular, for the "actual situation that year")—and specifically for the numbers of each category of workers at the end of the previous year.[5] Accountants or those who report employment and wage figures on behalf of their enterprises or other work units (at least those enterprises or other work units in urban areas) are given detailed instructions on how to report monthly, quarterly, yearend, and annual average figures on employment and wages. The instructions are based on regulations released by China's NBS, especially in 1990 and with further clarifications in 1998 and 2002, regarding how to report employment and wages.[6]

The annually reported figures on total manufacturing employment in China include all manufacturing employees: production workers, salaried workers, and supervisory workers. China does not show separate data for these groups of workers. Table 1 presents figures from China's annual enterprise reporting system on the numbers of employed manufacturing workers in the country from 1978 through 2002, broken down into the various categories reported (described in the next section).

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Table 1. Official reported manufacturing employment in China, yearend 1978–2002

[In millions]

Year	Manufacturing employment			Manufacturing employment in urban units			Urban manufacturing staff and workers				Town and village enterprises (TVE's)	
	Total	Rural	Derived urban[1]	Total	Men	Women	Total	State-owned units	Urban collective-owned units	Other ownership units	Industry	Manufacturing[2]
1978	53.32	17.34	35.98	—	—	—	35.95	24.49	11.46	—	17.34	—
1980	58.99	19.42	39.57	—	—	—	39.47	26.01	13.46	—	19.42	—
1985	74.12	27.41	46.71	—	—	—	46.20	29.75	16.08	.37	41.37	—
1986	80.19	31.39	48.80	—	—	—	48.20	30.96	16.80	.46	47.62	—
1987	83.59	32.97	50.62	—	—	—	49.88	32.09	17.24	.58	52.67	—
1988	86.52	34.13	52.39	—	—	—	51.49	33.27	17.45	.77	57.03	—
1989	85.47	32.56	52.91	—	—	—	52.06	33.44	17.54	1.08	56.24	—
1990	86.24	32.29	53.95	—	—	—	53.04	33.95	17.73	1.35	55.72	51.50
1991	88.39	32.68	55.71	—	—	—	54.43	34.82	17.82	1.80	58.14	53.73
1992	91.06	34.68	56.38	—	—	—	55.08	35.26	17.47	2.36	63.36	58.56
1993	92.95	36.59	56.36	—	—	—	54.69	34.44	15.95	4.30	72.60	67.10
1994	96.13	38.49	57.64	54.92	30.31	24.61	54.34	33.21	15.15	5.98	69.62	64.34
1995	98.03	39.71	58.32	54.93	30.11	24.82	54.39	33.26	14.17	6.96	75.65	69.92
1996	97.63	40.19	57.44	53.44	29.52	23.92	52.93	32.18	13.46	7.28	78.60	72.65
1997	96.12	40.32	55.80	51.30	28.44	22.86	50.83	30.11	12.44	8.27	[3]61.49	[3]56.84
1998	[3]83.19	[3]39.29	[3]43.90	[3]38.26	—	—	[3]37.69	[3]18.83	[3]7.42	[3]11.44	73.34	67.79
1999	81.09	39.53	41.56	35.54	20.12	15.42	34.96	16.48	6.22	12.25	73.95	68.35
2000	80.43	41.09	39.34	33.01	18.75	14.25	32.40	14.15	5.19	13.06	74.67	69.01
2001	80.83	42.96	37.87	30.70	17.52	13.18	30.10	11.94	4.25	13.91	76.15	70.38
2002	83.07	45.06	38.02	29.81	16.98	12.83	29.07	9.79	3.46	15.82	76.68	70.87

[1] Derived urban manufacturing employment is calculated as national manufacturing employment minus rural manufacturing employment.

[2] TVE manufacturing employment was reported officially only for 2002, when it constituted 92.4 percent of TVE industry employment; figures for other years are estimated, using the same percentage.

[3] Break in series.

NOTES: Dash indicates data not available. All figures refer to the mainland provinces of China, not including Hong Kong, Macao, or Taiwan. The data are from China's annual yearend reporting system, not from census data and not adjusted to agree with census data.

SOURCES: China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 8, 10, 13, 16, 21, 23–26, 171, 473. China, Ministry of Agriculture, China TVE Yearbook Editorial Committee, editors, *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), p. 130.

Structure of manufacturing employment

Chart 1 (based partly on table 1) displays the structure of China's manufacturing employment at the end of 2002, the latest date for which enough statistics are currently available. The country's NBS and Labor Ministry published a figure of 83 million manufacturing employees in China, of whom 45 million were called rural and 38 million were classified as urban. But these data do not take full account of the 71 million town and village enterprise (TVE) manufacturing workers reported by the Ministry of Agriculture. The TVE category includes large factories in industrial parks outside cities, as well as suburban, town, and rural factories.[7] On the basis of the reasonable assumption that the 38 million urban and 71 million TVE manufacturing employment categories are mutually exclusive, the total manufacturing employment at yearend 2002 was about 109 million, as shown in Chart 1. (This contradiction and its implications are addressed more fully later in the article.) Furthermore, there is evidence that the official figure of 83 million manufacturing workers excludes millions of migrant manufacturing workers. (See also later.)

Of the 38 million urban manufacturing employees at yearend 2002 indicated in Chart 1, 30 million were employed in so-called urban manufacturing units (*danwei*), and of these, 29 million were on-post (not laid-off or unemployed) staff and workers. Most of these urban manufacturing staff and workers (16 million) were employed by corporations, joint ventures, and other companies in China's growing private sector. By the end of 2002, manufacturing employment in urban state-owned enterprises had dropped steeply, to 10 million, and in urban collective units had declined to only 3 million. (See table 1.)

There is considerable overlap between the two categories making up the urban manufacturing classification: manufacturing employment in urban units and urban manufacturing staff and workers (*zhigong*). Urban manufacturing staff and workers (all of whom have been on-post workers since 1998) are

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included by definition in the category of manufacturing employment in urban units.[8] In every year for which both series are available, namely, 1994–2002, the category of manufacturing employment in urban units is slightly (0.5–0.7 million) larger than that of urban manufacturing staff and workers. (See table 1.) The residual half a million to three-quarters of a million workers in urban manufacturing units include urban reemployed former retirees and foreign employees of manufacturing units, as well as employees from Hong Kong, Macao, and Taiwan.[9]

For example, at yearend 2002, China recorded 29.807 million employed in urban manufacturing units and 29.069 million urban manufacturing staff and workers, the difference between the two categories being approximately 738,000. (See table 1 and chart 1.[10]) This residual is accounted for by the category of other urban manufacturing employment, with 738,885 reported for yearend 2002, of whom 150,470 were reemployed and continuing workers of retirement age.[11] Who, then, were the remaining 588,000 employees in urban manufacturing units? The Labor Ministry clearly has collected data on how many of them are foreign personnel, but *China Labor Statistical Yearbook 2003* does not report this information. (The volume does report that, in all sectors of the economy, only 50,045 out of all those in the category of other urban employment, totaling 4.28 million, were "Hong Kong, Macao, Taiwan & Foreign Personnel" at yearend 2002. This small number implies that the great majority of the hundreds of thousands of foreign experts, technical and administrative workers, teachers, managers, and entrepreneurs actually working in China have been classified—or misclassified—as working in rural areas or are not recorded as working at all.) Therefore, only a small proportion of the unexplained 0.59 million workers under the classification of "other" urban manufacturing employees at yearend 2002 could be recorded in the statistics as foreign personnel. The rest of the "other" urban manufacturing employees work for urban manufacturing enterprises, but are in statistical categories such as employees lent from another company, workers holding a second job, and those working without a contract because they have not completed employment formalities.[12]

The larger urban category of manufacturing employment in urban units included 29.8 million of the 38.0 million total for yearend-2002 urban manufacturing employment. (See table 1 and chart 1.) The other 8.2 million were in relatively small privately owned and privately operated enterprises (*siying qiye*) or were self-employed individual or family enterprises (*geti jiuye*) in urban manufacturing.[13] China's urban (*chengzhen*) manufacturing workforce in 2002 included 2.6 million workers in *getihu* (individual and household enterprises) and 5.6 million working in privately owned *siying qiye*. In the latter category, 0.8 million workers were categorized as "investors" in their own companies, and 4.8 million were called hired laborers or hired hands.[14]

On the basis of China's urban manufacturing employment data (see table 1 and chart 1), 13 million urban manufacturing workers remain in public-sector (state-owned and urban collective-owned) work units. Thus, the private sector now employs 25 million of China's reported 38 million urban manufacturing workers.[15] Private-sector manufacturing workers are counted, and their numbers are reported, but otherwise, far less information is published about the private sector than the public sector.

Because of the city bias of employment statistics in China, there are almost no further readily available details about the 45 million rural or 71 million TVE manufacturing employees. This information gap is the biggest weakness of China's statistics on manufacturing employment. (The article returns to the problematic classifications of urban and rural statistics in a later section.)

Reported trends in manufacturing employment

As shown in table 1, the officially reported number of employed manufacturing workers in China rose dramatically during the post-Mao economic reform period, from 53 million in 1978 to an all-time high of 98 million in 1995, declined sharply to 80 million in 2000, and then rose again to 83 million by yearend 2002. Rural manufacturing employment has risen with few setbacks throughout this 24-year period, peaking at a reported 45 million as of the end of 2002. The difference between China's reported national and rural manufacturing employment should be urban manufacturing employment; but this number was not published for a number of years, and the column in table 1 is derived as a residual calculation. The figures so derived indicate that urban manufacturing employment in China rose from 36 million in 1978 to a high of 58 million in 1994–95 and then dropped to 38 million by yearend 2002. A figure of 38.018 million for urban manufacturing employment is directly reported in a published table.[16] Therefore, the procedure used to derive urban manufacturing employment in table 1 appears to be defensible. Employment in urban manufacturing units reportedly dropped from 55 million in 1994–95 to 30 million by yearend 2002, and total urban manufacturing staff and workers increased from 36 million in 1978 to 55 million in 1992–93, thereafter declining to 29 million by the end of 2002, on the basis of the reported statistics in table 1. These employment trends based on the official data, however, are misleading. The next two sections discuss changes in definition and coverage that affect the available manufacturing employment statistics and the trends in manufacturing employment during 1990–2002 after adjusting for the changes to the extent possible.

Change in the definition of urban employed

What do the preceding numbers mean? In the first place, successive figures are sometimes not comparable due to changes in coverage or redefinition. In particular, the number

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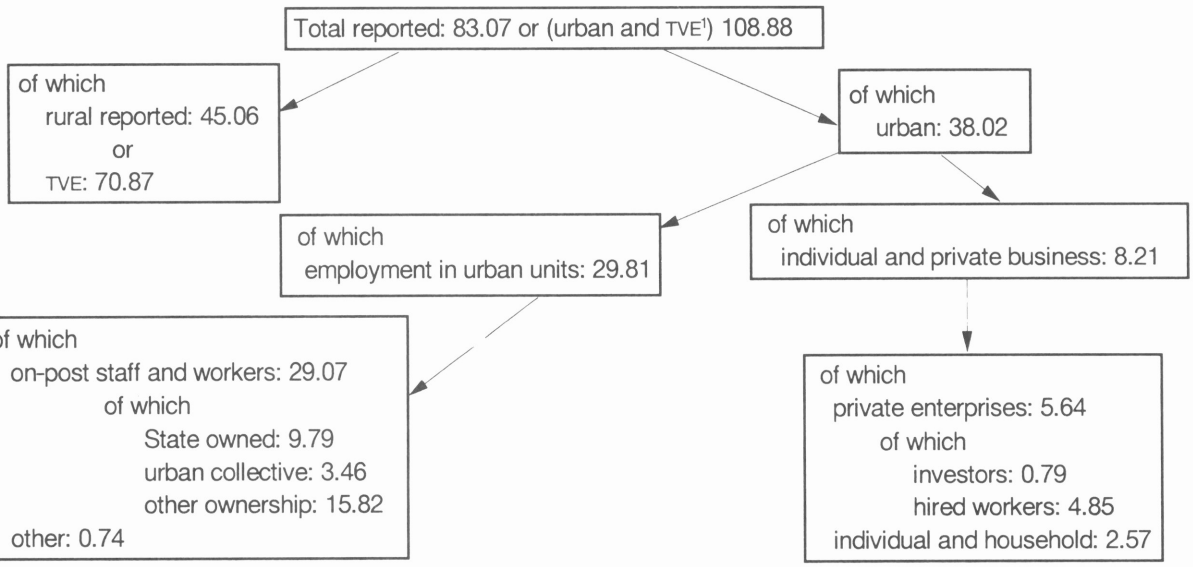
Chart 1. Structure of manufacturing employment in China, yearend 2002 (numbers in millions)



[1] Town and village enterprise.

NOTE: Official total yearend-2002 manufacturing employment in China was 83.07 million, of which 38.02 million was urban and 45.06 million was rural. But if nonurban manufacturing employment was best represented by TVE employment of 70.87 million, then the total yearend-2002 manufacturing employment in China was 108.88 million.

SOURCES: Table 1 and text.

for implied urban manufacturing employment dropped sharply, from 55.8 million at the end of 1997 to 43.9 million at yearend 1998, an apparent decline of 12 million in 1 year. A similar drop is shown for manufacturing employment in urban units, from 51.3 million at the end of 1997 to 38.3 million at the end of 1998, and thus down 13 million during 1998. Employment numbers for urban manufacturing staff and workers also declined, from 50.8 million to 37.7 million that year, a drop of 13 million as well. Figures for manufacturing staff and workers in state-owned units decreased by 11 million that year and went down by 5 million in urban collective-owned units, while increasing by 3 million in "other" ownership units.

What happened to these manufacturing employment statistics during 1998? One reported change was that there was an important shift in the employment statistics coverage in urban areas. Starting in 1998, workers who had been laid off from active employment, but were still connected with their former employment unit, were no longer deemed employed and were thus excluded from the employment figures.[17] Therefore, these laid-off ("off-post" or "not-on-post" in the English translation of China's statistical yearbooks) urban manufacturing workers are not included in the 1998–2002 numbers for urban manufacturing employment, manufacturing employment in urban units, or urban on-post manufacturing staff and workers.[18] By yearend 2002, the net result of the layoff and rehiring processes was that the number of laid-off urban manufacturing staff and workers totaled 9.13 million.

Adjusted trends in manufacturing employment

In order to gauge trends in manufacturing employment in China, the analyst must adjust for definitional changes and changes in coverage in the urban data. It is important to recognize that before, and even after, the definitional change in 1998, reported urban manufacturing employment figures for China included, and continue to include, millions of surplus workers.[19] By the end of 2002, of those surplus manufacturing workers, 9.13 million were in the laid-off category, but through 1997 they were still nominally employed in their manufacturing work units.

One method for attempting to gauge true trends in manufacturing employment in China is to subtract the reported laid-off manufacturing workers from the pre-1998 total manufacturing employment figures (which still included laid-off employees), in order to get comparable figures for before 1998 and afterwards. There were reported to be 2 million laid-off manufacturing employees still nominally connected to their work units in 1995 and

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3 million in 1996. Table 2 shows that, after adjustment of the 1995–96 totals for the reported definitional shift, there still was a steep drop in official total and official urban manufacturing employment between 1996 and 1998 that cannot be explained by the one definitional change that has been reported. This table would appear to indicate that on-post (not laid-off) manufacturing employment in China declined from 96 million in 1995, to 94 million in 1996, to 83 million in 1998, to 81 million in 1999. If on-post manufacturing employment were indeed dropping by 2 million manufacturing workers a year, then the total would have been 92 million in 1997, 90 million in 1998, and 88 million in 1999. So the official figures for total manufacturing employment from 1997 to 1998 had a loss of 7 million workers that is not accounted for by the one reported definitional change.

There is no discontinuity between 1997 and 1998 in the official rural manufacturing data series. The definitional shifts appear to be only in urban data, and these shifts come entirely from changed coverage of urban manufacturing staff and workers. The category of on-post urban manufacturing staff and workers was dropping by about 2½ million from 1995 to 1996 and again from 1998 to 1999. If we were to assume that the trend was continuous from 1995 to 1999, then we would see the following approximate numbers in the category of staff and workers: 52.3 million in 1995, 49.7 million in 1996, 47 million in 1997, 44.5 million in 1998, and 42 million in 1999. Instead, the reported 1998 figure was 37.7 million. Therefore, about 7 million workers were dropped from the category between 1997 and 1998, in addition to those workers dropped due to the known definitional shift from including laid-off workers in employment figures to excluding them.

Now consider again the trends in China's manufacturing employment based on official data, keeping in mind the unexplained loss of 7 million manufacturing workers from the numbers up through 1997 to the figures for 1998 and thereafter. In 1995, on the basis of official data, China had 96 million on-post manufacturing workers, and the numbers were dropping through 1997. The reported 1998 official national total was 83 million. If the inexplicably missing 7 million are added back in, then perhaps the total was really 90 million, although that figure still signifies a significant drop in manufacturing employment from 1995 to 1998. By yearend 2000, the reported total was 80.4 million (but the true number could have been more than 87 million if the missing workers were included). No matter how the official data are adjusted, China's total manufacturing employment dropped by around 8.5 million or more from 1995 to 2000. The official total then rose by 2.6 million from yearend 2000 to 2002. So the net loss of manufacturing jobs in China during 1995–2002 was about 6 million. Nevertheless, it is important to note that the trend of declining manufacturing employment in China was apparently reversed after the year 2000.

Below the national level, official figures for rural manufacturing employment rose until 1995–96 and stabilized from 1995 through 1999, thereafter rising every year since 1999. Therefore, on the basis of the official series, all the declines in China's manufacturing employment in the late 1990s happened in urban areas. Many who lost their jobs were laid off while still receiving basic living subsidies from their enterprises, and many others were subjected to mandatory early retirement. Some manufacturing workers in urban China also have become fully recognized as unemployed.[20] Of the yearend-2002 registered unemployed urban workers who were previously employed (2.17 million), 41 percent had lost manufacturing jobs.[21] This reduction in the workforce implies that 0.89 million former urban manufacturing workers were classified as unemployed as of the end of 2002.

Table 2. Manufacturing employment excluding surplus laid-off manufacturing workers in China, yearend 1995–2002

[In millions]

Year	Total manufacturing employment[1]	Surplus laid-off manufacturing workers	Rural manufacturing employment	Derived urban manufacturing employment[1]	Manufacturing employment in urban units[1]	Manufacturing urban staff and workers[1]
1995	95.90	2.13	39.71	56.19	52.80	52.26
1996	94.40	3.23	40.19	54.21	50.21	49.70
1997	—	—	—	—	—	—
1998[2]	83.19	([3])	39.29	43.90	38.26	37.69
1999	81.09	([3])	39.53	41.56	35.54	34.96
2000	80.43	([3])	41.09	39.34	33.01	32.40
2001	80.83	([3])	42.96	37.87	30.70	30.10
2002	83.07	([3])	45.06	38.02	29.81	29.07

[1] Excludes surplus laid-off manufacturing workers. Data for 1995–96 are calculated from the reported figures, shown in table 1, minus surplus laid-off manufacturing workers. Data for 1998–2002 are the reported figures.

[2] Break in series.

[3] Data not shown because surplus laid-off manufacturing workers are not included in total manufacturing employment after 1997. Only 1995 and 1996 data are used to calculate estimates presented in this table.

NOTE: Dash indicates data not available.

SOURCES: Table 1; China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 1996* (Beijing, China Statistics Press, 1996), p. 409, and *China Labor Statistical Yearbook 1997* (Beijing, China Statistics Press, 1997), p. 405.

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Apparently, then, manufacturing employment in China increased vigorously until 1995, declined from that year to 2000, and has risen again since then, regardless of whether the reported data come from the Labor Ministry and the NBS or whether the data are adjusted for changes in coverage or definition. Urban state-owned and collective-owned manufacturing enterprises have lost most of their employed workers since the early 1990s, as shown in table 1. Most of their former workers have been laid off, fired, subjected to early retirement, or retained by their enterprise after it was sold, was privatized, or became a joint Chinese-foreign company in the decade from 1992 to 2002. Meanwhile, rural manufacturing employment reportedly has continued to increase, and in urban areas manufacturing employment in the category of other ownership units grew rapidly during that decade. This category includes manufacturing enterprises with joint (Chinese-foreign) ownership, shareholding stock ownership, limited-liability corporations, and foreign-owned enterprises.[22] What these numbers appear to mean is the following:

- China's manufacturing is becoming less bloated with surplus workers over time;
- The number of manufacturing workers (however defined or adjusted) in China has declined somewhat since 1995;
- Urban state-owned and urban collective-owned enterprises have shown steep declines in numbers of manufacturing workers since the mid-1990s;
- So-called rural manufacturing is still growing; and
- Urban private-sector manufacturing employment is expanding.

Research by Thomas Rawski helps us understand what is going on in some parts of China's manufacturing sector. Rawski documented the decline in urban staff and worker manufacturing employment in China from 1993 to 2002. Utilizing detailed data from several engineering sectors producing widely used industrial components, he showed a 52-percent increase in labor productivity (value added per worker) in the short period from 1996 to 2000, while employment in these sectors dropped steeply by the year 2000, to 63 percent of the 1996 numbers, and output was nearly stagnant. According to Rawski, "These data reveal industries in the throes of restructuring rather than dynamic growth."[23] China's manufacturing sector is shedding surplus workers and becoming more productive and competitive. Meanwhile, Rawski pointed out, laid-off manufacturing workers in China and in developed countries such as the United States and Japan are experiencing similar dislocations in their personal and family lives.

The U.S. Conference Board has emphasized that China is losing many more manufacturing jobs than the developed world (including the United States) is—and in many of the same industries in which the developed world has seen the greatest declines.[24] Manufacturing industries in China with the greatest job losses during 1995–2002 were textiles, steel processing, machinery, and nonmetal mineral products.[25] China's manufacturing job losses can be traced to the restructuring of extraordinarily inefficient state-owned and urban collective-owned factories and to rapidly advancing labor productivity.[26]

The next five sections of this study delve more deeply into some of the topics raised in the foregoing analysis. Enterprise employment data are contrasted with data from the 2000 population census, supporting the conclusion that the enterprise reports undercount millions of manufacturing workers. Then the problematic categories of urban and rural manufacturing workers are explored in more detail, leading to a statistical anomaly that goes further into the data on the TVE's. Finally, key export regions are examined and migrant manufacturing workers are discussed, because many of China's manufacturing workers have migrated into the export zones in search of jobs and there is some evidence that they are not well enumerated in China's labor statistics.

Data discrepancies

This section presents a comparison of manufacturing employment data from the 2000 census of China with the annual enterprise data for the same year and attempts to explain the discrepancies between the two sources. The comparisons here show that the regular administrative reporting system misses many millions of workers, not only in the manufacturing sector, but also in many other sectors of the economy. In addition, a discussion of the census results highlights an apparent tendency on the part of rural households to report household members as agricultural workers, even if they work in manufacturing part time or for part of the year. Therefore, although the census achieved more complete reporting than did the official annual compilations from enterprises, the census, too, appears to have undercounted manufacturing employment, especially outside the cities and towns.

The 2000 census of China discovered more manufacturing workers than were reported from annual administrative data. Both the 1990 and 2000 censuses asked respondents information about the employment of all persons aged 15 years and older. In the 2000 census, the data were gathered in a long form filled out by about 10 percent of civilian households in every locality and chosen to be representative of the population as a whole. Figures cited in the rest of this article are extrapolated to the entire counted civilian population aged 15 years and older.[27]

Employment data from annual enterprise reporting and from China's 2000 census do not agree with each other. For example, table 3 shows the estimated numbers of employees in each major sector of China's economy at or near the end of the year 2000

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Table 3. Employment in China: comparison of census and enterprise data, 2000

[In millions]

Sector	Census data	Enterprise data	Difference[1]
Total employment	709.71	629.78	79.93
Farming, forestry, animal husbandry, and fisheries	456.89	333.55	123.34
Mining and quarrying	7.41	5.97	1.44
Manufacturing	88.43	80.43	8.00
Production and supply of electricity, gas, and water	4.44	2.84	1.60
Construction	19.05	35.52	−16.47
Geological prospecting and water conservancy	.90	1.10	−.20
Transport, storage, post, and telecommunications	18.30	20.29	−1.99
Wholesale and retail trade and catering services	47.48	46.86	.62
Finance and insurance	4.19	3.27	.92
Real estate trade	1.64	1.00	.64
Social services	15.27	9.21	6.06
Health care, sports, and social welfare	7.53	4.88	2.65
Education, culture and arts, radio, film, and television	18.16	15.65	2.51
Scientific research and polytechnical services	1.59	1.74	−.15
Government and party agencies and social organizations	16.69	11.04	5.65
Others	1.74	56.43	−54.69

[1] Difference is census figure minus enterprise figure.

NOTES: Enterprise data are for yearend 2000; census data are from November 1, 2000, which was 2 months earlier. Therefore, the numbers from the two sources are not expected to be exactly the same. Census figures are derived by the author from the census long-form sample and refer to population aged 15 and older.

SOURCES: Census data are from China National Bureau of Statistics, *Tabulation on the 2000 Population Census of the People's Republic of China, vol. 2* [in Chinese] (Beijing, China Statistics Press, 2002), pp. 1569–70. Enterprise data are from China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 8–9.

from the two major data sources. On November 1, 2000, the census recorded a total employed population of approximately 709.7 million workers. Two months later, administrative compilations of data from enterprises, economic units, and self-employed individuals recorded a total of 629.8 million workers, 80 million fewer than the census. (See table 3.)

What are the sources of the discrepancies between these two sets of data? We can see from table 3 that the census recorded 123 million more workers in agriculture than did annual administrative data. One reason for this large difference is that the census asked about employment only in the last week of October 2000, the week just prior to the date the census was taken. The census surely detected individuals who work in agriculture during peak planting and harvest seasons, but not the rest of the time, and these workers were counted as employed in agriculture during the peak autumn harvest season.

The way employment questions are asked in China's censuses and the instructions for filling out the census forms apparently bias rural household respondents in favor of reporting all household members as agricultural workers, even if some adults in the family actually work in nonagricultural sectors of the economy most of the time.[28] Therefore, the decennial censuses may overreport employment in agriculture and underreport employment in many industrial and service sectors of the economy. In particular, the censuses of 1990 and 2000 probably underreported the total number of manufacturing employees in China.

In most other employment categories outside of agriculture, the census also estimated a larger employed population for the latter months of the year 2000 than did enterprise data compiled by the Labor Ministry and the NBS. This may mean that the census detected millions of workers that the administrative reporting system is regularly missing. (See table 3.) For example, in services, the annual reporting system seems to be leaving out millions of workers, perhaps because many service workers are in the informal economy. By contrast, the regular administrative reporting system recorded more workers than the census did in construction, in transport, in the small categories of geological prospecting and water conservancy, and in research and technical services. The annual system also reported 56 million people at yearend 2000 in the category of other unclassified workers, while the census was able to classify most workers into one of its standard employment categories. (See table 3.) Some of these "other" workers may in fact work in two parts of the economy, such as agriculture during peak seasons and manufacturing during another, or even the same, part of the year.

The discrepancy between census and enterprise data on the number of manufacturing workers in China was not large in the year 2000, at least if census data are compared with the total employment figures by sector compiled by China's Labor Ministry and the NBS and reported in table 3. The two data sets are as close together as they are because the census also likely undercounted rural manufacturing workers. (See

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later.) The census estimated 88.43 million persons employed in manufacturing the last week of October 2000. On the basis of the national employment totals published by the NBS and the Labor Ministry, economic units reported that employment in manufacturing totaled 80.43 million at yearend 2000.[29]

What can account for this discrepancy of 8 million manufacturing workers between census data and the officially compiled enterprise data? First, the census counted each part-time worker as an employed worker. Anyone who worked more than 1 hour for pay in the week before the census was counted as one employed worker. Of manufacturing workers counted in the census, 3 percent worked fewer than 4 days in the previous week, and 97 percent worked full time or overtime. More specifically, 39 percent of manufacturing employees worked for income 4 or 5 days in the previous week, and 58 percent worked 6 or 7 days during the 7 days before the census.[30] It is possible that annually reported employment figures tend to neglect those who work less than full time. Therefore, part-time manufacturing workers might explain some of the discrepancy—no more than 2 to 3 million—between the census-based estimate of manufacturing workers in late 2000 and the official NBS-Labor Ministry compilation of yearend-2000 enterprise data on manufacturing employees.

Temporary workers in manufacturing who happened to be at work during the last week of October 2000 would have, or at least should have, been reported by the census as employed in manufacturing. Annual enterprise data also capture some temporary workers. For example, it was reported that, within the category of on-post urban manufacturing staff and workers in state-owned enterprises in 2002, 9.31 million (95 percent) of 9.79 million were in long-term manufacturing employment, while 0.47 million (5 percent) were in temporary manufacturing employment.[31] However, long-term or temporary status is reported only for this 10 million of China's reported total of 83 million on-post manufacturing workers in 2002. The annual enterprise reporting system classifies all urban on-post employees as either "long term," defined as having been working for 1 or more years, or "temporary, provisional," defined as having worked for less than 1 year.[32] Many of the latter employees may simply be workers who have not yet been on the job long enough to qualify as long-term workers, even though that is the intent of both employer and employee. It is possible that the census included more of China's actual temporary manufacturing workers than are included in the annual enterprise reports, although there does not appear to be any proof that such a bias or shortfall exists in enterprise data.

A minor cause of differences in manufacturing employment between census data and annual data is that the censuses of 1990 and 2000 recorded employment of the population aged 15 years and older, whereas compiled annual data are supposed to refer to the population aged 16 years and older.[33] According to 2000 census data, China had a total of 334,000 manufacturing workers who were exactly age 15 in the last week of October 2000.[34] Therefore, 0.33 million of the 8.00 million differential between census and annual enterprise numbers of manufacturing workers in China in 2000 could have been caused by the inclusion of workers aged 15 years in census data and their apparent exclusion from annual employment data.

At the older end of the working ages, the census was supposed to include as employed everyone aged 15 years and older in the long-form sample population who had worked for income either part time or full time in the week before the census, no matter what their age. China's regular employment statistics define working ages as 16–59 years for men, 16–54 years for women working in white-collar jobs, and 16–49 years for women in blue-collar jobs. In theory, with regard to urban workers, only those in these age groups are included in the category of staff and workers. Employed people who are still working beyond the statutory working ages or who have been rehired after retiring from a job are supposed to be included in the category of "other" urban employment, in a subcategory of retirement-age workers who have been rehired or who have continued working. The aforementioned working ages do not apply to agricultural employment, and it is not clear whether they have any relevance to rural or town manufacturing employment. In theory, annual employment statistics, as well as census employment statistics, should include all those people in their fifties, sixties, and older who are working to earn income. Therefore, at the older working ages, there should be no age cutoff in employment statistics and no definitional difference between census figures and annual enterprise data on manufacturing or other employment.

Urban and rural manufacturing workers

In China's annual statistics on employment in manufacturing, the categories "rural" (*xiangcun*) and "urban" (*chengzhen*) are profoundly problematic.[35] If these employment statistics followed China's official statistical definition of urban and rural places and populations, then *urban* would include manufacturing employment in cities (*chengshi* or *cheng*) and in towns incorporated as urban places (*zhen*). The urban manufacturing figures should include actual workers in manufacturing in cities and towns, regardless of whether the workers have or do not have their permanent residence or registration there. If rural villagers are employed full time in manufacturing in an urban town (*zhen*) or in a city, then, on the basis of the NBS statistical definition of *urban*, these manufacturing employees should be classified in the data as urban manufacturing workers.

Indeed, China's census of November 1, 2000, reported that the nation had 41.96 million manufacturing workers in cities and 18.41 million in urban towns (*zhen*), for a total of 60.36 million urban manufacturing workers, constituting 68 percent of all the manufacturing workers in China. The census also counted 28.07 million rural (*xiangcun*) manufacturing workers, 32 percent of

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the enumerated manufacturing workers.[36] As it is, the 2000 census may have underestimated the urban proportion of manufacturing employment because rural workers who had moved to towns or cities within the previous 6 months and who were working in manufacturing there would be counted for the census back in their villages and therefore might be called rural manufacturing workers or even rural agricultural workers.

Table 1 shows, however, that the annual statistics for yearend 2000 recorded urban manufacturing employment at only 39 million (fewer than the 2000 census counted in the cities alone), just 49 percent of the reported national total, while rural manufacturing employment, at 41 million, constituted more than half of China's manufacturing employment. The category of manufacturing employment in urban units was reported at only 33 million that year, and that of urban manufacturing staff and workers was reported at 32 million. China's 2000 census used a comparatively careful definition of urban population and employment that has been refined by the NBS during the last two decades. The NBS official statistical definition of urban and rural populations and employment is arguably the best standard for other Chinese statistics. Interestingly, the breakdown of China's annual manufacturing employment statistics into the rural classification and the various urban categories is inconsistent with China's own statistical definitions of *urban* and *rural*.

The inconsistencies between census data and annually reported data on urban and rural manufacturing employment arise in part because annual data are "administrative." The regular statistics are based on administrative geographical boundaries, rather than on statistical distinctions between rural and urban employment. In the administrative data, *urban* encompasses only cities and perhaps also the political county seat (called the "county town") of each county in China, while *rural* denotes everywhere else, including all other towns that are officially established as urban.[37] In the annual manufacturing employment statistics, however, the word *urban* appears to be a misnomer. The data ostensibly refer to manufacturing employment only in China's cities and perhaps some of their immediate suburbs and the county towns. Apparently, almost all of China's manufacturing employment in urban towns (*zhen*) and rural areas is lumped together as rural manufacturing employment.

In truth, the discrepancy between the annual administrative data and the census data is even greater than the preceding paragraph asserts. According to the NBS, some "urban" data on manufacturing employment include data from units that are not in fact located in any urban area.[38] Specifically, if a state-owned factory is located in a remote rural area, its data might still be included in urban data on employment and wages in manufacturing. This categorization is a legacy of the planned-economy practice of reporting data by administrative subordination rather than geographic locality. In addition, according to the NBS, there is at least one case of a rural county in Guangdong province that was reclassified and established as a city, after which all the factories in the new "city" continued to be classified and reported as TVE's; indeed, it may still be that no manufacturing employment or wage data from this new "city" are reported as urban.

Fortunately, of late China has been making a gradual transition to compiling statistical data on the basis of geographic locality rather than administrative subordination.[39] Still, there appears to be no concrete information that can help quantify what proportion of the reported data on "urban" manufacturing employment and wages is actually from rural locations or what proportion of "rural" or "TVE" manufacturing employment or wages actually refers to manufacturing units located in cities.

A major statistical anomaly

China's statistics on manufacturing employment suffer from an important inconsistency. The Labor Ministry concerns itself primarily with city employment, while the Ministry of Agriculture is responsible for data on rural and town (*zhen*) employment. This division of responsibility is a legacy of the Maoist command-economy era, and it has not yet been corrected. Therefore, the Labor Ministry publication *China Labor Statistical Yearbook* concerns itself almost entirely with city employment and wage statistics; even within cities, the Labor Ministry focuses its data collection and reporting on the rapidly declining urban state-owned and collective enterprises. The Labor Ministry calls these data "urban" statistics. Meanwhile, the Agriculture Ministry collects employment and wage data from the TVE's, including those engaged in manufacturing, and publishes the data in its own publications. It appears that there is no coordination between the two ministries. For example, in calculating total manufacturing employment in China, NBS and the Labor Ministry seem to ignore the Agriculture Ministry data from the TVE's.

This problem is illustrated in table 1 and chart 1. The rightmost two columns of the table report Ministry of Agriculture data on employment in industry (*gongye*) TVE's since 1978. This category is almost all employment in manufacturing. (The rest of "industry" employment comprises the two relatively small categories of mining and the production and supply of electricity, gas, and water.) In 2003, a Ministry of Agriculture publication reported for the first time the number of TVE manufacturing employees (for yearend 2002), and that number constituted 92.4 percent of TVE industry employment. Arbitrarily using that same percentage for the years starting in 1990, the far right column of the table presents estimated TVE manufacturing employment during 1990–2001.

It is important to note that TVE industry employment data had an abrupt definitional shift in 1997 in which the total reported dropped sharply, only to rise again the following year. Part of the jump in the number of TVE manufacturing employees in 1998 may be associated with the unexplained statistical loss of 7 million urban manufacturing staff and workers that year, as

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discussed earlier. In 1998, the NBS reclassified the group of directly reporting enterprises to those with annual sales revenue above a certain amount and exempted smaller enterprises.[40] As reporting requirements were reduced for small and medium-sized enterprises in urban areas, 7 million manufacturing workers inexplicably dropped out of the urban numbers entirely and were not picked up anywhere in the official rural or in the official total manufacturing employment series. However, they may have been added to the TVE employment category, boosting its manufacturing employment numbers in 1998.

It is unclear just what the TVE industry employment numbers actually mean and do not mean or how part-time or part-year employees are treated in the data. Therefore, it is unclear whether TVE industry employee numbers are overstated, understated, or about right. Nevertheless, the TVE data must be considered in evaluating China's manufacturing employment levels and trends, and evidence discussed in the remainder of this article argues for using those data, rather than the official series on rural manufacturing employment, to estimate noncity manufacturing employment in China. In addition, the TVE data provide the only figures on rural earnings, and those earnings must be used in constructing earnings and compensation estimates for all of China.[41]

The column giving data on total manufacturing employment in table 1 does not include all the reported TVE manufacturing employees. How do we know this? The reason is that all or almost all of the reported "urban" manufacturing employees in China are not in TVE's. The category of urban "staff and workers" explicitly excludes all TVE employees.[42] The rules about how to report the "other" urban enterprise employees who, together with staff and workers, constitute "employment in urban units" have nothing to do with TVE's.[43]

It may be that some of the residual 8.21 million "urban" manufacturing employees who were self-employed or who worked in private enterprises in 2002 also were called TVE employees, but this overlapping of categories appears unlikely, given the way urban and rural employment data for China are reported.[44] These workers are in cities, whereas TVE manufacturing employees generally work outside the cities, in rural areas and in towns. In fact, instructions for filling out China's labor force survey specifically state, "TVE employees are only those who work in enterprises located in rural townships and villages."[45] Among manufacturing workers in 2002, there were 21.35 million employees in private enterprises (*siying qiye*) or in individual or family enterprises (*geti duzi qiye*). Of these, 8.21 million were in the cities, while 13.14 million were classified as "rural," meaning noncity; it is likely that the latter group was included in 2002 TVE manufacturing employment and wage statistics.[46]

If the 29.81 million manufacturing employees working in urban units at yearend 2002 are subtracted from the total manufacturing employment figure for the same year (table 1), the result is 53 million manufacturing employees who could be working in TVE's. Yet the Agriculture Ministry reported 70.87 million TVE employees in manufacturing that year. (See table 1.)

Chart 2 graphs two different estimates of total manufacturing employment in China. The "reported" series is that constructed by the NBS and the Labor Ministry and titled "Total manufacturing employment" in table 1. The series titled "Urban and TVE" in the chart assumes that the columns for derived urban manufacturing employment (referring to cities) and TVE manufacturing employment (referring primarily to towns and villages—the rightmost column in the table) are mutually exclusive and do not overlap; the chart series is the sum of those two sets of data. (Data from the two series in Chart 2 are given in table 4.) Both series indicate that (1) total manufacturing employment in China peaked in the mid-1990s; (2) there was a slow decline in Chinese manufacturing employment in the late 1990s; and (3) beginning in 2001 or 2002, there was a slight increase in national manufacturing employment. (Note that there were definitional shifts in TVE industry employment data, and then in urban manufacturing employment data, from 1996 to 1998.)

The "urban and TVE" series in chart 2 and table 4 suggests that China had 109 million manufacturing employees by yearend 2002, whereas the officially compiled series reported 83 million, a difference of 26 million. Which series is correct or, at least, more nearly correct?

On the one hand, if the yearend-2000 totals from the two series in the chart and the table are compared with 2000 census-based estimates of manufacturing employment, it becomes evident that the census found about 8 million more manufacturing workers in China than did the NBS-Labor Ministry compilation that year (see table 3), but 20 million *fewer* than the TVE and urban manufacturing employment total for that date. The census number is closer to the official series, which would argue in favor of that series.

On the other hand, the urban and TVE series agrees with the results of the 1995 industrial census, which counted 147 million workers in industry (*gongye*) nationwide. China's official administrative data series for the whole country (not only for TVE's) reported that, in 1995, 89 percent of all of China's "industry" employees were in manufacturing. Applying this percentage to the industry employment data from the 1995 industrial census would translate into 131 million manufacturing workers nationwide that year.[47] The total of urban and TVE manufacturing employment for yearend 1995 was 128 million. Therefore, evidence from the 1995 industrial census of China argues for using the urban and TVE series to estimate total manufacturing employment in China.[48]

More information is needed to determine which series is more nearly correct for total manufacturing employment in China during 1990–2002. Tentatively, it would appear that the urban and TVE series on manufacturing employment would be more useful than the official series. One reason is that the NBS and the Labor Ministry have little usable information associated with their figure of 45 million "rural" manufacturing workers.

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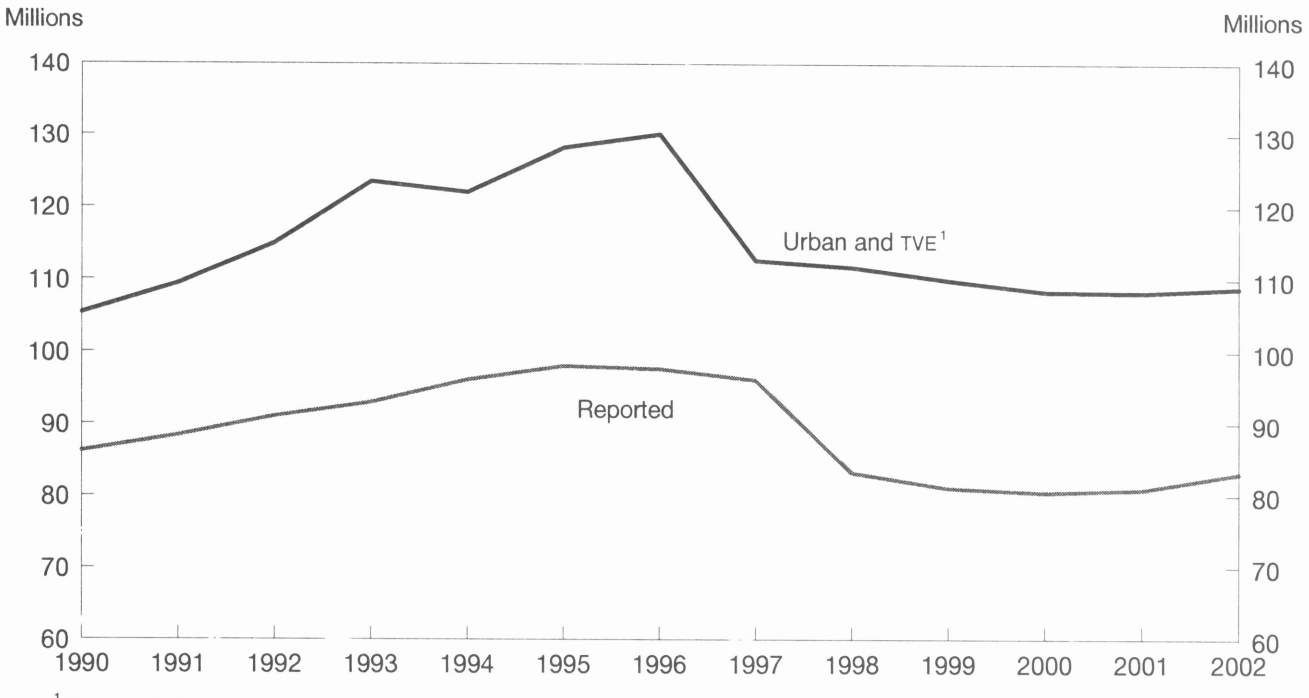
Chart 2. Manufacturing employment in China, yearend 1990–2002



[1] Town and village enterprises; manufacturing employment in this sector is derived from reported TVE industry employment.

SOURCE: Calculated from Table 1.

Nothing is published except that one number, and no information is available on how this number was derived or estimated. By contrast, a branch of the Agriculture Ministry has gathered and published some information on the TVE manufacturing employees and on the earnings paid to them. The only regular reporting system that collects detailed data for rural enterprises, including manufacturing enterprises, is the data collection system run by the Township Enterprise Bureau of the Ministry of Agriculture:

> The Township Enterprise Bureau of the Agriculture Ministry collects detailed data on township-run and village-run collective enterprises, and basic statistics on co-operative enterprises, private enterprises and individual-owned enterprises. The NBS assists the Township Enterprise Bureau in the design of the statistical reporting forms. The Township Enterprise Bureau collects the data and makes some of them regularly available to the NBS. The NBS relies on the Township Enterprise Bureau's data and has no independent regular reporting system for rural enterprises.[49]

If the urban and TVE series is the more nearly correct one, then the 2000 census long form may have underestimated the true number of manufacturing workers in China on November 1, 2000, by about 20 million (108,000,000 – 88,000,000). (See tables 3 and 4.) One study has pointed out that the census questionnaire and the instructions for enumerators may tend to bias the responses of rural households in favor of reporting all members as engaged in agricultural employment, even if a family member is working in manufacturing.[50] Another problem is that when the 2000 census enumerators located migrants, they probably handed them a short census form to fill out, whereas households were sampled to decide which would receive the long form. The result of these procedures might be that employment in industry or service sectors favored by migrants is underestimated by the census long form.[51] Also, in some parts of China, the last week of October is still a heavy harvest season, and the census might have counted as agricultural workers millions of manufacturing employees who were only temporarily diverted into agriculture.

If the urban and TVE manufacturing series is the preferred one, then China reported about 105 million manufacturing employees at yearend 1990, a figure that rose to 128 million at yearend 1995 and 130 million at yearend 1996. (See table 4.) In 1997 and 1998, statistical changes and corrections, as well as redefinitions, in both TVE data and urban employment data resulted in a drop in China's total manufacturing (urban and

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Table 4. Manufacturing employment in China: two alternative series, yearend 1990–2002

[In millions]

Year	Urban and TVE[1] manufacturing employment	Official reported manufacturing employment
1990	105.45	86.24
1991	109.44	88.39
1992	114.94	91.06
1993	123.46	92.95
1994	121.98	96.13
1995	128.24	98.03
1996	130.09	97.63
1997	112.64	96.12
1998	111.69	83.19
1999	109.91	81.09
2000	108.35	80.43
2001	108.25	80.83
2002	108.88	83.07

[1] Town and village enterprises. SOURCE: Calculated from table 1.

TVE) employment figure, to approximately 112 million by yearend 1998, of which 44 million were called "urban" and about 68 million "TVE." (See table 1.) Since then, TVE manufacturing employment apparently rose slowly each year, to 71 million at yearend 2002, while on-post (not laid-off) urban manufacturing employment dropped from 44 million to 38 million. Total urban and TVE manufacturing employment in China declined by 4 million, from 112 million in 1998 to 108 million in 2000–01, and then rose slightly to 109 million by yearend 2002, as shown in table 4 and chart 2.

Manufacturing in key export regions

Many establishments in China engage in manufacturing that is part of global trade. These manufacturing enterprises import large quantities of components, inputs, raw materials, and machinery, primarily from other Asian countries, and they employ large numbers of nonnative managers and professionals. They export some of their final product to the global market, chiefly the United States, Europe, and developed countries in Asia.[52] The two leading manufacturing regions producing for the global market today are the Pearl River (*Zhujiang*) Delta (near Hong Kong and Macao) of Guangdong Province, which includes 9 cities, and the Yangtze River (*Changjiang*) Delta, which includes 15 cities in Shanghai Municipality, Zhejiang Province, and the southern half of Jiangsu Province.[53] Both areas include many noncity manufacturing centers.

At yearend 2002, on the basis of the NBS and Labor Ministry compilation, these four provinces reported a total manufacturing employment of 2.69 million in Shanghai Municipality, 7.81 million in Zhejiang Province, 7.45 million in Jiangsu Province, and 7.81 million in Guangdong Province.[54] Except in Shanghai Municipality, the majority of the manufacturing employees were classified as rural in these export-oriented provinces. Rural manufacturing employees totaled 1.09 million in Shanghai Municipality, 5.82 million in Zhejiang Province, 4.61 million in Jiangsu Province, and 4.25 million in Guangdong Province.[55] If the Agriculture Ministry were to report the numbers of TVE manufacturing workers by province, the numbers for those four provinces would undoubtedly be much higher than the reported numbers of rural manufacturing employees there. If their TVE manufacturing workers constitute about 92.4 percent of their TVE industry workers, then the four provinces have approximately the following numbers of manufacturing workers outside their cities: Shanghai, 1.50 million; Zhejiang, 8.00 million; Jiangsu, 6.96 million; and Guangdong, 7.61 million, for a total of about 24 million.[56] These numbers are far greater than the numbers of rural manufacturing workers reported by the NBS and the Labor Ministry for those provinces.

Of China's reported 70.9 million TVE manufacturing employees in 2002, only 13.4 million were reported to be producing for export, while 57.5 million were apparently producing only for the domestic market. Most of the TVE employees producing for the export market probably were located in the Pearl River and Yangtze River Deltas.

Migrant manufacturing workers

Where are the migrant manufacturing workers in China's statistics? Most published data on manufacturing employment do not single out migrants. Therefore, it is difficult to discover how many migrant manufacturing workers there are and where they are.

Many of China's urban manufacturing workers, especially in the export-manufacturing zones, have migrated into cities and their suburbs from rural areas. These rural-to-urban in-migrants are supposed to be included in 2000 census figures on urban manufacturing employees if they have been in the city for 6 months or longer. Also, annual enterprise data for urban manufacturing units are, in theory, required to include workers from rural areas in the category of urban manufacturing "staff and workers." Specifically, the urban employment classification "on-post staff and workers" includes the category "workers whose population registration is in rural areas"; all these figures are to be reported monthly, quarterly, and annually.[57] According to the NBS, the official series on manufacturing employment in urban units (see table 1) included a total of 4.59 million migrant manufacturing workers (whose household registration was still in rural areas) at yearend 2002. The 4.59 million figure constituted 15 percent of the 29.81 million manufacturing employment in urban units; the number of in-migrant manufacturing workers with rural population registration increased to 5.46 million at yearend 2003, or 18 percent of manufacturing employment in urban units at the end of that year.[58]

Many millions of young rural workers have migrated to China's export-manufacturing zones in the most recent decade and a half to work in factories. Sometimes these factories are

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within city administrative boundaries, but often they are located in industrial parks, suburban areas, built-up periurban industrial zones, towns, or rural regions where agricultural land is being taken over for manufacturing zones. Both foreign and domestic employers who are eager to keep down their labor costs and statistical reporting requirements may prefer that their export-processing factories be classified as rural or TVE.[59] Under such a classification, they need meet few, if any, requirements to pay social insurance and other welfare obligations for their hundreds or thousands of production and hand-assembly workers, and, at the same time, data-reporting requirements for their enterprises are minimal. Many of the migrant manufacturing workers in these factories may be counted in China "rural" manufacturing employment figures or in the TVE manufacturing industry employment numbers. (See table 1.)

There is, however, circumstantial evidence that not all migrant workers are included in China's official annual employment data. China's November 1, 2000, census estimated that there were already 14.60 million migrant rural-to-urban manufacturing workers, constituting 25 percent of all manufacturing workers in cities and urban towns.[60] Worker migration has been increasing since then, especially for manufacturing, so the number likely was larger by the end of 2002.

Other indirect evidence from one province points to the same conclusion. Shanghai Municipality carried out a detailed survey of its "floating population" (*liudong renkou*) as of August 1, 2003.[61] The survey estimated that in-migrants from other provinces who had been in Shanghai Municipality for a day or more totaled 4.99 million. Of these individuals, 3.75 million were employed, yet the *Shanghai Statistical Yearbook*s exclude even long-term in-migrants from their figures on the total population of the municipality and, therefore, probably from the total employment figures (7.43 million at yearend 2002; 8.13 million at yearend 2003) and the manufacturing employment figures as well.[62] Data on manufacturing employment in Shanghai Municipality in the *China Labor Statistics Yearbook*s are based on the data in the *Shanghai Statistical Yearbook*s. Shanghai Municipality reportedly had 2.69 million manufacturing workers at yearend 2002 and about 2.61 million at yearend 2003.[63] As of August 1, 2003, there were 1.27 million floating in-migrant manufacturing workers in Shanghai Municipality. It appears that these migrant manufacturing workers were largely excluded from the official data series on Shanghai. Unless they were counted in China's official data series as manufacturing workers back in their home provinces, they also were missing from the official national manufacturing employment series that is compiled from provincial data.

A global perspective

Table 5 gives BLS compilations of levels and trends of manufacturing employment in the Group of Seven (G7) developed countries; in 2002, these countries had a total of 53 million manufacturing workers. China's official data showed 83 million manufacturing employees that year, but, as mentioned earlier, that figure was likely an understatement, and the true number was probably closer to 109 million. (See table 4.) Most of the countries listed in table 5 have had declining numbers of manufacturing workers, as did China in the late 1990s, because

Table 5. Manufacturing employment in G7 countries, 1995–2002

[In thousands]

Year	G7[1] total	United States	Canada	Japan	France	Germany	Italy	United Kingdom
1995	59,825	20,493	1,907	14,520	4,115	9,017	4,831	4,942
1996	59,437	20,518	1,926	14,420	4,073	8,643	4,781	5,076
1997	[2]59,567	[2]20,835	2,016	14,390	4,035	8,521	4,746	5,024
1998	[2]59,204	[2]20,733	2,102	13,790	4,047	8,688	4,820	5,024
1999	[2]58,024	[2]20,070	2,202	13,410	4,031	[2]8,591	4,820	4,900
2000	[2]57,353	[2]19,644	2,254	13,180	4,081	8,646	4,796	4,752
2001	55,606	18,434	2.230	12,800	4,127	8,626	4,774	4,615
2002	53,321	17,233	2,291	11,990	4,059	8,491	4,814	4,443

[1] The G7 countries are the United States, Canada, Japan, France, Germany, Italy, and the United Kingdom.

[2] Break in series. For the United States, all breaks are due to updated population controls. Furthermore, data for 2000 forward for the United States are based on the 2002 North American Industry Classification System; data for earlier years are based on the 1987 Standard Industrial Classification. The 1999 break for Germany reflects the incorporation of an improved method of data calculation and a change in coverage to persons living in private households only.

NOTE: The data in this table are obtained mainly from household surveys, such as the Current Population Survey for the United States. Household surveys are more comparable across countries than are establishment surveys.

SOURCE: *Comparative Civilian Labor Force Statistics, Ten Countries, 1960–2004* (Bureau of Labor Statistics, May 13, 2005); on the Internet at **http://www.bls.gov/fls/flslforc.pdf**.

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of both rising productivity and increasing global competition in manufacturing.[64]

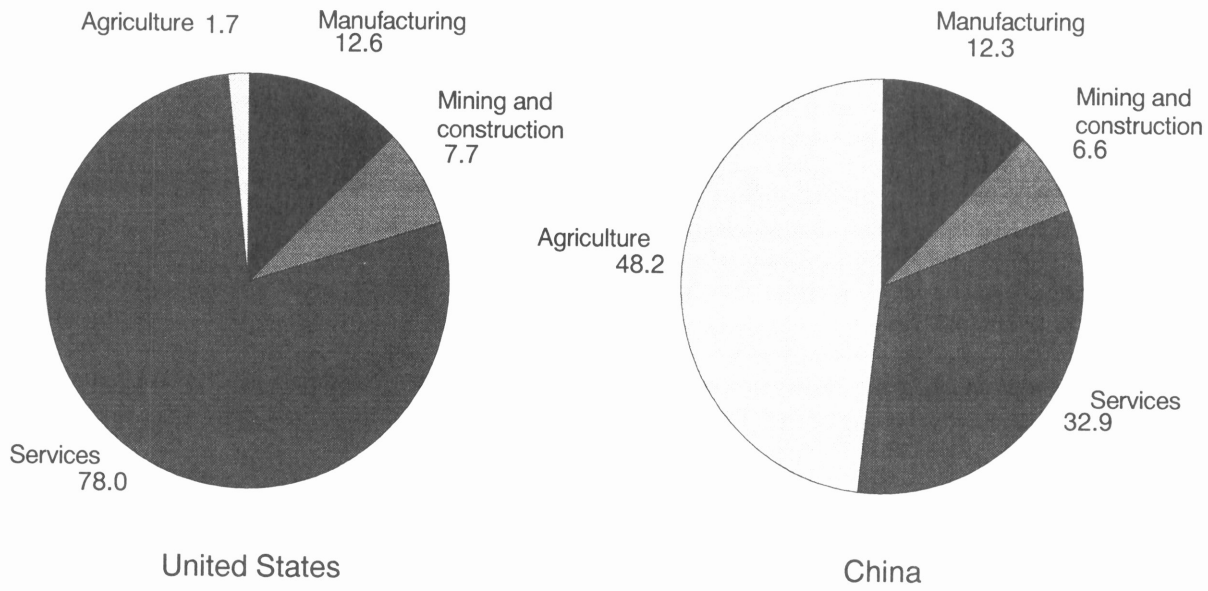
In addition, the share of manufacturing in total employment has been declining in most of the G7 countries.[65] In 1990, manufacturing employment ranged from 15 percent to 32 percent of total employment in these developed countries, but by 2002, the share was down to 12 percent to 24 percent of total employment. In China, meanwhile, official data showed that manufacturing constituted only 14 percent of total employment in 1990, after which it declined to 12 percent in 2002. The difference between China and the developed countries, of course, is that agriculture still employs a large proportion of the working population in China. Chart 3 shows that, even though manufacturing employs a similar proportion of workers in the United States and China, most other workers in the United States are in services, whereas in China the service sector is comparatively underdeveloped and agriculture continues to employ more workers than services.

Why does China have so many more manufacturing workers than other countries? First, much of China's manufacturing production is still labor intensive rather than capital intensive, so more workers are required in China to produce the same output. Second, China is extremely competitive in the global market for manufactured products and is able to sell its manufactures around the world, not only because it pays low wages, but for many other good reasons as well. Third, the manufacturing sector in China serves the country's own huge domestic market as well as the international market.[66]

Summary and conclusions

This article has collected and assessed the available statistics on manufacturing employment in China. Official data from the China National Bureau of Statistics and the Labor Ministry show a steep drop in urban manufacturing employment in China from 1995 to 2001 and in total manufacturing employment from 1995 to 2000, after which the numbers stabilized or began to rise. The declines in Chinese manufacturing employment in the late 1990s were caused by (1) massive layoffs and early retirements of redundant workers in China's urban state-owned and urban collective-owned manufacturing enterprises, (2) a change in coverage starting in 1998 that has included only on-post (not laid-off) manufacturing workers in the urban employment numbers from 1998 to the present, and (3) another definitional shift from 1997 to 1998 that has not been explained. The analysis presented here has shown that, even after adjustment for the definitional shifts, China has lost millions of manufacturing workers since the mid-1990s.

Chart 3. Employment by sector in the United States and China, 2002, in percent



SOURCES: U.S. data are from *Comparative Civilian Labor Force Statistics, Ten Countries, 1960–2004* (Bureau of Labor Statistics, May 13, 2005); on the Internet at **http://www.bls.gov/fls/flslforc.pdf**. Chinese data are from official yearend enterprise reports as published in *China Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 128–29.

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Published labor statistics for China continue to emphasize data for the declining urban state-owned and collective-owned enterprises, while neglecting the healthiest and most dynamic parts of the economy. This approach means that the employment numbers put out by the Labor Ministry and by the National Bureau of Statistics are becoming ever more irrelevant. In manufacturing, the action has moved to the private sector. In urban statistics, the booming private domestic, foreign-owned, and multinational manufacturing enterprises and corporations are lumped under the umbrella term "other ownership units." Privately owned and family-owned urban *siying qiye* manufacturing businesses are ignored in the employment data from the Labor Ministry and the NBS, and the same is true of self-employed manufacturing workers in the cities. Yet it is the urban private sector that has seen ever-increasing manufacturing employment. "Other" urban manufacturing ownership units had only 1.35 million employees in 1990, but the number has grown every year since then and reached 15.82 million by yearend 2002. Meanwhile, the residual category of urban manufacturing workers employed in the privately owned *siying qiye* and *getihu* rose from less than 1 million in 1990 to 8.21 million by yearend 2002. It appears that government statistical and labor agencies do not pay adequate attention to the private-sector manufacturing corporations and the small manufacturing businesses in China's cities.

China's employment statistics focus on the cities, while the expanding "rural," town, suburban, and industrial park manufacturing enterprises all over the country are almost entirely left out of the statistics. Apparently, virtually all of China's manufacturing enterprises and factories located outside strict city limits are lumped together under the category "town and village enterprises" (TVE's). This term is a misnomer for all the employers, both private and collective, both domestic and foreign, of the 71 million noncity manufacturing employees in China who are referred to as TVE manufacturing employees. Most TVE's were privatized by the late 1990s; therefore, the private sector has become important in employing TVE workers as well as urban workers.[67]

In a holdover from the Maoist decades, the Ministry of Agriculture is responsible for supervising and collecting statistics on all the industrial enterprises located outside city limits in China. In 2003, for the first time, one of the agency's publications, the *China Village and Town Enterprise Yearbook*, published the number of TVE manufacturing employees in China.[68]

Adding together official manufacturing employment numbers for the cities and estimates for the TVE's suggests that China had about 105 million manufacturing employees in 1990, and the total increased in the early 1990s to a peak of 130 million in 1996. This large number may have included some overreporting of TVE manufacturing employees, along with the surplus urban manufacturing employees not yet deleted from the total urban manufacturing employment figures. After statistical corrections in both urban and TVE data, China was estimated to have approximately 112 million manufacturing employees at yearend 1998. The number declined to about 108 million in 2000–01 and rose slightly to 109 million by yearend 2002. All of these estimates are based on the supposition that there is no overlap between TVE and official urban manufacturing employee figures.

This article has demonstrated that manufacturing employment in China increased during the 1980s and early 1990s, peaked in about 1995–96, declined during the late 1990s until 2000–01, and increased again in 2002.

Future research priorities

The following areas should have high priority for future data collection in China and future research on Chinese manufacturing:

1. *Migrant manufacturing workers.* Publicly available data on China's manufacturing employees do not provide enough information about how many migrant manufacturing workers there are in China and where they are working. Yet migrants from the rural areas are fueling the country's manufacturing boom, and there are tens or hundreds of millions more surplus workers in agriculture, some of whom could migrate to join factories in the future. Migrant workers help keep China globally competitive in manufacturing. Further collection and dissemination of information on China's migrant manufacturing workers are needed.
2. *Rural manufacturing employment.* Much better data collection and reporting, and much more research, are needed to try to fill in some of the missing information on rural and town manufacturing employment. Reporting is routinely more thorough for city manufacturing units in China.
3. *Conflicting data.* More work is needed by China's statistical leaders and by analysts of labor force data to reconcile and make sense of the conflicting sets of manufacturing employment data so far released. Communication, coordination, and better statistical oversight are needed among the NBS, the Labor Ministry, the Ministry of Agriculture, and the State Administration for Industry and Commerce and with scholars who utilize China's official labor force statistics.
4. *Labor force surveys.* China needs to design, carry out, and publish results of labor force surveys using international standards and definitions. The surveys should cover the rural as well as the urban labor force. China has been conducting experimental labor force surveys,

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but most of the results have not yet been released. Reportedly, China will conduct a regular labor force survey in 2006 and begin publishing data from that survey.

5. *National economic census.* During 2005, with reference year 2004, China is conducting its first national census of the economy. This census is expected to refine, correct, and update data on who works where in manufacturing. The census "is sure to find that private-sector employment is much higher than is currently reported."[69] When results of the economic census become available at the end of 2005, the new information should be used to update research on China's manufacturing sector. □

Notes

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[1] Judith Banister, "Manufacturing Employment and Compensation in China," on the Internet at **http://www.bls.gov/fls/#publications**.

[2] See Jeffrey R. Taylor and Judith Banister, *Statistical Reliability in China* (U.S. Census Bureau, 1989).

[3] Carsten A. Holz, *The Institutional Arrangements for the Production of Statistics*, Statistics Directorate, OECD-China Governance Project, OECD Statistics Working Paper STD/DOC (2005), 1 (Paris, Organization for Economic Cooperation and Development, 2005), p. 5.

[4] Banister, "Manufacturing Employment and Compensation in China." (See "Ministries" in the "Glossary and Definitions" section of that paper for a list of the ministries involved in the collection and reporting of manufacturing employment in China.)

[5] For relevant Chinese language terms, see Banister, "Manufacturing Employment and Compensation in China." "Actual situation," "labor situation," and "yearend number of workers" are defined in the "Glossary and Definitions" section of that paper.

[6] Copies of the enterprise statistical reporting form (*laodong qingkuang biao*, or "labor situation form") for 2004 were submitted to urban authorities by the end of February 2004 and reported 2003 data for urban companies and work units; wage-reporting instructions (*laodong gongzi—tongji taizhang*, or "labor wages—statistical accounts") for 2004 were from the Beijing Municipality Statistical Bureau. (See especially p. 2-1 of the latter.)

[7] The TVE's were originally established as collective economic units run by local governments in rural areas and towns. The purpose of TVE's was, and still is, to employ small farmers and rural laborers in industrial or service occupations in locations not far from their family homes. This practice allows the modernization of China's vast countryside without necessitating massive migration from villages to cities. In the 1980s, and especially from the 1990s to today, TVE's shifted from public toward private ownership, and many foreign-funded enterprises became classified as TVE's. Now the TVE category, in addition to encompassing small local enterprises, can include very large factories in industrial parks outside cities, as well as suburban, town, and rural factories. Indeed, companies have incentives to have their factories classified as TVE's because mandatory social insurance payments are very low, statistical reporting requirements are minimal, and many legal and taxation benefits accrue to TVE's.

[8] See Banister, "Manufacturing Employment and Compensation in China." Some of the terms are defined in the "Glossary and Definitions" section of this paper.

[9] China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), p. 638.

[10] See also *China Labor Statistical Yearbook 2003*, pp. 13, 230.

[11] *Ibid.*, p. 249.

[12] Enterprise statistical reporting forms, 2004; wage-reporting instructions, 2004.

[13] *China Labor Statistical Yearbook 2003*, p. 169.

[14] China State Administration for Industry and Commerce, *Zhongguo gongshang xingzheng guanli nianjian 2003* (*Yearbook of the Industry and Commerce Administration of China 2003*) (Beijing, China Industry and Commerce Press, 2003), pp. 583, 587.

[15] See also Ming Lu, Jianyoung Fan, Shejian Liu, and Yan Yan, "Employment restructuring during China's economic transition," *Monthly Labor Review*, August 2002, pp. 25–31; on the Internet at **http://www.bls.gov/opub/mlr/2002/08/art3full.pdf**.

[16] *China Labor Statistical Yearbook 2003*, p. 10.

[17] *Ibid.*, p. 20.

[18] *Ibid.*, p. 243. See also Banister, "Manufacturing Employment and Compensation in China." The terms *laid-off staff and workers*, *not-on-post staff and workers*, *off-post staff and workers*, and *on-post staff and workers* are defined in the "Glossary and Definitions" section of that paper.

[19] Ray Brooks and Ran Tao, "China 's Labor Market Performance and Challenges," IMF Working Paper WP/03/210 (Beijing, International Monetary Fund, November 2003); on the Internet at **http://www.imf.org/external/pubs/ft/wp/2003/wp03210.pdf**; see also Robert H. McGuckin and Matthew Spiegelman, *China's Experience with Productivity and Jobs* (New York, The Conference Board, 2004), p. 12.

[20] See Banister, "Manufacturing Employment and Compensation in China." The term *unemployment rate* is defined in the "Glossary and Definitions" section of that paper.

[21] *China Labor Statistical Yearbook 2003*, pp. 96, 126.

[22] *Ibid.*, p. 637.

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[23] Thomas G. Rawski, *Recent Developments in China's Labor Economy* (Geneva, International Labor Office, November 2003) (revised from a report prepared in January 2002).

[24] McGuckin and Spiegelman, *China's Experience*, p. 5.

[25] See Changming Li, *China Industrial Development Report 1997* (Beijing, Economic Management Press, 1997), especially Chapter 11, "China's textile industry: From size to strength"; also in Christopher Howe, Y. Y. Kueh, and Robert Ash (eds.), *China's Economic Reform: A Study with Documents* (London, RoutledgeCurzon, 2003), pp. 165–75.

[26] McGuckin and Spiegelman, *China's Experience*, pp. 4–5, 11–13, 17.

[27] The calculation procedure for estimating the nationwide employed population from the long-form sample sidesteps the problem that there was a severe undercount of children below age 10 or so in the 2000 census. The count of the population aged 15 years and older in the 2000 census was quite complete, in that it matched the expected adult population as projected from the 1990 census and taking into account all available demographic information for the interim period, even though there is controversy about whether some young and middle-aged adults were counted in the wrong places. (See Weimin Zhang and Hongyan Cui, "*Dui Zhongguo 2000 nian renkou pucha zhunque xing de guji*" ("Estimates of the accuracy of China's 2000 population census"), *Renkou yanjiu* (*Population Research*), vol. 27, no. 4, 2003, pp. 25–35; Kam Wing Chan, "Chinese census 2000: New opportunities and challenges," *The China Review*, Fall 2003, pp. 1–12; Daniel Goodkind and Gregory Robinson, "Intercensal evaluations of year 2000 censuses: Issues and surprises in the United States and China," paper presented at the International Seminar on China's 2000 Population and Housing Census, Beijing, April 2004.

[28] Alwyn Young, *Gold into base metals: Productivity growth in the People's Republic of China during the reform period*, NBER Working Paper Series no. 7856 (Cambridge, MA, National Bureau of Economic Research, 2000), pp. 22–23.

[29] *China Labor Statistical Yearbook 2003*, pp. 8–9.

[30] China National Bureau of Statistics, *Tabulation on the 2000 Population Census of the People's Republic of China*, vol. 2 [in Chinese] (Beijing, China Statistics Press, 2002), pp. 1578–79.

[31] *China Labor Statistical Yearbook 2003*, pp. 23, 362.

[32] Wage-reporting instructions, 2004, p. 1-2.

[33] Compare "*Di wu ci quanguo renkou pucha biao chang biao*" ("The fifth national population census form, long form") (Beijing, China National Bureau of Statistics, 2000), columns R17–R22, with China National Bureau of Statistics, *China Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), p. 181.

[34] China National Bureau of Statistics, *Tabulation on the 2000 Population Census of the People's Republic of China*, vol. 1, p. 570; vol. 2, pp. 800, 1269.

[35] See Banister, "Manufacturing Employment and Compensation in China." The terms *urban* and *rural* are defined in the "Glossary and Definitions" sections of that paper.

[36] *Tabulation on the 2000 Population Census of the People's Republic of China*, vol. 2, pp. 888, 942, 996, 1050.

[37] Louise Fox and Yaohui Zhao, "China's labor market reform: Performance and prospects," background paper for the *China 2002 Country Economic Memorandum* (Washington, DC, World Bank, 2002), p. 27.

[38] Most of the information that follows is from an interview with NBS statistics officials in Beijing Jan. 10, 2005.

[39] Holz, *The Institutional Arrangements*, p. 12.

[40] *Ibid.*, p. 17.

[41] See Judith Banister, "Manufacturing earnings and compensation in China," *Monthly Labor Review*, forthcoming, August 2005.

[42] *China Statistical Yearbook 2003*, p. 181.

[43] Enterprise statistical reporting forms, 2004; wage-reporting instructions, 2004, pp. 1-1 to 1-2.

[44] *China Statistical Yearbook 2003*, p. 123; Loraine A. West, discussant, BLS seminar, Washington, DC, Nov. 8, 2004.

[45] "2004 *nian chengzhen laodongli diaocha zhidu*" ["The 2004 Urban Labor Force Survey System"] (China National Bureau of Statistics, Nov. 17, 2004), p. 20.

[46] *China Statistical Yearbook 2003*, pp. 146–47.

[47] *China Labor Statistical Yearbook 2003*, p. 8.

[48] Young also showed that the official NBS and Labor Ministry compilation of national manufacturing employment in 1995 was highly inconsistent with the 1995 industrial census results. (See Young, *Gold into base metals*, 2000, p. 22 and table XI.)

[49] Holz, *The Institutional Arrangements*, pp. 15–16.

[50] Young, *Gold into base metals*, 2000, pp. 22–23.

[51] Daniel Goodkind, personal communication, Nov. 8, 2004.

[52] Nicholas R. Lardy, "United States-China ties: reassessing the economic relationship," testimony presented before the House Committee on International Relations, U.S. House of Representatives, Oct. 21, 2003; on the Internet at **http://www.iie.com/publications/papers/lardy1003.htm**.

[53] Zhong Wu, "Guangdong keeps foreign trade lead," *The Standard, Greater China's Business Newspaper*, May 18, 2004.

[54] *China labor Statistical yearbook 2003*, p. 8.

[55] *Ibid.*, p. 26.

[56] Ministry of Agriculture, China TVE Yearbook Editorial Committee, eds., *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), pp. 156, 174.

[57] Wage-reporting instructions, 2004; enterprise statistical reporting forms, 2004.

[58] Personal communication with NBS officials, Jan. 10, 2005; table 1, this article; China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2004* (Beijing, China Statistics Press, 2004), p. 9.

[59] Fox and Zhao, "China's labor market reform," pp. 13–14.

[60] "*Chengzhen jiuye yu shiye wenti yanjiu—2000 nian di wu ci quanguo renkou pucha shuju fenxi*" ["Research on Urban Employment and Unemployment Problems—Analysis of Year 2000 5th National Census Data"] (Beijing, Chinese Academy of Social Sciences, CASS Population and Labor Economics Research Institute, 2003), p. 47.

[61] "*Shanghai Shi 2003 nian wailai liudong renkou diaocha—shuju shouce*" ["Survey of the Floating Population of Shanghai in 2003—Data Handbook"] (Shanghai, Shanghai Municipal Statistics Bureau, 2004).

[62] *Shanghai tongji nianjian 2003* [*Shanghai Statistical Yearbook 2003*] (Beijing, Shanghai Municipal Statistics Bureau, China Statistics Press, 2003), pp. 62, 98; *Shanghai Statistical Yearbook 2004* database.

[63] *China Labor Statistical Yearbook 2003*, p. 8; *Shanghai Statistical Yearbook 2003*, pp. 78–81; *Shanghai Statistical Yearbook 2004* database.

[64] For manufacturing productivity trends in the advanced industrial countries, see *International Comparisons of Manufacturing Produc-*

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tivity and Unit Labor Cost Trends, Revised Data for 2003 (Bureau of Labor Statistics, Feb. 25, 2005), on the Internet at **http://www.bls.gov/news.release/pdf/prod4.pdf;** and *International Comparisons of Manufacturing Productivity and Unit Labor Cost Trends, Supplementary Tables* (Bureau of Labor Statistics, Feb. 25, 2005), on the Internet at **http://www.bls.gov/fls/prodsupptabletoc.htm**.

[65] *Comparative Civilian Labor Force Statistics, Ten Countries, 1960–2004* (Bureau of Labor Statistics, May 13, 2005), Table 6; on the Internet at **http://www.bls.gov/fls/flslforc.pdf**.

[66] See Banister, "Manufacturing Employment and Compensation in China," for a discussion of China's domestic market, of factors enhancing and factors inhibiting China's competitiveness, and of the question whether China has an "inexhaustible" supply of labor.

[67] Fang Cai, Albert Park, and Yaohui Zhao, "The Chinese labor market," paper presented at the Conference on China's Economic Transition: Origins, Mechanisms, and Consequences, Pittsburgh, Pennsylvania, November 2004, p. 17.

[68] *China Village and Town Enterprise Yearbook 2003*; data were for 2002.

[69] "China, no right to work," *The Economist*, Sept. 11, 2004, pp. 27–28.

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Productivity measures for retail trade: data and issues

Alternative concepts for the output of retail trade industries have been proposed and implemented, but the conclusion of strong labor productivity growth in this sector is robust to the choice of measure

Marilyn E. Manser

The retail trade industry is a major component of the U.S. economy, with employment exceeding that in manufacturing. Yet only recently has the strong productivity performance of the retail sector been widely noted. Analysis of productivity growth in retail trade is especially challenging because it involves defining what output is for the industry, and different concepts can be used.

This article discusses conceptual and other issues in measuring productivity for retail trade industries, and presents current information on productivity in these industries in the United States. First it discusses the classification of retail trade activities. Second, it focuses on issues in defining the output concept for retail trade and in obtaining operational measures. Third, it presents data and comparisons for various measures and fourth, it addresses issues in comparing changes in retail trade productivity across countries.

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Classification of retail trade

Recently, U.S. data have been converted to the new North American Industry Classification System (NAICS). NAICS retail trade (industries 44–45) includes stores and nonstore retailers and excludes food services and drinking places (NAICS 722). Both NAICS and the earlier Standard Industrial Classification (SIC) system classify retail stores according to the types of goods that are being moved to the consumer. Eating and drinking places were classified as part of the retail trade division under the SIC (industries 52–59).

Two other major differences between NAICS and SIC also affect the classification of retail trade. Under NAICS, unlike SIC, auxiliary units involved in management or support activities such as transportation, warehousing, accounting and related services, and repair and maintenance are classified into specialized industries rather than including them in the industries they support, including retail trade. In addition, NAICS considers the method of selling when classifying establishments into wholesale versus retail trade, whereas the SIC system focused on the class of customer. This latter change caused a noticeable increase in the size of the retail trade sector, with a corresponding decrease in wholesale trade.

All of the changes previously described were introduced with the initial 1997 version of NAICS and continue under the 2002 NAICS revision. There were no changes at the three-digit level for retail trade between 1997 and 2002, but additional detail is provided for two retail trade industries under NAICS 2002. This article uses the NAICS 2002 definition of retail trade, unless otherwise noted.

Output concepts and issues

Industry output and productivity concepts. The broadest measure of productivity is multifactor productivity, which relates output to an index of all the inputs used in its production. Multifactor productivity (MFP) change measures the joint influences on economic growth of technological change, efficiency improvements, returns to scale, and other factors. The most commonly

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used measure of productivity is labor productivity, which is defined simply as output per hour. Labor productivity measures are produced and used more widely than multifactor measures because data needed for inputs other than labor are not available on a quarterly basis, are not as timely, and are not available or not measured precisely for many industries. Besides measuring the joint influences of the factors noted, labor productivity change also reflects the substitution of other inputs for labor in the production process.

To measure either labor or multifactor productivity for industries, we must define output. The Bureau of Labor Statistics (BLS) prefers the *sectoral output* concept for measuring industry output and productivity growth in the United States. Sectoral output is defined as gross output of the industry less intraindustry transfers.[1] This choice arises from the recommendation of the U.S. National Academy of Sciences that manufacturing industry multifactor productivity measures include intermediate inputs along with capital and labor inputs, as well as from subsequent research. An alternative output measure is *value-added output*, which is equal to sectoral output minus all intermediate inputs.

For retail trade, there are additional considerations. Another output measure, uniquely used for the distributive trades, is *gross margins*, which equals sectoral output less the cost of goods sold. It equals the sum of operating costs including other intermediate goods, other inputs, and residual profits.

In general, a retail trade industry produces sectoral output using labor hours, capital services, goods purchased for resale, and (other) intermediate inputs. The most general representation of the production process is:

$$f(O, M, I, K, L) = 0.$$

Often, we write:

$$O = g(M, I, K, L),$$

where:

O is the quantity of sectoral output;
M is the amount of goods purchased for resale;
I is the amount of intermediates;
K is the input of capital services
L is the input of labor hours
p_i is the price of i, $i = O, M, I, K, L$.

Thus, gross-margin based output (GMO) is $O - M$, and value-added output (VA) is $O - M - I$.[2]

It is often noted in studies of production and productivity that use of a value-added measure assumes a type of separability between intermediate and other inputs, and does not allow for substitution possibilities between I, K, and L. In effect, beginning a study with gross-margin-based output does the same, allowing for no substitution among the types of goods purchased and other inputs. Ideally, one would like to have data on all the components of the model to test which is the appropriate approach. Unfortunately, sufficient information for these purposes is not available at present. In the absence of complete information on all the inputs identified, which is needed to produce a multifactor productivity measure, it is worthwhile considering merits and availability of alternative output measures for use in productivity studies.

There are a variety of conceptual issues affecting retail trade output, and various researchers have favored one or the other of the alternative concepts for output of this sector. Walter Oi argues that "The principal function of a retailer is to transfer possession of its merchandise lines to the ultimate consumer.[3] It assembles a product line, displays it at a convenient place and time, and provides ancillary services...." Generally, a retailer takes ownership of the products until they are sold to consumers. Thus, sales (sectoral output) is a commonly used measure of output for this industry sector. On balance, Oi prefers the sectoral output approach, rather than the gross margins approach, for measuring retail sector output for two primary reasons.[4] First, as already noted, "[t]he principal 'product' is a flow of transactions that transfers possession to material goods." Second, gross margins are the sum of value added (payments to labor and capital) plus monopoly rents. Changes in gross margins, like changes in sales, appropriately will reflect changes in efficiencies in store operations. But as Oi notes, gross margins also can increase as a result of businesses securing market power.[5] Increased monopolization, however, does not reflect increased output provided to consumers.[6] In contrast, sales as a measure of output does not have this problem, because monopolization reduces sales. Other researchers have favored gross margins.[7]

If a retailer switches from purchasing products from a supplier whose products require more effort at the store to assemble or display (or both) to one whose products can be much more readily transferred to consumers, yet which are the same from the viewpoint of the consumer, that switch will show up as no change in sectoral output for retail trade. In this case, gross margins will fall (assuming the supplier provides more services and charges more for the latter product).[8] But the output to consumers will be unaffected.[9]

It can be argued that the gross margins concept is preferable, at least for some types of retail establishments, because the merchant just buys a product and does not transform it in any way before the consumer takes it home and, further, the purchased good does not substitute for any other factor input. But even for a basic product, such as a can of beans sold by a grocery store, there must be a minimal amount of transformation just from changing the location of the good to make it more accessible to the consumer. The way the cans of beans are packaged together may directly affect the amount of labor required to display them. Further, different packaging characteristics may affect the amount of spoilage, breakage, or pilfering. Most products require more transformation than

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does a can of beans. Thus, the purchased goods are not separable from the services being delivered to the customer, which argues that gross output is the preferable measure of output.

Our preference would be to construct MFP measures for retail trade, defining output as sectoral output and treating goods purchased for resale as an input along with other inputs (capital and labor services and other intermediate goods and services). In the absence of data to do this, we examine labor productivity based on existing measures of both the quantity of sectoral output (O) and gross-margin based output (GMO).

Measurement issues. As noted earlier, BLS uses the sectoral output concept for purposes of measuring U.S. productivity growth. U.S. data on the value of sales of retail trade industries are available from the Census Bureau in its *Annual Benchmark Report for Retail Trade and Food Services*.[10] The annual report benchmarks monthly collected data to the Annual Retail Trade Survey. The retail sales data are further benchmarked in the annual report to data available from the quinquennial censuses. To measure output for a given industry at the most detailed level, BLS starts with the value of goods sold by item type j, deflates it by a retail selling price p_j, usually a Consumer Price Index (CPI), then combines all j products in the industry using Törnqvist aggregation.[11] The only exception among retail industries occurs for new car dealers (NAICS 441110). Output for this industry is constructed based on counts of vehicles sold by these dealers and current dollar sales of their service departments.[12]

In producing the National Accounts, the Bureau of Economic Analysis (BEA) produces output series for trade industries that, in concept, are gross margins, in accord with the approach taken by the international System of National Accounts.[13] The Census Bureau data include information on the nominal value of gross margins. BEA's measure of nominal gross margins is based on those data, but is larger than the census estimate because BEA makes several adjustments to it.[14] BEA assumes that, at the detailed industry level, the real gross margin rates do not change from the benchmark values. Nominal gross margin rates are allowed to change, however, depending on the availability of annual census data. In calculating real gross margins, BEA must use the same available price indexes that BLS uses to calculate sectoral output, generally CPIs. Thus, in practice, the BEA and BLS measures are constructed in a much more similar fashion than the concepts would imply.

In concept, it would be appropriate to measure gross margin output starting with the value of gross margins for item k, then deflating by the price of gross margins, p_{Mk}, which would be collected directly. In practice, this was not possible in the past. Recently, the BLS Producer Price Index (PPI) program has begun developing price indexes designed to measure gross margins. BEA is not yet using the new retail PPIs that have been developed to date, but will begin evaluating them for future use. In the following section, which describes the data, we provide information on the retail trade PPIs that are available now and we compare them with the industry implicit price deflators (largely based on CPIs) from the BLS industry productivity database. As PPIs become available for additional industries, and the time series lengthen, it will be important, for research purposes, to continue to compare them. Future BEA and BLS data comparisons could assess the implication of use of alternative price measures as well as other differences for the various output series for retail trade.

Another approach to developing price measures for gross margins is to calculate them from other information using "double deflation." As already noted, BEA does not calculate margin price indexes using double deflation. This approach has not been adopted by statistical agencies, probably primarily because all of the error resulting from the numerous assumptions that need to be made would be reflected in the estimated margin price measures and the resulting real gross margin output measures. Marcel P. Timmer, Robert Inklaar, and Bart van Ark have constructed this type of measure for the United States, which is of interest for research purposes.[15]

The ability to produce high-quality measures of intermediate inputs, whether for use together with sectoral output in measuring multifactor productivity or for use in constructing value added, depends on available data. In general, direct information on the current-dollar value of intermediate purchases is somewhat limited for the United States. Construction of the real value of intermediates is made more problematic in some cases by the absence of fully suitable deflators. Some goods and services are imported, so both PPIs and import price deflators are needed. In sum, intermediates are a weak area in the U.S. data.

In constructing value-added measures, current-dollar value added can be constructed from the income side of the national income accounts, rather than by subtracting intermediate inputs from gross output. BEA recently completed a partial integration of the national income accounts. The input-output accounts and the value added by industry measures have been integrated. Now the current-dollar value-added levels are based on information from both sources. Issues about deflation remain.

Data and comparisons

Trends in labor productivity growth in retail trade. Business sector productivity growth was strong over the 1990–2003 period. Productivity growth in retail trade also was strong, at 3.4 percent per year, on average. (See table 1.)[16] Retail trade productivity growth was slightly below that in manufacturing for this entire period and for each subperiod considered. The *acceleration* in labor productivity growth between the first half and latter half of the long business cycle of

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Table 1. Labor productivity in the United States, 1990–2003, average annual rates of change

[In percent]

Sector	2003 employment (in thousands)	1990–2003	1990–1995	1995–2000	2000–2003
Business sector[1]	111,747	2.5	1.5	2.7	3.7
Manufacturing	14,807	4.0	3.4	4.1	4.9
Retail trade	15,866	3.4	2.6	3.9	4.1
Food services and drinking places	8,791	.4	–.5	.6	1.4

[1] The business sector measure, produced using a value-added output concept, is not directly comparable to the industry measures, for which the output concept is sectoral output.

1990–2000, however, was greater in retail trade than in manufacturing: an increase of 1.3 percent per year for the former, compared with 0.7 percent per year for the latter. Productivity growth is typically strong in the first 3 years after a business cycle peak. For example, after the peak in 2000, the business sector as a whole and both the manufacturing and retail trade sectors experienced strong productivity growth in 2000–03. For the business sector as a whole, productivity growth from the first quarter of 2001 to the first quarter of 2004 was the highest for any 12-quarter period following a peak in the last 50 years.

Almost certainly, the factor related to the U.S. productivity speedup of the 1990s which has received the most attention is the rapid growth in the high-tech (information processing equipment and software) sector. Our data show that the combination of two effects, the use of high-tech capital services throughout the economy and the multifactor productivity improvements in the industries that produce high-tech capital, accounted for more than two-thirds of the speedup in labor productivity growth in 1995–2000, compared with the growth during 1990–95. This result is consistent, however, with a strong role for productivity growth in certain other sectors such as retail. First, industries producing high-tech capital equipment had by far the strongest productivity growth rates among manufacturing industries, but growth in many other manufacturing industries was weak. Some industries both within and outside of manufacturing experienced *negative* multifactor productivity growth. Second, some of the labor productivity growth in retail trade can be attributed to the effects of using high-tech capital.

Also included in table 1 are figures for productivity change in food services and drinking places. Notice that although this industry did experience an acceleration of productivity growth in the latter half of the 1990s, the growth rate was low in each of the subperiods considered. In earlier studies of U.S. productivity growth in retail trade, SIC-based data for retail trade, which include eating and drinking places, would have been used. Productivity in retail trade on an SIC basis grew at an annual average rate of 2.4 percent over the 1990–2000 period, compared with 3.2 percent on a NAICS basis.[17]

Comparison of alternative output series. As noted earlier, BEA and BLS utilize different concepts of "gross" output; BLS uses sectoral output, whereas BEA uses gross margins. Table 2 reports output change in retail trade for both of these measures, as well as for BEA's value-added output measure, over the 1990–2003 period.[18] Although changes in the three measures differ somewhat over this period, all show a strong increase in retail trade output growth in the latter half of the 1990s compared with growth over the 1990–95 period. In addition, all show at least some decrease in the rate of growth of output for 2000–2003 compared with 1995–2000, but the difference between the size of the output increase for value-added output compared with the other two measures is particularly striking.

The differences between the three alternative measures are somewhat larger than those shown by the earlier comparisons of output change in retail trade using SIC-based data reported by Jack E. Triplett and Barry P. Bosworth.[19] They noted that the data showed a close correspondence in the growth of output over the period they considered, 1987–2001. Since that time, BEA revised their SIC-based data and both agencies converted their output data to NAICS.

BEA and BLS are in the process of comparing and assessing their various output measures, with the long-term goal of removing arbitrary differences and explaining any differences that remain for program-related reasons. Preliminary comparisons of output change for some detailed retail industries show some significant differences over the periods compared, 1990–95 and 1995–2000, but additional work is needed on those comparisons.

Productivity results for retail trade industries. Table 3 presents average annual rates of change in labor productivity for the three-digit NAICS industries that comprise retail trade.[20] All 12 of these industries experienced productivity growth over the 1990–2003 period. The productivity speedup of the late 1990s was widespread among these industries; all but gasoline stations (NAICS 447) and miscellaneous store retailers (NAICS 953) experienced productivity accelerations in 1995–2000, as compared with 1990–95. Notable trends that occurred

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Table 2. Output in retail trade, 1990–2003 average annual rates of change

[In percent]

Output measure	1990–2003	1990–1995	1995–2000	2000–2003
Sectoral output (BLS)[1]	4.2	3.4	5.4	3.5
Gross output (gross margins) (BEA)[2]	4.8	4.1	6.0	4.0
Value-added output (BEA)[2]	5.4	4.1	6.5	6.0

[1] Bureau of Labor Statistics data classified according to NAICS 2002.

[2] Bureau of Economic Analysis data classified according to NAICS 1997.

in U.S. retailing during the 1990s were increased concentration and growth in investment in information technologies.[21] Electronics and appliance stores (NAICS 443) and nonstore retailers (NAICS 454) experienced the strongest growth rates among these industries over the 1990–2003 period. Nonstore retailers consist of electronic shopping and mail-order houses (40.3 percent of nonstore retail employment in 2003), vending machine operators (10.4 percent of nonstore retail employment), and direct selling establishments (49.3 percent of nonstore retail employment). Productivity growth was especially high in electronic shopping and mail-order houses; 14.0 percent per year on average over the 1990–2003 period, with a particularly strong acceleration in the 1995–2000 period.

High-tech goods represent a significant share of the goods sold by retailers in both electronics and appliance stores (NAICS 443) and nonstore retailers (NAICS 454).[22] It has been argued that these are industries in which the sectoral output concept is undesirable because the output gains and declining output prices arise from the manufacture of the goods sold, not from the activities of the retailers, which simply sell the computers (or other goods) incorporating the high-tech components. Under this view, that productivity gains in these retail industries reflect the pass-through of productivity gains from manufacturing, measured productivity in these retail industries is biased upward because of the use of this concept.[23] One way to get a rough estimate of the maximum amount of possible overstatement in retail trade productivity due to the sale of these high-tech goods is to look at productivity in retail trade excluding electronics and appliance stores and nonstore retailers.[24] The conclusion about the strong productivity growth and the productivity speedup in retail trade remains if these industries are excluded. Labor productivity in retail trade excluding electronics and appliance stores and nonstore retailers grew at an annual average rate of 2.1 percent in 1990–95, sped up to 3.1 percent per year in 1995–2000, and continued to grow strongly at 3.3 percent from 2000 to 2003. Some of the productivity gains in electronics and appliance stores and nonstore retailers are likely to arise from sources other than simply a pass-through of productivity gains in the production of goods sold, and some of the gains arise from the sale of goods other than high-tech goods. Therefore, the difference between productivity growth for all of retail trade and for retail trade excluding these two industries, 0.7 percent per year on average for 1990–2003, is likely to be an overstatement of any effect from the pass-through of gains from manufacture of high-tech goods.

Productivity growth among retail trade industries was lowest in food and beverage stores (NAICS 445), at 0.5 percent, and for motor vehicle and parts dealers (NAICS 441), at 1.7 percent, over the 1990–2003 period. The food and beverage store industry experienced the lowest growth in output, 0.4 percent, of the 12 retail industries.[25] It has experienced notable changes of various types over this period. One change was a movement toward superstores (some of which are classified as part of NAICS 452, general merchandise stores) and toward convenience stores (some of which are operated in combination with gasoline stations and are classified in NAICS 447). There has been growth of specialized retailers that carry extensive lines of organic products or various high-end products (or both), but do not stock many standard food and beverage products, along with growth of specialized services in these and other stores. Certain measurement issues that Oi discusses arise for these industries, but it is unknown to what extent they trade off against each other.[26] For instance, on the one hand, if there is more in-store labor used to produce high-quality specialty products such as fresh prepared foods, measured productivity might decline. On the other hand, new, lower cost retailers may provide lower quality services (such as not packing up the purchases or having longer waits for check-out) in ways that are not captured in the output measures.

Motor vehicle and parts dealers experienced the third lowest output growth of the retail industries over the study period, 3.1 percent per year on average. Over this period, automobiles became more highly computerized, and reliability generally improved. In addition, service departments increasingly used computer diagnostic equipment to detect needed repairs.

Comparison of alternative price deflators for retail trade. Beginning in 2000, BLS began introducing monthly PPIs for various retail trade industries. For products for which the PPI program determines that margin prices exist and are meaningful,

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Table 3. Output per hour in retail trade industries, average annual rates of change, 1990–2003

[In percent]

NAICS	Industry	2003 employment (in thousands)	1990–2003	1990–1995	1995–2000	2000–2003
44, 45	Retail trade	15,866	3.4	2.6	3.9	4.1
441	Motor vehicle and parts dealers	1,975	1.7	1.6	2.0	1.4
442	Furniture and home furnishings stores	597	3.9	3.1	4.2	4.8
443	Electronics and appliance stores	544	15.6	14.2	14.9	19.1
444	Building material and garden equipment and supplies dealers	1,242	3.6	2.7	4.2	4.1
445	Food and beverage stores	2,953	.5	−.9	.4	2.8
446	Health and personal care stores	981	2.6	−.1	3.8	5.1
447	Gasoline stations	905	2.6	3.3	1.4	3.6
448	Clothing and clothing accessories stores	1,391	5.3	5.6	5.7	4.4
451	Sporting goods, hobby, book, and music stores	727	3.7	2.9	5.4	2.0
452	General merchandise stores	2,827	4.7	4.2	5.4	4.2
453	Miscellaneous store retailers	1,112	4.1	4.8	4.3	2.5
454	Nonstore retailers	613	10.4	7.5	13.2	10.3

the retail trade output concept is margins.[27] The approach taken is to capture the margin price of an individual product. The margin price is found by taking the selling price and subtracting the purchase price of the last shipment received (less all rebates and allowances) for the specific good.[28]

As an example of procedures consider food stores, a very large industry and one of the first retail industries for which PPIs were published. Development of PPIs requires specific decisions on the underlying output concept. The PPI views food stores as providing all of the marketing functions necessary to allow customers to make unit purchases of items rather than being required to buy in bulk. Typically, consumers cannot gain access to these products directly from manufacturers or wholesalers. Basic functions of retailers involve standardizing or grading, storing and transporting, buying, risk bearing, financing, selling, and product planning. Storage functions include displaying inventory in the store for customers to purchase. Storage functions also include maintaining supplies housed elsewhere or obtaining a constant flow from suppliers (or both). The PPI program identified a minority of items within this industry as cases in which retail priced items, not margin prices, are measured because further processing is performed by the seller. A baked good that is made on the premises is an example of an item that does not have a margin price. The PPI program, based on its investigation of the industry, recognized that the CPI is measuring something quite different than the margin price and did not expect that PPIs and CPIs would move together.

CPIs are not developed for specific retail trade industries, but rather for products. Implicit price deflators for various retail trade industries based primarily on CPIs are available from the BLS industry productivity program, however. These deflators are derived by dividing current dollar sales in the industry by the industry output index, and they represent selling prices in the industry. Table 4 presents these implicit price deflators along with annual average PPIs for retail industries where PPIs are published. Of the 39 observations on annual price changes where both price measures are available, the PPI increases faster (or falls less) than the implicit price deflator in 30 cases (77 percent). Both series demonstrate volatility, although volatility of the PPIs seems somewhat greater. The different behavior of the two price series implies that application of selling prices to deflate gross margins is not appropriate. It is not possible to assess how a completely margin-based output measure would compare with the sectoral output measure without taking the next step, which is to develop an actual data series on gross margins and deflate it, using the new PPIs. BEA had asked for margin-based PPIs and, as noted earlier, they will be exploring their use for the national accounts.

International comparisons

International comparisons of industry labor productivity involve issues such as classifying industries, measuring output, and measuring labor input. The exclusion of eating and drinking places from retail trade makes the NAICS definition more similar to retail trade as defined by the International Standard Industrial Classification (ISIC) system, in which retail trade (division 52), excludes restaurants. Under ISIC, however, retail trade includes repair of personal and household goods, which is excluded from the NAICS and SIC definitions of retail trade. The other classification changes from NAICS to SIC may work in the direction of making the U.S. system and ISIC more dissimilar.

Although alternative conceptual definitions of output were discussed earlier, there are other issues that affect the comparability of real output measures for various countries, even when the concept is the same. They include valuation, that is the

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Table 4. Annual percent changes in retail trade Producer Price Indexes and Implicit Price Deflators, 2000–03

NAICS	Industry	Producer Price Index			Implicit Price Deflator		
		2000–2001	2001–2002	2002–2003	2000–2001	2001–2002	2002–2003
44111	New car dealers	3.4	5.4	2.6	–0.1	1.5	4.0
44121	Recreational vehicles dealers	–	–	–2.2	.8	–1.5	–2.2
441222	Boat dealers	–	–	5.5	–	–	–
4413	Automotive parts, accessories and tire stores	–	–	3.3	3.0	1.8	1.2
443130	Camera and photographic supply stores	–	–6.1	21.3	–	–	–
445	Food and beverage stores	5.6	3.5	3.7	2.9	1.6	1.7
445110	Grocery stores	5.5	3.4	3.8	2.9	1.6	1.7
4453	Beer, wine, and liquor stores	–	.6	3.3	2.6	2.1	1.3
44611	Pharmacies and drug stores	–	9.8	3.7	3.8	3.3	1.8
446130	Optical goods stores	–	4.9	4.2	3.2	.6	.2
446191	Food supplement stores	20.7	5.7	6.5	1.4	.4	1.3
447	Gasoline stations	–	–	–19.0	–1.5	–4.1	11.6
448310	Jewelry stores	–	3.7	.6	.0	–2.8	[1]–3.2
448320	Luggage and leather goods stores	–	–9.7	1.2	–	–	–
451110	Sporting goods stores	–	3.5	–2.6	–1.6	–2.0	–1.2
451120	Hobby, toy, and game shops	–	–7.9	9.1	–4.1	–5.3	–6.1
451130	Sewing, needlework, and piece goods	–	–4.2	.3	–.2	–.4	–2.4
451211	Book stores	–	–1.0	6.4	–	–	–
453110	Florists	–	2.2	.8	2.9	.0	–.9
453210	Stationery stores	–	7.0	8.3	–3.1	–3.8	–4.6
453220	Gift, novelty, and souvenir shops	–	–.7	–1.0	.5	–1.0	–2.4
454113	Catalog and mail-order houses	–	2.9	–.7	–	–	–
454210	Automatic merchandising machine operators	–	1.0	3.9	3.3	1.9	2.2
45431	Fuel dealers	–	–5.6	7.8	1.1	–8.9	18.4

[1] The implicit deflator is for NAICS 4483, jewelry, luggage and leather goods stores; jewelry stores account for about 94 percent of industry sales.

NOTE: All industries in the retail trade sector for which Producer Price Indexes are published for the time period are included. Dash indicates data not available.

use of basic prices versus market prices.[29] They also include the use of base-year versus chained price index formulas. Another important issue is the extent of quality adjustment, particularly the use of hedonic techniques. To the extent that hedonic or other quality adjustment procedures used by one country capture more of the quality improvement in an industry's output than do the procedures used for another country to which it is being compared, some of the difference in measured productivity may be due to measurement procedures. Robert Gordon made this point in assessing the higher measured productivity growth for the United States than for European countries since 1995.[30] In sum, though, he concluded that the main source of the relatively strong U.S. performance has been the information and communication technology-using industries of wholesale and retail trade, and he discussed various characteristics of the U.S. economy that contributed to that strong performance.

In assessing industry productivity change for the United States, we prefer the sectoral output concept, as noted earlier for the case of retail trade. For a number of years, BLS has regularly published comparisons of manufacturing labor productivity change across countries, and for that series we use value-added output (from BEA). A practical reason is that these data are more readily available. In addition, there are considerations, such as differences among countries in the extent of vertical integration of industries, that may make value added a better concept for international comparisons of labor productivity, at least for some industries such as manufacturing. For international comparisons of productivity, comparable measures of hours changes also are needed.[31]

BLS currently is investigating the possibility of developing international comparative series on productivity change for selected service sector industries. Retail trade is a likely candidate.

All of the differences in concepts and methods that affect comparisons of productivity change across countries would affect comparisons of productivity levels. In fact, the differences discussed in this study are likely to be much more significant for comparisons of levels. In addition, as each country measures industry output in its own currency units, a common unit of measure is needed in order to make comparisons among countries. Market exchange rates are not suitable. What is needed are purchasing power parities, which are the number of foreign currency units required to buy goods and services for the foreign country equivalent to what can be bought with one unit of

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currency of the base country. Although purchasing power parities are available for gross domestic product from the Organisation for Economic Co-operation and Development (OECD), these parities are developed for comparing expenditures made by consumers, business, and government for goods and services, not for comparing value added by industry. Parities have not been developed for the purpose of comparing value added by industry. We have not explored options for constructing a common unit of measure specifically for any industry, including retail trade.

There are other reasons as well to be very cautious in making levels comparisons of labor productivity. One concerns interpretation of the results. As an extreme example, consider the validity of comparing output per hour in an automobile assembly plant with output per hour in a corner bakery. Of course, the former would have far higher output per hour due to far higher capital services inputs, but what does that mean? It would largely reflect differing use of capital services and intermediate inputs. Comparisons of output per hour across countries have the same problem, because countries differ greatly in their industry composition. Although comparisons of multifactor productivity levels would not have this particular problem, there are likely to be measurement issues affecting comparability of capital services measures, where they exist. And measures of hours levels also suffer from comparability issues. Because there is considerable interest in international hours comparisons, BLS is studying the comparability of hours measures for various countries.

ALTHOUGH RETAIL TRADE is an industry that generally is viewed as more amenable to measurement than are many service sector industries, there are major conceptual challenges. Issues concerning what is meant by output in this industry are noted throughout the article. From the discussion on alternative output concepts, this article concludes that sectoral output is, in theory, the desirable concept for measuring productivity change for retail trade. Because of various data limitations, it seems useful to analyze the various U.S. measures that are available, however. U.S. productivity trends for the retail trade sector and its component industries are presented and discussed. For purposes of comparing productivity trends across countries, the use of value-added output measures may be preferable. □

Notes

[1] For trade and most other service sector industries, gross output is measured as total shipments. For manufacturing and a few other industries, gross output is measured as total shipments to other industries less inventory change. For a few industries, output is a physical quantity measure.

[2] The value of sectoral output is $p_O O$, and so forth. In practice, output quantities generally are constructed from values and prices.

[3] Walter Oi, "Retail Trade in a Dynamic Economy," unpublished paper presented at the Brookings Institution Workshop on productivity measurement in the services sector, September 2000, p. 15.

[4] Oi, "Retail Trade in a Dynamic Economy," p. 4.

[5] According to Oi, "Retail Trade in a Dynamic Economy," the gap between estimates of gross margin and value added for retail trade widened slightly over the 1983–97 period.

[6] Oi, "Retail Trade in a Dynamic Economy," also argues that data should be disaggregated by store format, at least chain versus independent, and by breadth of output line.

[7] Jack E. Triplett and Barry P. Bosworth, *Productivity in the U.S. Services Sector: New Sources of Economic Growth* (Washington, DC, The Brookings Institution, 2004), ch. 8, discuss the pros and cons of use of sales versus gross margins, and provide additional references.

[8] In this case, labor productivity would be expected to rise using the sectoral output concept and might either rise or fall using the gross margins concept.

[9] For additional discussion, see Oi, "Retail Trade in a Dynamic Economy."

[10] *Annual Benchmark Report for Retail Trade and Food Services*: January 1992 Through February 2004 *Current Business Reports*, BR/03-A (U.S. Census Bureau, March 2004), on the Internet at **www.census.gov/prod/2004pubs/br03-a.pdf** (visited July 13, 2005).

[11] In general, the historical consumer price data used are research series CPIS.

[12] Counts of new vehicles sold are based on Ward's Automotive data. Counts of used cars sold in new car dealer industries (NAICS 441110) are from National Automobile Dealers Association (NADA) data. The service and parts segment of the industry measure is based on detailed service department current dollar sales from NADA, deflated using CPIS. Indexes for the three industry segments are aggregated into an output index for new car dealer industries using base year employment weights based on NADA data.

Beginning with release of data for 2004, BLS will revise its procedures to construct output data for new car dealers based on the same data sources and methodology used for the other retail trade industries.

[13] BEA calls this series "gross output;" a term which we do not use in this article in order to avoid confusion.

[14] First, sales of services and parts installed (for example, services provided on new cars by car dealers) are included in output. Second, BEA adds its own estimates of retail sales taxes and excise taxes, rather than use the Census Bureau estimates of taxes. Third, own account software and own account construction are added. Fourth, BEA makes adjustments for misreporting, misfiling, and nonemployers.

Figures reported in this article are based on data available as of June 2, 2005.

[15] Marcel P. Timmer, Robert Inklaar, and Bart van Ark, "Alternative output measurement for the U.S. retail trade sector," *Monthly Labor Review*, July 2005, pp. 39–45.

[16] Figures reported in this article are based on data available as of June 2, 2005.

[17] For an analysis of the NAICS reclassification and of industry productivity trends under NAICS, see Lisa Usher, Matthew Russell, and

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Paul Takac, "Industry productivity trends under the North American Industry Classification system," *Monthly Labor Review*, November 2004, pp. 31–42.

[18] As noted earlier in the article, the BLS sectoral output data are on a NAICS 2002 basis. The BEA NAICS data are on a NAICS 1997 basis.

[19] See for instance, Triplett and Bosworth, *Productivity in the U.S. Services Sector.*

[20] BLS also produces productivity and related measures for all four-digit industries in retail trade and, where possible, for five- and six-digit industries. Those data are available upon request by contacting the Division of Industry Productivity Studies by e-mail: dipsweb@bls.gov or by calling 202-691-5618.

[21] For additional discussion of trends in retailing, see Mark Seiling, Brian Friedman, and Mark Dumas, "Labor productivity in retail trade," *Monthly Labor Review*, December 2001, pp. 3–14. This article presents productivity trends from 1987–99 using SIC-based data.

[22] Computer hardware, software, and supplies accounted for 42.0 percent of sales in the electronics and appliance stores industry (NAICS 443) and for 19.0 percent of industry sales in the nonstore retailers industry (NAICS 454) in 1997. Together, sales in these two industries accounted for 92.2 percent of all retail sales of this merchandise line.

[23] See, for instance, Triplett and Bosworth, *Productivity in the U.S. Services Sector*. Or see Timmer and others, "Alternative Output Measurement."

[24] BLS does not have productivity data for all the components of electronics and appliance stores (NAICS 443) that would be needed to undertake this exercise at a lower level of detail.

[25] Output data are available on the Internet at **ftp://ftp.bls.gov/pub/special.requests/opt/dipts/outin.txt** (visited June 2, 2005).

[26] Oi, "Retail Trade in a Dynamic Economy."

[27] This discussion of PPI procedures is based largely on an unpublished "Industry Synopsis" prepared prior to beginning pricing of the industry. A shorter discussion, "Retail Trade Industries in the PPI," was published in the *PPI Detailed Report* (Bureau of Labor Statistics, July 2000). If a meaningful margin price does not exist, such as for some deli items or baked goods made on the premises, the net sales price is captured.

PPI uses the term "margin prices;" these prices are appropriate for deflating what we have termed, "the value of gross margin output," that is, sales minus the cost of goods purchased for resale.

[28] Although it was recognized that the national accounts define the margin price as the selling price of a good in the retail market less the cost of replacing the good in the store's stock, it was determined to be infeasible to operationalize that definition.

Also, discounts are taken into account and quality adjustment procedures are used.

[29] Basic price is what the producer actually receives. Therefore, it excludes indirect business taxes and transportation costs, which are included in the market price.

[30] Robert Gordon, "Why Was Europe Left at the Station When America's Productivity Locomotive Departed?" NBER Working Paper 10661 (Cambridge, MA, National Bureau of Economic Research, August 2004).

[31] For a discussion of issues in measuring hours, see Lucy P. Eldridge, "Hours Measures for Productivity Measurement and National Accounting," paper prepared for the Paris group, September 2004, available on the Internet at **www.insee.fr/en/nom_def_met/colloques/citygroup/2004_meeting_papers.htm**, item d. "Substantive papers for session 3," United States (visited July 13, 2005).

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Alternative output measurement for the U.S. retail trade sector

An experimental alternative estimate of real output in retail trade, based on double deflated margins might be a viable methodology for measuring retail trade output, but important data issues need to be resolved and further research is necessary

Marcel P. Timmer,
Robert Inklaar,
and
Bart van Ark

One of the main features of the resurgence in U.S. labor productivity growth after 1995 is the strong contribution by both wholesale and retail trade. In fact, the productivity performance of these sectors is the foremost reason why the American economy grew so much faster than the European economy over the past decade.[1] Naturally, this has attracted attention to the way in which output and productivity in the trade sector is measured in the United States and Europe.[2]

There is no consensus on how to measure output in retail trade for the purpose of productivity measurement. Many productivity studies, including BLS studies in the *Review*, use real sales per hour worked as an indicator of labor productivity growth.[3] Using sales volume as an indicator for real trade output assumes that there is a one-to-one relationship between the number of products sold and the trade services delivered. For example, if an automobile dealership sells twice as many cars, it is assumed to deliver twice as many trade services. This assumption may of course be criticized from a statistical viewpoint. For example, with the more intensive use of quality-adjusted price indexes for the deflation of sales values, the resulting sales volume is not such a correct proxy for trade services anymore. Nowadays, this problem is most visible when one measures computer sales. For example, nominal sales of the electronic and appliance stores (NAICS 4431) grew on average at 5 percent per year during 1995–2002. The prices of these products, about half of which are computers, declined on average at an annual rate of 12 percent due to dramatic technical improvements. As a result, sales volume grew by a phenomenal 17 percent annually. But, as pointed out by Jack E. Triplett and Barry P. Bosworth: "Electronic stores are in the business of selling boxes that they obtain from the manufacturer...An index that combines the improvements within the box with changes in the number of boxes bears little relationship to the actual activities of the retail store."[4] In the remainder of this article, we call this the "inside-the-box" effect.

An alternative way of measuring retail output, which may circumvent the inside-the-box effect, at least conceptually, is to make a clear distinction between the products sold by a retailer and the retail services delivered. Retailers are seen as supplying services through storing and displaying a selection of goods in convenient locations and making them conveniently available for customers to buy. The goods purchased are not treated as part of the intermediate consumption needed to supply these services, when they are resold with only minimal processing such as grading, cleaning, packaging, and so forth. The difference between the value of the goods sold and the value of the goods that would need to be purchased to replace them is called the margin value. This margin concept of trade output is used in the System of National Accounts which underlies the construction of the national accounts around the world.[5]

To measure productivity growth, the measures of current margins will need to be converted into

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volume measures of margin. The first way to do this is by deflating current margins by a margin price index which is directly observed. Recently, BLS has introduced a new initiative to measure margin prices in its Producer Price Index program by surveying the difference between the sales price of a specific item and its acquisition cost. However, so far, these measures cover only a limited number of trade industries and years.[6] The second way is to apply a double deflation technique, that is, to use sales prices and purchase prices to construct an estimated margin price. Indeed if prices of goods purchased and goods sold are measured separately with indexes that use the same techniques for quality adjustment, double deflated measures of the real margin will not suffer from the inside-the-box problem.

However, although most national statistical offices within the Organisation for Economic Co-operation and Development (OECD) use margin-based output in current prices, as yet, few statistical offices actually deflate margin values to derive margin volumes. Instead they use, as indicated earlier, sales volumes as a proxy for margin volumes. Why do statistical offices not use double-deflated measures of retail trade output in practice? An important practical reason is that price data of purchases of goods for resale is scarce and generally not available at a sufficiently detailed level. Moreover, when purchased goods account for a large share of total sales, and when the reliability of the price indexes for purchased goods is not very high, the estimate of the volume of the margin, which is a residual, can become highly erratic.

In this article, we attempt double deflation of retail output on an experimental basis. Admittedly, data availability is far from perfect and various assumptions need to be made in order to be able to derive double-deflated measures of trade margins. But our results show that the approach should not be ruled out beforehand. The new estimates allow us to assess the difference between the growth in real sales and real margins. We stress that the real margins approach is not the only possible concept of trade output when measuring productivity. As mentioned by Marilyn E. Manser, productivity measurement requires the most general framework of data possible so that various approaches can be tried and compared.[7] But given the increasing questions about the current methodology of using real sales for productivity measurement, it is worthwhile to also pursue research into the alternative of double deflation and indicate areas for further data improvements. Although the double deflation approach may be relevant for the entire trade sector, we focus on the retail trade sector as this sector has attracted the most attention in studies of U.S. economic growth and because data for this sector are more abundant than those for the wholesale sector.

Double deflation

For double deflation of retail margins, two sets of prices are needed: retail sales prices and retail purchase prices. The main problem is the derivation of purchase prices. In exhibit 1, we provide a stylized view of the flow of goods through various purchase channels. Retailers still purchase "goods for resale" mainly through wholesalers (for example, 68 percent of total purchases in the United States in 1997). But increasingly, the wholesale sector is bypassed and goods are acquired directly from domestic and foreign manufacturers.

For each merchandise line, the change in retail purchase prices (p_C^R) can be calculated as a weighted average of changes in wholesaling sales prices (p_S^W), producer prices (p^D), and import prices (p^I) as follows:

$$\dot{p}_C^R = v_R^W \dot{p}_S^W + v_R^I \dot{p}^I + v_R^D \dot{p}^D \qquad (1)$$

with $\dot{p}_i$ denoting a price change and v_R the share in total retail purchases of wholesaling, imports, and domestic production respectively. Domestic producer prices can be derived from BLS, *Producer Price Indexes*. Import prices can be derived from BEA, *End Use Import Price Indexes*. Unfortunately, no data are available on wholesale sales prices. But an estimate of wholesale sales prices can be made using the domestic producer and import prices and information on the shares of imports in wholesale purchases. To this end, we need to assume that changes in wholesale sales prices ($\dot{p}_S^W$) are proportional to changes in wholesale purchase prices ($\dot{p}_C^W$). The sensitivity of our results for this assumption is discussed as:

$$\dot{p}_S^W = \dot{p}_C^W = v_W^I \dot{p}^I + v_W^D \dot{p}^D \qquad (2)$$

with v_W^I and v_W^D the share of imports and domestic production in total wholesale purchases. Substituting (2) in (1), we can express the change in the purchase prices of goods for resale faced by the retailers in terms of producer and import prices only as follows:

$$\dot{p}_C^R = \left(v_R^I + v_R^W v_W^I\right) \dot{p}^I + \left(v_R^D + v_R^W v_W^D\right) \dot{p}^D \qquad (3)$$

The weights are given by the retail purchase share of the sum of the direct and indirect (though wholesale) purchases of domestic produce and imports. There are no data available on the share of imports in wholesale purchases (v_W^I) or on the share of imports bought directly by retailers in all retail purchases ($v^I{}_R$). Therefore, we assume that the share of imports in wholesale purchases and the share of imports in retailers' purchases not made through wholesalers are equal to the total import share in total purchases v^I :

$$v^I = v_W^I = \frac{v_R^I}{1 - v_R^W} \qquad (4)$$

In parallel, a similar assumption is made for domestic production. Substituting (4) in (3) and using the identity that

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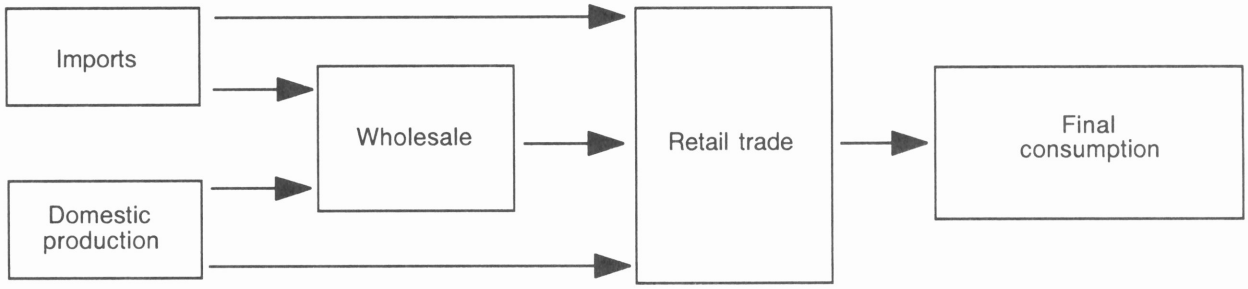
Exhibit 1. Simplified flow of goods between trade and production sectors



$v^D = (1 - v^I)$, we can derive the change in the retail purchase price as:

$$\dot{p}_C^R = v^I \ \dot{p}^I + (1 - v^I)\ \dot{p}^D \qquad (5)$$

The share of imports in total purchases of each type of good is obtained from BEA *1997 import matrix*, under the assumption that the share of each merchandise line in total purchases equals the share of each merchandise line in total consumption. Retail purchase prices are derived for each merchandise line by matching a producer price index and an import price index to each final consumption good category, such as food and clothing. This was done for about 150 products.

Margin prices and volume

Retail purchase prices for merchandise lines given by (5) are aggregated to a retail industry and combined with total margins (M) and sales (S) to construct retail margin prices ($\dot{p}_M^R$). For a particular retail industry, sales prices are given by:

$$\dot{p}_S^R = \frac{M^R}{S^R}\dot{p}_M^R + \left[1 - \frac{M^R}{S^R}\right]\dot{p}_C^R \qquad (6)$$

so that margin prices can be implicitly derived by:

$$\dot{p}_M^R = \frac{S^R}{M^R}\left(\dot{p}_S^R - \left[1 - \frac{M^R}{S^R}\right]\dot{p}_C^R\right) \qquad (7)$$

The productivity program derives retail industry sales prices from the detailed price index series of the Consumer Price Index Research Series for the 1987–2002 period. We combine these with data on sales and margins at current prices from the annual *Census of Wholesale Trade* and the *Census of Retail Trade*, covering the 1993–2002 period. The combined data set contains 20 retail industries. In this article, results are given for 12 aggregated three-digit industries using Törnqvist aggregation procedures.

Table 1 compares retail sales prices, purchase prices derived using equation (5), and the implicit margin prices derived using equation (7). Looking first at the purchase prices, one can see that average annual growth in the 1993–2002 period is 0.4 percent at the aggregate retail level. However, purchase prices declined in four retail industries. In sporting goods, hobby, book and music stores (NAICS 451) purchase prices declined by 0.5 percent per year. The major part of purchases by this industry consists of imports, and prices for those goods fell by 0.7 percent. Miscellaneous store retailers (NAICS 453) also benefited from declining purchase prices through imports. Purchase prices of nonstore retailers (NAICS 454) and especially of electronics and appliance stores (NAICS 443) declined at a much faster pace, mainly because of price declines in domestic goods. The price decline in the latter industry was mainly due to declining prices of computers and peripherals, which made up 19 percent and 42 percent of purchases respectively, and for which domestic producer prices declined by 34 percent.

By comparing the sales price in column 1 with the purchase price in column 2, one can also trace whether the final customers benefited from slow growth or declines in purchase prices. At the aggregate level, retail sales prices grew 0.5 percent annually, which was slightly faster than purchase prices. But at the industry level, price changes varied strongly. Sales prices were growing slower than purchase prices for 7 out of 12 industries. In clothing stores (NAICS 448), furniture stores (442), general merchandising (452), and miscellaneous retail stores (453) sales prices grew slower than

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Table 1. Sales, purchase, and margin prices growth, U.S. retail industries 1993–2002

NAICS97	Industry	Sales prices	Purchase prices	Purchase price contribution		Share of imports in total purchases (percent)	Implicit margin prices
				Domestic products	Imports		
44–45	Retail trade	0.5	0.4	0.7	–0.3	26	0.6
441	Motor vehicle and parts dealers	.8	.8	.7	.2	24	.4
442	Furniture and home furnishings stores	.1	1.0	1.1	–.2	25	–1.1
443	Electronics and appliance stores	–10.6	–12.7	–8.4	–4.3	51	–4.3
444	Building material and garden equipment and supplies dealers	.0	.3	.4	–.1	59	–.6
445	Food and beverage stores	2.2	1.0	1.0	.0	7	5.5
446	Health and personal care stores	2.3	1.5	1.5	.0	32	4.3
447	Gasoline stations	2.4	2.9	2.6	.3	6	.6
448	Clothing and clothing accessories stores	–1.8	.3	.1	.1	60	–4.7
451	Sporting goods, hobby, book, and music stores	–.9	–.5	.2	–.7	63	–1.5
452	General merchandise stores	–.2	.4	.5	–.1	38	–1.7
453	Miscellaneous store retailers	–1.1	–.6	–.1	–.5	50	–1.8
454	Nonstore retailers	–3.3	–4.4	–2.7	–1.6	36	–2.1

SOURCES: Sales prices are from the BLS, Office of Productivity and Technology; import prices are from the Bureau of Economic Analysis (BEA) Import Price Indexes; domestic prices are from the BLS Producer Price Indexes; import share is from the BEA 1997 import matrix; otherwise authors' own calculations. Sales shares by merchandise line from Census Bureau. Double-deflated margin prices are calculated (using equation 7 in the text) using margin-to-sales ratio from Annual Retail Trade Census, and authors' own calculations.

purchase prices by at least 0.5 percent per year. For example, purchase prices for clothing stores grew by 0.3 percent, whereas sales prices declined by 1.8 percent per year. However, declines in purchase prices of electronic stores were not completely passed on to the customer. In food stores, sales prices increased much faster (2.2 percent) than purchase prices (1.0 percent).

Using equation (7), we can derive margin prices. These prices reflect the implicit price of the trading service, rather than the sales price of the good sold. The last column in table 1 shows that margin prices grew slowly at the aggregate level and in line with sales and purchase prices. But the change in margin prices varies across the various retail industries. Margin prices increased by 4 percent or more in food stores (445) and health and personal care stores (446). But in most retail industries, margin prices declined between 1993 and 2002. In five industries, margin prices declined by a range between 1.1 and 2.1 percent, compared with two industries that experienced price declines of more than 4 percent (clothing stores, NAICS 448 and electronics retailing, NAICS 443).

An appropriate application of the double-deflation method requires that prices for both sales and purchases are corrected for quality changes to the same extent.[8] For most goods, both the CPI, and the PPI and IPP use standard quality adjustment procedures, so one can probably assume that this condition holds. The difference is likely to be greatest where hedonic techniques are used for the index of sales prices, but not for purchase prices. This is currently the case for many clothing types and certain consumer electronics and household appliance products (other than computers and peripherals). For those consumer products, the CPI, not the PPI and IPP, is based on hedonic adjustment methods. One may expect that this should lead to an upward bias in the margin price index, but this is not necessarily the case. For example, for apparel consumer price indexes, a BLS study found no significant bias in the nonhedonic-based sales price series compared with the hedonic ones. Both upward and downward discrepancies were found for various apparel categories, which almost cancelled out at the aggregate.[9] Electronics and appliance stores (NAICS 443) is a special case. For computers and peripherals, the CPI and the PPI and IPP are based on hedonic adjustment techniques. But given the fact that we could only match sales and purchase prices of one merchandise line (computers and peripherals as a whole), the estimate of the margin price in electronics and appliance stores as a whole should still be treated with caution. Further information on the differences in quality-adjustment methods between CPI on the one hand, and PPI and IPP on the other is needed before conclusive remarks on this issue can be made.

Using the margin prices for the deflation of the current margin value, a comparison can now be made between real sales and real margin growth. Although the former measures the volume of sales, the latter measures the changes in the volume of trade services delivered. At the aggregate retail level, we find no substantial difference between the two measures of retail output. During the 1993–2002 period, real margins and real sales in retailing grew at almost 5 percent per year. (See table 2.) But again, differences are substantial for individual retail industries. According to the double-deflated margin concept, output growth in the electronics stores is

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Table 2. Growth of real sales and real margins of U.S. retail industries, 1993–2002

NAICS	Industry	Real growth		
		Sales	Margins	Difference
44–45	Retail trade	4.8	4.8	0.0
441	Motor vehicle and parts dealers	5.6	5.9	.3
442	Furniture and home furnishings stores	5.3	6.9	1.6
443	Electronics and appliance stores	17.4	10.7	–6.7
444	Building material and garden equipment and supplies dealers	6.2	7.3	1.2
445	Food and beverage stores	.6	–1.0	–1.6
446	Health and personal care stores	5.0	2.7	–2.3
447	Gasoline stations	2.1	3.1	.9
448	Clothing and clothing accessories stores	5.3	8.8	3.4
451	Sporting goods, hobby, book, and music stores	5.6	6.7	1.1
452	General merchandise stores	6.1	6.2	.2
453	Miscellaneous store retailers	6.8	6.9	.1
454	Nonstore retailers	11.1	9.5	–1.6

NOTE: Real margins are calculated using double-deflated margin prices from table 1.

SOURCE: Table 1, Annual Retail Trade Census, and authors' own calculations.

still high, but much lower than that suggested by sales volumes (10.7 percent instead of 17.4 percent per year). This is because the rapid decline of computer sales prices is partly offset by a similarly rapid decline in prices of the same computers purchased by the electronics stores. Also, in food stores (NAICS 445) and health care stores (NAICS 446), margin-based output grew slower than real sales. But in the other nine retail industries, real margin growth was faster than real sales growth. The difference is biggest in clothing stores (NAICS 448), furniture stores (NAICS 442), building material stores (NAICS 444), and sporting goods, hobby, book, and music stores (NAICS 451). Margin-based output growth in clothing stores is now growing at the highest rate of all retail industries, except for nonstore retailers and electronics retailing, whereas, on basis of sales volume, clothing only ranked eighth out of 12 retail industries.

Caveats

It needs to be stressed that the output estimates based on double-deflated margins presented in this article are of an experimental nature, and require a careful assessment of potential (systematic) errors. One of the reasons for national statistical offices to avoid double deflation in obtaining the volume of the margin for distributive trade industries is that all possible measurement errors in both sales and purchases prices will end up in the margin prices. As a result, double-deflated margin prices are more sensitive to price measurement errors than sales prices. Retail industries can be more susceptible to this problem than other industries as margin-to-sales ratios can be rather low. In table 3, we provide an indication of the severity of this problem by showing the coefficient of variation of the annual growth rates of real sales and real margins over the 1993–2002 period. As was to be expected, the volatility of real margins is higher than the volatility of real sales in all industries, in particular, in food stores and gasoline stations, but only marginally so in furniture stores, clothing stores, and miscellaneous stores. Interestingly, in some industries, the volatility of real margins is actually lower than the volatility of real sales in other industries.

An important potential measurement error in our procedures is that we allocate all the change in margin prices to retailing, thereby ignoring the role of changes in wholesale, transport, and tax margins. The latter two will only have small effects, but ignoring the change in wholesale margins might potentially have a bigger impact.[10] Table 4 indicates the share of retail and wholesale margins in the total trade margins on sales by retail industries. The share of wholesale margins in total margins vary from about one-seventh in the case of clothing stores (NAICS 448), miscellaneous stores (NAICS 453), and nonstore retailers (NAICS 454) to about one-quarter in most other industries. On average, wholesale margins make up less than a quarter (22 percent) of the total margin on consumer goods. As explained earlier, we needed to assume that the change in purchase and sales prices in the wholesale sector were the same. So if, for example, wholesalers have managed to bring down their margin prices more than their purchase price, our estimates of retail margin price changes are upwardly biased. This bias will depend on the share of the wholesale margin in total margin as given in table 4, times the difference in wholesale purchase and margin prices. Without data on wholesale sales prices, this issue cannot be resolved.

Another weakness is the way by which we had to allocate producer and import price indexes to products sold by retail industries. Although indexes are allocated at a relatively detailed level, matching is based on comparatively concise product descriptions, so mismatches cannot be ruled out. We

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Table 3. Coefficient of variation of annual growth of real sales in U.S. retail industries, 1993–2002

NAICS97	Industry	Sales	Margins
44–45	Retail trade	0.4	1.0
441	Motor vehicle and parts dealers	.6	2.3
442	Furniture and home furnishings stores	.5	.5
443	Electronics and appliance stores	.3	1.7
444	Building material and garden equipment and supplies dealers	.4	.9
445	Food and beverage stores	2.0	4.3
446	Health and personal care stores	.3	1.5
447	Gasoline stations	1.2	6.8
448	Clothing and clothing accessories stores	.5	.5
451	Sporting goods, hobby, book, and music stores	.5	.7
452	General merchandise stores	.2	.6
453	Miscellaneous store retailers	.7	.8
454	Nonstore retailers	.4	.8

SOURCE: Data from table 2, growth of real sales and real margins, and authors' own calculations.

have not been able to come up with a measure of the potential severity of this problem. More detailed producer price and import price indexes might alleviate this problem.

Other potential measurement errors in our procedures stem from assumptions concerning the shares of goods categories in purchases. Due to data limitations, we assume that the share of imports in purchases of each category in a particular retail industry is equal to the share of imports in total consumer demand for this category. Mismeasurement due to these assumptions about shares will probably only have a modest impact on our results. For example, if the import share for products sold by food stores (NAICS 445) were twice our estimated share (14 percent instead of 7 percent—see table 1), the purchase price would rise by 0.9 percent instead of 1.0 percent. In general, as long as price changes are modest, errors in the measurement of shares will only result in small errors in purchase prices.[11]

Concluding remarks

In this article, we have argued that at times of rapid changes in retail formats, improvements in the quality of distributive services and in the quality of goods sold, conventional measures of trade output using the growth of real sales are

Table 4 Average share of retail and wholesale margins in total retail sales, 1993–2002

NAICS97	Industry	Total trade margin share in retail sales	Total trade	
			Share of retail margin (in percent)	Share of wholesale margin (in percent)
44–45	Retail trade	32.8	78	22
441	Motor vehicle and parts dealers	23.7	74	26
442	Furniture and home furnishings stores	52.9	81	19
443	Electronics and appliance stores	36.0	74	26
444	Building material and garden equipment and supplies dealers	37.0	76	24
445	Food and beverage stores	31.8	82	18
446	Health and personal care stores	40.8	75	25
447	Gasoline stations	28.5	74	26
448	Clothing and clothing accessories stores	48.4	86	14
451	Sporting goods, hobby, book, and music stores	49.7	76	24
452	General merchandise stores	37.0	72	28
453	Miscellaneous store retailers	49.6	86	14
454	Nonstore retailers	50.2	87	13

SOURCES: Wholesale margins are attributed to retail industries based on the product composition of wholesale sales by industry from the 1997 Census, merchant wholesalers margin to sales ratios from the Annual Census of Wholesale Trade, and the share of wholesale sales to retailers from the 1997 census.

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becoming increasingly questionable. Sales-based output measures confounds the two types of quality improvements mentioned earlier. Using an experimental approach, we constructed alternative estimates of trade output based on double-deflated margins. This alternative measure suffers less from the inside-the-box effect as long as both sales and purchases prices are corrected for quality changes to the same extent. At the aggregate level of the retail sector and in many specific retail industries, output growth measures based on real margins are not radically different from those based on real sales. But for example, output growth in clothing stores appears to be much higher when measured on the basis of double-deflated margins, whereas output growth in food and beverage stores is much less. Importantly, output growth in electronics and appliance stores based on double-deflated margins was found to be still high, but much lower than growth of real sales.

It should be stressed that the estimates in this article are of an experimental nature. There are important data issues to be resolved before our estimates can be treated as a genuine alternative to the present real sales-based estimates. For example, the increasing complexity of discount practices put a high demand on the data, and may be a reason in favor of a direct measurement of margin prices rather than through our double-deflation approach. Separation of retail and wholesale margins is complicated due to the lack of wholesale sale prices. In addition, none of the current methods discussed here is able to deal directly with the actual improvements in service quality in retail industries.[12] However, this article has shown that double deflation is a viable methodology for measuring retail trade output and deserves further research. □

Notes

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[1] See, for example, Bart van Ark, Robert Inklaar, and R. H. McGuckin, "ICT and productivity in Europe and the United States, Where do the differences come from?" *CESifo Economic Studies*, vol. 49, March 2003, pp. 295–318.

[2] See, for example, *The EU Economy 2004 Review*, European Economy no. 6 (Luxembourg, European Commission, Office for Official Publications, 2004).

[3] See Christopher Kask, David Kiernan, and Brian Friedman, "Labor productivity growth in wholesale trade, 1990–2000," *Monthly Labor Review*, December 2002, pp. 3–14 and Mark Sieling, Brian Friedman, and Mark Dumas, "Labor productivity in the retail trade industry, 1987–99," *Monthly Labor Review*, December 2001, pp. 3–14.

[4] See Jack E. Triplett and Barry P. Bosworth, *Productivity in the U.S. Services Sector. New Sources of Economic Growth*, ch. 8 (Washington, DC, The Brookings Institution, 2004), p. 240.

[5] The Bureau of Economic Analysis (BEA) produces the National Income and Product Accounts (NIPA) for the United States. The BEA uses the margin concept as the concept for retail industry output.

[6] See Triplett and Bosworth *Productivity in the U.S. Services Sector*, 2004 and Marilyn E. Manser, "Productivity measures for retail trade: data and issues," *Monthly Labor Review*, July 2005, pp. 30–38. Some services, such as service shops of automobile dealers, provide directly priced services which can be surveyed as well.

[7] Manser, "Productivity measures for retail trade: data." See also Walter Oi, "Productivity in the Distributive Trades: The Shopper and the Economies of Massed Reserves," in Zvi Griliches, ed., *Output Measurement in the Service Sector* (Chicago, University of Chicago Press, 1992); B. T. Ratchford, "Has the productivity of retail food stores really declined?" *Journal of Retailing*, vol. 79, issue 3, 2003, pp. 171–82; and Triplett and Bosworth, *Productivity in the U.S. Services Sector*, for a discussion about various output and productivity measures in trade industries.

[8] See Jack E. Triplett, "High Tech Industry Productivity and Hedonic Price Indices," in OECD, *Industry Productivity. International Comparison and Measurement Issues*, OECD Proceedings, Paris, 1996, pp. 119–42.

[4] See Paul Liegey, "Apparel price indexes: effects of hedonic adjustments," *Monthly Labor Review*, May 1994, pp. 38–45.

[10] Ignoring transport margins is not a major problem as transport margins only represent a small share of personal consumption expenditure. Not taking taxes into account is potentially more serious: sales and excise taxes have been rising at about 5 percent per year between 1993 and 2002. Still, the potential impact on our results is limited: taxes that represent 7 percent of the total sales value, and increase at about 5 percent per year, add 0.35 percent to sales prices on annual basis.

[11] We also have to assume that shares of product categories in total sales are representative of their shares in total purchases. In the case where margins differ by product within a particular retail industry, the share of a product in purchases will not be equal to its share in total sales. For example, if margins on computers are smaller than on other products sold by electronic and appliances stores, we underestimate the share of computers in the purchases price index. Given the fact that computer prices decline faster than prices of other products sold by this retailing industry, we probably underestimate the price decline of purchases. It is possible to perform some ad hoc sensitivity analysis but, as mentioned before, we have no formal way to evaluate these potential measurement errors.

[12] See, for example, Ratchford, "Has the productivity of retail food stores really declined?"

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Evaluating BLS labor force, employment, and occupation projections for 2000

In 1989, BLS first projected estimates for the year 2000 of the labor force, employment, and occupations; in most cases, the accuracy of BLS projections were comparable to estimates from naïve extrapolated models

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The purpose of any evaluation of economic forecasts is to find the sources of the errors and to improve future forecasts. The errors may result from internal procedures, assumptions, or methods, and from external inputs.[1] Moreover, because the forecasts are intended to be used for some function or purpose, the evaluation should pose questions that determine how well the predictions fulfilled this intended purpose.

Thus, for a forecast evaluation to be valuable, it must pose the right questions that need to be addressed. This is true whether the forecasts are short-term macroeconomic predictions or the long-term BLS projections of labor force, employment, and occupation trends. However, an evaluation of these BLS long-term projections poses three methodological issues that usually are not encountered in analyses of short-term macroeconomic forecasts. First, no other organization made projections of these variables. Consequently, there is no benchmark for judging the BLS forecasts. Second, these projections are long-term rather than the short-term macroeconomic forecasts that have been evaluated in the past. Thus, the questions that must be addressed in this evaluation can differ from those addressed in the macro forecasts. Finally, this is a one-time forecast—that is, the evaluation is concerned with the BLS projections for a *single* year, 2000—while most forecast evaluations have examined multiple forecasts.

This article evaluates the labor force, employment by industry, and occupation projections that BLS made in 1989 for the year 2000.[2] While these forecasts have already been evaluated individually,[3] it is possible to both ask additional questions that were not addressed in those studies and to use evaluation methodologies different from those employed previously. In addition, this article, whenever possible, uses the same methodologies to evaluate the projections of all three of these variables.

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Methodological issues

Because there are no other forecasts that are comparable to the BLS projections, it is necessary to construct a benchmark for the projections of each variable. In each case, BLS projections are compared with similar data obtained from the forecasts of a benchmark. The benchmarks that were selected all use data that were available at the time when BLS projections were prepared. In actuality, the benchmarks are naïve models such as: (1) projecting the latest available information; or (2) predicting that the change over the forecast period is equal to that observed over the previous time interval, which is of the same length as the forecast period.[4]

Because the projections that are being analyzed in this article were prepared in 1988, the forecast period is 12 years in length. Consequently, the change from 1976 to 1988 was used as the basis for this benchmark.

At a minimum, the BLS projections should be more accurate than the forecasts of these naïve models.

Long-term projections vs. short-term forecasts. The questions that are appropriate for evaluating

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the short-term forecasts have been examined in detail,[5] but the questions that should be asked in analyzing longer run projections have not been given the same degree of attention. Because BLS projections primarily focus on long-run trends, the questions asked and the statistics used in evaluating these forecasts should be related to the primary emphasis of the forecast. Thus, the two *basic* questions to be asked in evaluating these projections are: (1) Have the trends, especially structural changes, been predicted correctly? (2) Were these forecasts better than those that could have been produced by a benchmark method? Additional questions such as what the sources of the errors were and if the forecasts improved over time can also be posed.

The statistics that can answer these questions include the following: (1) the percentage of components where the direction of change was predicted correctly; (2) dissimilarity indexes that measure the structure of the labor force, and so forth; (3) contingency tables that determine whether the actual and predicted directions of change are related; and (4) Spearman Rank Correlation Coefficients that measure the relationship between the predicted and actual changes of the components of an aggregate forecast. Whenever possible, the same statistical procedures are used to measure the accuracy of the forecasts of all three variables for which BLS made projections.

One-time projections. In most forecast evaluations, the analyst examines a set (time series) of forecasts. It is then possible to discuss the characteristics of the *average* forecast. We cannot do this here, because BLS projections do not constitute a time series of forecasts. Rather, the projections (of the labor force, employment by industry, and of occupational employment) that BLS made in 1989 for the year 2000 are examples of *predictions made for a single end point.* Consequently, there are two reasons why the procedures that have been employed to evaluate sets of forecasts cannot be utilized in this case.[6]

First, the *magnitude* of the forecast error involving predictions made for a single end point may be a function of events that were unique to that particular year. This would be especially true if the target year is a recessionary year and not one in which full employment prevails. Thus, one should not base the forecast evaluation of *this one prediction* on how close the projection was to the outcome.[7] Instead, it is necessary to develop measures and to use benchmarks or standards of comparison that are independent of the magnitude of unique events.

Second, evaluations of a set of forecasts consider the characteristics of the *average* forecast. By focusing on the average forecast, the random shocks that affect particular years are canceled out. In such evaluations, it has been customary to use quantitative measures such as mean absolute error (MAE), mean absolute percentage error (MAPE), or mean square error (MSE) to describe the characteristics of the forecasts.[8]

Because we are evaluating a single forecast, we use measures that are appropriate and that answer the two basic questions listed above. However, the questions asked and the descriptive statistics used in past forecast evaluations were also examined. The analysis is done separately for the forecasts of the three different variables.

Labor force projections

The BLS projection of the labor force for 2000 was based on two estimates obtained from different sources. The Census Bureau provided the population estimates for 2000 for 14 classifications of age and gender. BLS then multiplied these population numbers by its own participation rate estimates for each of these 14 classifications. It then summed the 14 estimates to obtain the overall estimate of the labor force size in 2000. This projection has been evaluated by Howard N Fullerton, Jr.[9]

Exhibit 1 presents some of the questions that were asked in both the original forecast and subsequent evaluation. These include: What is the projected size of the labor force, by age and gender? What is the growth rate of the labor force? What are the participation rates of the various groups? What is the distribution of the total labor force by age and gender? The error measures that were used in evaluating these projections are also presented in exhibit 1. They include the direction of error, the absolute and percentage error, the dissimilarity index, and so forth. The limitations of these questions and statistics are also noted.

Both the questions and measures used to evaluate the projections are relevant and appropriate. The major shortcoming is that there are no benchmark standards with which the forecasts can be compared. In addition, there are several other questions that can be posed in these evaluations.

Was the labor force projection accurate relative to the benchmark? Table 1 indicates that 1989's projection of the 2000 labor force overestimated the actual data by 0.2 million persons. Fullerton, however, also indicates that this small error was the result of offsetting errors made by both the Census Bureau (in underestimating the population) and by BLS (in overestimating the participation rates). In order to evaluate this projection, we calculated three alternative estimates of the 2000 labor force. The first uses the actual 2000 population in combination with the predictions of the participation rates made in 1989. This estimate can be used to measure the magnitude of the error that is entirely attributable to the misestimates of the participation rates. This projection is 3.8 million too high. (See table 1).

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The second alternative is based on the actual 2000 population and the 1988 participation rates. This measure can be used as a standard with which the participation rates forecasted in 1989 can be compared. This projection is 1.9 million too low. Thus, if the actual population had been known in 1989, the naïve procedure of using the 1988 participation rates would have yielded a more accurate forecast than one using participation-rate estimates projected for 2000.

In 1989, however, BLS would not have known the actual 2000 population. Consequently, as a benchmark or standard of comparison, a projection is presented based entirely on data available at the end of 1988—that is, Census Bureau population projections available in 1989 and the 1988 participation rates. This estimate of the labor force is 134.8 million, yielding an error of 6.1 million. Comparing the BLS projection made in 1989 with this estimate clearly shows that the BLS estimate of the 2000 labor force published in 1989 was more accurate than the standard of comparison. (See table 2.)

The same analysis was applied to the projections of the male and female components of the labor force. We again conclude that the BLS estimates were more accurate than the standard of comparison. Because these results hold for all

Exhibit 1. Questions about the labor force forecasts

Questions	Accuracy measure	Problem with questions and/or accuracy measure	New question and/or measure
What is the size of the total labor force?	Absolute error, percentage direction of error	Does not distinguish between census population errors and participation rate errors, standard of comparison	How much of total labor force error is the result of participation rate errors? Standard of comparison: 1988 participation rates
What is the size of the labor force by gender and so forth?	Mean absolute percentage error, direction of error	Same as total labor force	Same as total labor force
What is the growth rate of the total labor force?	Error in percentage points	Same as total labor force	How much of the error in the growth rate forecast is the result of participation rate errors? Standard of comparison: 1988 participation rates
What are the participation rates of total labor force? Of men? Of women? By age and sex?	Error in percentage points, or absolute error/participation rate; mean absolute percentage error.	Does not indicate whether direction of change in participation rate was predicted, no standard of comparison.	Were the directions of change in the participation rates accurately predicted? Standard of comparison: number of changes accurately predicted versus predictions by chance (binomial, p=0.5)
What was the distribution of the labor force by age and sex?	Dissimilarity Index	No standard of comparison	Dissimilarity Index: comparison with naïve model

Table 1. Alternative estimates of the 2000 labor force and its rate of growth

Labor force	Actual	1989 BLS estimate	Actual population		Census estimated population, 1988 participation rate (standard of comparison)
			BLS estimated participation rate	1988 participation rates	
Total labor force (millions)	140.9	141.1	144.7	138.2	134.8
Rate of growth	1.2	1.2	1.5	1.1	.9
Male labor force (millions)	75.2	74.3	76.5	76.8	74.6
Rate of growth	1.0	.9	1.1	1.1	.9
Female labor force (millions)	65.6	66.8	68.2	61.7	60.4
Rate of growth	1.5	1.7	1.8	1.0	.8

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Table 2. Participation rates, actual 1988, BLS forecast for 2000, actual 2000 and forecast errors

Group	Participation rates			Forecast error	
	Actual 1988	BLS 2000 forecast	Actual 2000	BLS	Naïve (1988)
Total, 16 and older	65.9	69.0	67.2	–1.8	1.3
Men					
16 years and older	76.2	75.9	74.7	–1.2	–1.5
16 to 19	56.9	59.0	53.0	–6.0	–3.9
20 to 24	85.0	86.5	82.6	–3.9	–2.4
25 to 34	94.3	94.1	93.4	–.7	–.9
35 to 44	94.5	94.3	92.6	–1.7	–1.9
45 to 54	90.9	90.5	88.6	–1.9	–2.3
55 to 64	67.0	68.1	67.3	–.8	.3
65 and older	16.5	14.7	17.5	2.8	1.0
Women					
16 and older	56.6	62.6	60.2	–2.4	3.6
16 to 19	53.6	59.6	51.3	–8.3	–2.3
20 to 24	72.7	77.9	73.3	–4.6	.6
25 to 34	72.7	82.4	76.3	–6.1	3.6
35 to 44	75.2	84.9	77.3	–7.6	2.1
45 to 54	69.0	76.5	76.8	.3	7.8
55 to 64	43.5	49.0	51.8	2.8	8.3
65 and older	7.9	7.6	9.4	1.8	1.5

labor force size estimates, a *fortiori*, the same conclusions apply to the estimates of the various growth rates.[10]

The accuracy of participation rates. Although the BLS projections of the 2000 labor force were more accurate than those of the standard of comparison, they benefitted from offsetting errors. The Census Bureau population estimates were too low, while the participation rates were overestimated. In evaluating these estimates of the participation rates, the following two questions are posed: (1) Did the estimates correctly predict the direction of change between 1988 and 2000? (2) Were these projections of the level of the participation rates more accurate than those generated by a standard of comparison?

There are 14 classifications of the labor force based on age and gender. (See table 2). The direction of change between 1988 and 2000 was projected correctly for 9 of these 14 classifications.[11] Using the binomial distribution with $p = 0.5$, it is possible to test the null hypothesis that this favorable result could have occurred purely by chance. We are unable to reject this hypothesis. As an additional test, we compared the levels of the participation rates observed in 2000 with the following: (1) the ones that BLS projected for 2000; and (2) the 1988 participation rates, which are used as the benchmark. The latter had smaller absolute errors in a majority of the cases. These results indicate that there was room for improving the projections of participation rates.

Measuring structural change: dissimilarity indexes. In order to determine whether the structural changes and major trends that occurred between 1988 and 2000 were predicted accurately, a statistic is used that directly addresses this question. The forecast of the total labor force is an aggregated estimate, and it is important to also examine the disaggregated component predictions. Such an analysis enables one to determine whether the structure of the aggregate has been predicted accurately.

If the aggregate, X, is predicted according to some scenario (for example, full employment), one would want to determine whether the structure is accurate even if the total is wrong. R.A. Kolb and H.O. Stekler developed a procedure for decomposing the total error into two components—where the first measures the scenario discrepancy and the second, the structural error.[12] They calculated the proportion of the aggregate predicted and actual totals that were associated with each of the i components. While their analysis was based on an information content statistic, using dissimilarity indexes would yield the same result.

A dissimilarity index is a statistic that can be used to determine whether one distribution approximates another one. Specifically, it measures the amount by which the forecasted distribution would have to change to be identical to the actual distribution. The formula for the dissimilarity index is:

$$D = 0.5 \sum_i \left| (P_{fi} / P_f) - (P_{ai} / P_a) \right|$$

where P_{fi} is the forecast of the labor force that will be in the

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Table 3. Dissimilarity indexes of labor force projections

Age	BLS projections	Standards of comparison		
		Actual population and—		Census population estimate and—
		BLS participation rate	1988 participation rate	1988 participation rate
Gender, age	1.83	2.02	2.24	2.32
Men, age	1.63	.91	.62	1.37
Women, age	1.91	2.86	2.4	1.32

*i*th group, and P_f is the forecast for the total labor force. Similarly, P_{ai} and P_a are the corresponding actual data. D is bounded in the interval 0 to 100 percent. The smaller the value of D, the smaller the difference is between the predicted and actual distributions—that is, the more accurate the forecast.

The dissimilarity index for the BLS projections was based on the 14 age/gender categories that had been used in 1989 to prepare the estimates for 2000. Similar dissimilarity indexes were constructed for the other distributions that serve as standards of comparison. The values of the various dissimilarity indexes are presented in table 3.

The results are mixed. In some cases, the dissimilarity indexes obtained from the BLS projections are smaller (and thus more accurate) than those of the standards of comparison. In other cases, the opposite results were obtained. However, the dissimilarity index for the actual BLS forecast never exceeds 2 percent for all age/gender categories or for men and women separately. The values of the dissimilarity indexes of the standards of comparison were also around 2 percent, indicating that the BLS projection was comparable to but not superior to these (naïve) benchmark forecasts.

While there is no statistical distribution for the dissimilarity index, the BLS projection substantially predicted the structural changes that occurred in the labor force between 1988 and 2000. On the other hand, similar results were obtained from the naïve models that served as the benchmarks.

Did the forecasts improve? The primary focus of this analysis is on the projections that were published in 1989 for 2000. While there had been a second set of projections for industry employment by industry and occupation, BLS actually made five forecasts of the 2000 labor force. These were published in 1987, 1989, 1991, 1993, and 1995.[13] It is thus possible to determine whether the accuracy of the forecasts improved as the forecast horizon declined.

The results are mixed. (See table 4.) The forecasts of the labor force that were made in 1988 (and published in 1989) were more accurate than those made in any other year. Thus, they did not improve with the passage of time—that is, as the forecast horizon became smaller. On the other hand, as the forecast horizon declined, so did the errors in the forecasts of the participation rates.

Employment by industry

The questions asked about the employment-by-industry projections are presented in exhibit 2. These questions were discussed in both the original forecast and in the subsequent

Table 4. Errors in labor force and participation rate projections for 2000, various horizons

Projection	Errors made in—				
	1986	1988	1990	1992	1994
Labor force	−1.5	.2	1.5	.7	−.6
Participation rate:					
All	.6	1.8	1.5	1.0	−.2
Men	.0	1.2	1.3	.6	−.7
Women	1.3	2.4	1.8	1.4	.4

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Exhibit 2. Questions about the employment forecasts

Questions	Accuracy measure	Problem with questions and/or accuracy measure	New question and/or measure
How many people will be employed in each industry?	Percentage error, mean absolute percent error	No standard of comparison; gives equal weight to large and small industries	Standard of comparison: rates of growth equal to previous rates of growth; mean weighted percent error
Which industries would have highest (lowest) employment growth rates?	Compare the number of industries projected to grow the fastest (slowest) with those that did grow fastest (slowest).	No standard of comparison; no analysis of all industries' projected and actual growth rates.	Standard of comparison: forecasts of fastest (slowest) growing industries from naïve model; Spearman rank correlation coefficient for all industries
What is the distribution of employment by industry?	Dissimilarity Index	No standard of comparison	Standard of comparison: same share as in 1988 and shares based on previous growth rates
What were the sources of the industry employment forecasts errors?	Model simulations	None	—

evaluation of that forecast. These include: What is employment by major industry group? What is employment by industry? Which industries are expected to grow the fastest? In which industries will employment decline? These are all questions that involve structural change and should be evaluated correspondingly. The measures that previously have been used in the evaluations and some of the limitations of these measures are also listed in exhibit 2.

Mean absolute percent error. How accurate were the employment-by-industry projections? The accuracy of the employment-by-industry projections has conventionally been evaluated by calculating the mean absolute percent error (MAPE). Again, an evaluation of a single prediction should not be based on the magnitude of the error regardless of whether it is measured in absolute or percentage terms. Nevertheless, we use this statistic in order to note that it can be calculated in two ways: (1) the simple average of the absolute percentage error of the forecast for each industry; or (2) a weighted average of the industries' errors, with the weights equal to the industry's share of employment.[14] The second measure reduces the weight of small industries, which might have large percentage errors.

The standard of comparison was a naïve forecast. It was assumed that the employment growth rate in each industry between 1988 and 2000 would be the same as the one that had occurred between 1976 and 1988. The mean absolute percent errors (MAPEs) of the BLS projections and of the naïve model are presented in the following tabulation:

	BLS		*Naïve*	
	Unweighted	*Weighted*	*Unweighted*	*Weighted*
Major industry sectors	11.9	7.4	11.8	7.2
174 disaggregated industries ...	18.8	13.6	24.6	14.4

They are divided into several categories: unweighted and weighted MAPEs for the 12 major industry sectors and the 174 disaggregated industries. For the 12 major sectors, there is very little difference between the errors of the BLS projections and those of the naïve model used as the standard of comparison. The MAPEs of the BLS projections for the 174 disaggregated industries are less than those of the naïve standard of comparison. This is especially true for the unweighted MAPEs.

The BLS projections correctly predicted the direction of employment change in 135 of 174 industries. The naïve model made a larger number of mistakes, 49. Because most industries grew during this period, a better measure is to de-

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termine whether industries in which employment was expected to grow rapidly (or slowly), actually experienced this type of growth. (This is done later where rank correlation coefficients and contingency tables are used.)

Measuring structural change: dissimilarity indexes. As with the labor force projections, we use dissimilarity indexes to determine whether the structural employment changes that occurred were forecast accurately. These dissimilarity indexes were for the 12 major industry sectors as well as for the 174 different smaller industries—and for the benchmarks used as the standards of comparison. Two naïve models serve as benchmarks. The first assumes that each industry's share of total employment would be the same in 2000 as it had been in 1988. The second assumes that each industry's share (s_i) of total employment would increase from 1988 to 2000 by the same amount as occurred between 1976 and 1988—that is, $s_{i2000} = s_{i1988} + (s_{i1988} - s_{i1976})$.

The results are mixed. The following tabulation shows the dissimilarity indexes for BLS projections and naïve model estimates:

		Dissimilarity indexes for naïve models	
	BLS projections	*No change from 1988*	*Same change 1988–2000 as 1976–88*
12 major industries	3.75	6.03	3.60
174 industries	6.89	10.38	8.09

The dissimilarity indexes associated with the BLS projections are smaller than those derived from the naïve standard that assumed the shares of industrial employment would remain constant between 1988 and 2000. In comparison with the naïve growth model, the BLS projections were better for the disaggregated industries, but slightly worse for the 12 major groupings. These results suggest that the BLS projections were able to capture the structural changes that occurred in industry employment as least as well as would have been obtained from a simple extrapolation.

Structural change: Spearman rank correlations. Another way to determine whether the projections captured the structural changes that occurred is to compare the forecasted growth rates of industrial employment with the actual growth rates. The original projections had listed the 20 industries expected to have the largest employment growth rates and the 20 industries that were expected to show the largest employment declines.[15] Only 12 of the industries that were expected to experience the fastest growth actually did so. It is difficult to interpret these results without a standard of comparison. The naive extrapolation model is again used as the benchmark. That model actually identified 13 of the 20 industries that had the highest employment growth rates. (See table 5). Similar results were obtained for the 20 slowest growing industries. BLS and the naïve model identified 8 and 7 of those 20 industries, respectively. Consequently, we conclude that the BLS projections of the fastest and slowest growing industries were not substantially different from the forecasts generated by a naïve model.

Rather than merely focus on the 20 industries in the two tails of the distributions, the Spearman rank correlation coefficient between the predicted and actual growth rates for all 174 industries were also calculated. This coefficient was 0.64 for both the BLS projections and the naïve extrapolation model. This result indicates that both sets of forecasts were able to forecast many of the structural changes that occurred, but there was no difference between the BLS projections and the extrapolations obtained from a naïve model.

Structural change: contingency table. The Spearman rank correlation coefficient provides an overall assessment of the rankings of the predicted and actual employment growth rates. Another method for demonstrating the same result is to construct a contingency table. After the employment growth rates of the 174 industries had been ranked, they were divided into quintiles, with the 35 industries having the highest growth rates placed in the first quintile, and so forth. This procedure was applied to both the projected and actual growth rates, and a 5X5 contingency table was constructed. We then tested the null hypothesis that there was no relationship between the predicted and actual growth rates of these quintiles. A similar procedure was used to evaluate the forecasts of the naïve extrapolation model. The contingency tables are presented in table 6. While the null of independence is clearly rejected, less than half of the observations of both the BLS and naïve model projections lie on the main diagonal (indicating that the forecasted and actual growth rates were in the same quintile). However, a majority of the remaining observations lie in the adjacent cells. These results are consistent with those obtained from the Spearman rank correlation coefficients.

The main result is that the BLS projections do not differ significantly from those obtained from the naïve extrapolative model.[16]

What were the sources of error in the employment projections? Arthur Andresassen used computer simulations and factor analysis to determine why the employment errors oc-

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curred.[17] He showed that there were two basic errors that offset each other. The low projection of gross domestic product was offset by inaccurate employment-output relationships. Our analysis did not attempt to replicate this analysis.

Occupational employment

The questions discussed in the occupation projections and in the subsequent evaluation are analogous to those of the

Table 5. Rank of the 20 industries exhibiting the highest employment growth rates, 1988–2000 by rank of BLS and naïve model projections

Industry	Rank		
	Actual	BLS Projection	Naïve model projection
Computer and data processing services	1	9	2
Personnel supply services	2	10	1
Health services	3	3	5
Amusement and recreation services	4	39	44
Miscellaneous transport services	5	16	28
Residential care	6	11	3
Individual and miscellaneous social services	7	14	13
Research and testing	8	38	12
Water and sanitation	9	6	22
Security and commodity brokers and exchanges	10	19	6
Commercial sports	11	94	69
Credit agencies and investment offices	12	1	15
Motion pictures and video tape rentals	13	92	42
Miscellaneous business services	14	22	17
Job training and related services	15	43	10
Child daycare services	16	131	29
Oil and gas field services	17	4	95
Personal services	18	5	9
Miscellaneous equipment rental and leasing	19	2	4
Air transportation	20	104	8

Table 6. Relationship between ranks of predicted and actual growth rates of employment by industry quintiles, BLS projections and Naïve model

Projected growth	Actual growth				
	1–35	36–70	71–105	106–140	141–174
BLS projection[1]					
1–35	18	13	2	1	1
36–70	9	12	10	2	2
71–105	5	5	11	7	7
106–140	1	4	10	12	8
141–174	2	1	2	13	16
Naïve model[2]					
1–35	21	11	3	0	0
36–70	6	12	6	4	7
71–105	6	7	11	7	4
106–140	1	4	11	10	9
141–174	1	1	4	14	14

[1] $x^2 = 93.61$
P = 0
[2] $x^2 = 92.22$
P = 0

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Exhibit 3. Questions about occupational forecasts

Questions	Accuracy measure	Problem with questions and/or accuracy measure	New question and/or measure
How many people will be employed in each occupation?	Absolute error, absolute percent error	No standard of comparison; gives equal weight to large and small occupations	
Which occupations will grow fastest?	Compare the number of occupations projected to grow the fastest with those that did grow fastest; distribution of growth rates by growth adjectives	No standard of comparison; analysis of all occupations' projected and actual growth rates	Spearman rank correlation coefficient; standard of comparison not possible due to definitional changes
Which occupations will have the largest job growth?	Compare the number of occupations that were projected to have largest job growth with those that did	No standard of comparison	Standard of comparison not possible due to definitional changes
What is the distribution of employment by occupation?	Absolute percent error	No standard of comparison	Dissimilarity Index: comparison with naïve model
What were the sources of errors?	Model simulations	None	—

employment by industry estimates. (See exhibit 3.) In presenting the projections, the analysis included the occupation's share of employment; the occupations that are likely to grow the fastest or decline; and the occupations that are likely to have the largest number of new jobs. The evaluation by Andrew Alpert and Jill Auyer considered the absolute percent change of actual and projected occupational employment; the numerical change in these categories; and the share of employment of each occupational group. Again, these are appropriate measures, but it is possible to use additional measures and compare them with a standard of comparison. The benchmark is the naïve model in which it is assumed that the growth in each occupation between 1988 and 2000 was equal to the growth rate that occurred between 1976 and 1988.[18]

The following tabulation shows MAPEs for BLS projections and naïve model estimates:

	BLS		*Naïve*	
	Unweighted	*Weighted*	*Unweighted*	*Weighted*
Major occupations....	5.86	5.29	13.8	11.8
338 disaggregated occupations....	45.2	15.0	–	–

The mean absolute percent errors of the projections of the major occupational groups are substantially smaller than those of the naïve model. Moreover, the BLS projections correctly predicted the direction of change for eight of the major occupational groupings, with agriculture being the exception.[19] On the other hand, the unweighted MAPE for the 338 smaller occupational groups is substantial (45.2 percent), indicating that there were substantial errors in many of these occupational groups. Because the weighted MAPE is smaller (15.0 percent), the larger percentage errors occurred in the smaller occupational groups.

Structural change: dissimilarity indexes. As with the projections of the other two variables, dissimilarity indexes are used to determine whether the structural employment changes that occurred were forecast accurately. These dissimilarity indexes were for the 9 major occupational groups, as well as for the 338 different occupational classifications and for the benchmarks used as the standards of comparison. For the major occupational groups, two naive models are used as benchmarks. The first assumes that each occupation's share of total employment would be the same in 2000 as it had been in 1988. The second assumes that each occupation's share (s_i) of total employment would increase from 1988 to 2000 by the same amount as occurred between 1976 and 1988—that is, $s_{i2000} = s_{i1988} + (s_{i1988} - s_{i1976})$. There is only one naive benchmark for the 338 occupa-

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Table 7. Relationship between ranks of predicted and actual growth rates of occupational employment, quintiles, BLS projections and actual growth

Projected growth	Actual growth				
	1–67	68–135	136–203	204–271	272–338
1–67	32	14	8	7	6
68–135	12	17	16	15	8
136–203	12	17	15	13	11
204–271	8	13	19	16	12
242–338	3	7	10	17	30

tions because the definition of some of the occupations changed, and, thus, it was not possible to construct the comparable growth rates. Consequently, for these 338 occupations, we only used the first of these naïve models—that is, the distribution of occupational shares would be the same in 2000 as it had been in 1988.

The results in the following tabulation indicate that the BLS projections captured the structural changes that occurred in occupational employment better than the naïve models did. The dissimilarity indexes associated with those projections were substantially smaller than those of the naïve models. Shown below are the dissimilarity indexes for BLS projections and the naïve models.

		Dissimilarity indexes for naïve models	
	BLS projections	*No change (2000=1988)*	*Same change 1988–2000 as 1976–88*
Major occupations....	2.12	3.12	4.53
338 disaggregated occupations....	7.64	8.43	–

Structural change: Spearman rank correlation. Similar to the employment-by-industry projections, the BLS estimates listed the 20 occupations that were expected to grow the fastest. Of these 20 occupations, only 6 actually had the fastest growth. Instead of focusing on the occupations that were in the tail of the distribution, we calculated the Spearman rank correlation coefficient between the predicted and actual growth rates for all 338 occupations. That coefficient is 0.43; it is statistically significant, but because there is no comparable benchmark, there is no basis of comparison. We can only note that this Spearman coefficient is substantially less than the comparable coefficient for the employment by industry data.

Structural change: contingency table. In presenting the distributions of the actual and projected growth rates of the 338 occupations, Alpert and Auyer divided them into six growth categories, ranked from declining to growing much faster than average. While they did not test the null hypothesis that there is no relation between the projected and actual growth rates, this hypothesis can be rejected. We also constructed a contingency table (see table 7), but it is based on the quintiles of each distribution rather than on growth categories. The hypothesis that there is no relationship between the projected and actual growth rates is also rejected, but it should be noted that there are many observations that are not on the main diagonal or in the adjacent cells. This result indicates that the projections for many occupations were clearly inaccurate and explains why the Spearman rank correlation coefficient is only 0.43.

What were the sources of error in the occupation projections? Alpert and Auyer identified some of the sources of error in the occupation projections. Some of the errors were attributable to assumptions made about technological changes that were expected to occur between 1988 and 2000. These included increases in automation that did not occur in many occupations, thus accounting for larger increases in employees than was anticipated. In addition, these authors ran simulations to show that in some cases inaccurate staffing patterns were the source of the errors, while in other cases the misestimates could be attributed to the mistakes made in the industry projections. We did not replicate this analysis.

Overall conclusions

This study established a set of procedures for evaluating BLS projections of the labor force, industry employment, and occupational employment. These procedures were then used to evaluate the projections for 2000 that were published in 1989. The projections were compared with benchmarks derived from naïve models. Our results showed that in most cases, the accuracy of the BLS projections were comparable to estimates obtained from naïve extrapolative models. □

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Notes

NOTE: This article was written under contract with the Bureau of Labor Statistics to explore current projection evaluation techniques and to suggest new approaches for effective evaluation of the Bureau's long-term projections of employment. BLS published its own evaluation of the 2000 projections relative to actual outcomes in the October 2003 *Review*. The current paper suggests additional evaluation approaches, including a comparison with what a simple extrapolation would have produced and the use of contingency tables. BLS intends to employ the new techniques suggested here in addition to all of its more traditional evaluation techniques in its examination of future employment projections.

[1] A governing principle of such an evaluation is that the forecaster should not be penalized for external errors nor benefit if the external errors offset the internal mistakes.

[2] See Howard N Fullerton, Jr., "New labor force projections, spanning 1988 to 2000," *Monthly Labor Review*, November 1989, pp. 3–11; Valerie Personick, "Industry output and employment: a slower trend for the nineties," *Monthly Labor Review*, November 1989, pp. 25–41; and George Silvestri and John Lukasiewicz, "Projections of occupational employment," *Monthly Labor Review*, November 1989, pp. 42–65.

[3] See Howard N Fullerton, Jr., "Another look at the labor force," *Monthly Labor Review*, November 1993, pp. 31–40; Andrew Alpert and Jill Auyer, "Evaluating the BLS 1988–2000 employment projections," *Monthly Labor Review*, October 2003, pp. 3–12; and Arthur Andreassen, "An evaluation of the 2000 employment by industry projections," Bureau of Labor Statistics mimeo.

[4] Because the projections that are being analyzed in this article were prepared in 1988, the forecast period is 12 years in length. Consequently, the change from 1976 to 1988 was used as the basis for this benchmark.

[5] H.O. Stekler, "Macroeconomic Forecast Evaluation Techniques," *International Journal of Forecasting*, Vol. 7, 1991, pp. 375–84.

[6] The problem is not due to the length of the forecast horizon because long-run population forecasts have been evaluated using these error measures. Rather, this problem occurs when there are a small number of observations. See Stanley K. Smith and Terry Sinich, "Evaluating the Forecast Accuracy and Bias of Alternative Population Projections for States," *International Journal of Forecasting*, Vol. 8, 1992, pp. 495–508.

[7] However, if a *set* of such *single* forecasts is available, the quantitative measures could then be used to evaluate the set of these predictions. It is thus imperative to also calculate the quantitative statistics so that eventually an entire set of forecasts can be evaluated.

[8] H.O. Stekler (1991) and R. Fildes and Stekler (2002) noted that these error measures are descriptive statistics and do not inform whether the forecasts are "good" or "bad". To make such a judgment, a benchmark is required. It is then possible to determine whether the forecasts being evaluated are more accurate than those generated by the benchmark procedure. In addition, it is desirable to be able to use a statistical test to determine whether the two sets of forecasts are *significantly* different. See H.O. Stekler, "Macroeconomic Forecast Evaluation..."; and R. Fildes and H.O. Stekler, "The State of Macroeconomic Forecasting," *Journal of Macroeconomic Forecasting*, Vol. 24, 2002, pp. 435–468.

[9] Howard N Fullerton, Jr., "Evaluating the BLS labor force projections to 2000," *Monthly Labor Review*, October 2003, pp. 3–12.

[10] The BLS forecast is also more accurate than a naïve model that would have predicted the growth rate from 1988–2000 would be identical to that observed from 1976–1988. That naïve model would have predicted the labor force to grow at an annual rate of 2 percent. See Howard N Fullerton, Jr., "New Labor Force Projections, Spanning..."

[11] The errors occurred in the youngest and oldest age groups of both men and women.

[12] R.A. Kolb and H.O. Stekler, "Information Content of Long-Term Employment Forecasts," *Applied Economics*, 1992, pp. 593–96.

[13] See Howard N Fullerton, Jr., "Labor force projections: 1986 to 2000," *Monthly Labor Review*, September 1987, pp. 19–29; "New labor force projections, Spanning..."; "Labor force projections: the baby boom moves on," *Monthly Labor Review*, November 1991, pp. 31–44; "Another look at the labor force..."; and "The 2005 labor force: growing, but slowly," *Monthly Labor Review*, November 1995, pp. 29–44.

[14] Even though the MAPE is not useful in evaluating a single forecast, this statistic can be used when single forecasts are combined into a set of forecasts.

[15] Valerie Personick, "Industry output and employment..."

[16] This result suggests that extrapolative methods may have been the basis of the BLS projections.

[17] Arthur Andreassen, "An Evaluation of the 2000 Employment..."

[18] This benchmark could only be used for the major occupational groupings because the definitions of the disaggregated groupings have changed.

[19] The naïve model generated identical results.

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High-technology employment: a NAICS-based update

Among high-technology industries—those with a high proportion of scientists, engineers, and technicians—some are projected to grow rapidly; overall, however, this group of industries is expected to continue to grow slowly

Daniel E. Hecker

High technology receives a great deal of attention due to its association with new products and new production processes and its implications for productivity, international competitiveness, overall economic growth, and the creation of well-paying jobs. Numerous studies have resulted in the publication of high-tech rankings of States and metropolitan areas, while State and local governments have established task forces to assess the potential of high technology to stimulate their economies and have developed strategies to lure high-technology firms.[1]

It is important to define the term *high tech(nology)*, both to assess the claims about its effect on the economy and to develop policies and programs. Four articles previously published in the *Review* presented definitions of high-technology industries and occupations and analyzed high-tech employment trends and projections.[2] Because there are a number of methods of identifying high-tech industries, the lists of such industries produced in the literature differ from one another. Using BLS data, this article presents one particular method, lists the resulting industries, discusses employment in those industries, and examines several other approaches. Along with describing employment in high-tech industries in 2002, the article considers employment in 1992, projected employment for 2012, and growth over the 1992–2002 and 2002–12 periods, as well as earnings in high-tech industries and occupations in 2004. The updated list of high-tech industries is based on the 2002 North American Industry Classification System (NAICS), which replaces the Standard Industrial Classification System (SIC) used in earlier articles. The article describes the criterion used to select the industries and, in the final section, examines other selection criteria that were suggested in a March 2004 interagency conference on defining high technology.

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Definitions and data

The term *high tech* has been used broadly to describe not only industries, but also occupations and products. A Congressional Office of Technology Assessment document describes high-technology firms as those "engaged in the design, development, and introduction of new products and/or innovative manufacturing processes through the systematic application of scientific and technical knowledge."[3] The document also points out that high-technology firms typically use state-of-the-art techniques and, in terms of quantifiable resources, devote a "high" proportion of expenditures to research and development (R&D) and employ a "high" proportion of scientific, technical, and engineering personnel. A National Science Foundation report on science and technology resources also refers to the employment of scientists, engineers, and technicians and to measures of R&D activities as "two of the most important parameters of innovation" and uses those two parameters "as surrogates for measuring the broader concept of innovation."[4] Articles in the *Review*, as well as other sources, have used one or both of these input-based criteria to identify high-tech industries. Studies specify thresholds for

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these measures, such as a percentage of total employment in science, engineering, and technician occupations or spending on R&D as a percentage of sales or value added. Industries that exceed these thresholds are identified as high tech.[5] Other studies rely on judgment, generally about output, to identify high-tech industries. For example, the American Electronic Association defines an industry as high tech if it was a "maker/creator of technology."[6] Using the judgment of industry analysts, the Census Bureau identifies high-tech products as those embodying new or leading-edge technologies.[7]

A March 2002 *Review* article by Christopher Kask and Edward Sieber points out that both input-based and output-based methods have advantages and drawbacks.[8] Input-based approaches rest on easily obtainable nonsubjective data, but in the absence of an obvious threshold above which an industry is deemed high tech, the resulting lists must be considered arbitrary. Furthermore, such methods suffer from a failure to take account of the products of an industry and may include industries with products not commonly thought of as high tech (although, of course, an industry using high-tech production methods might be considered high tech even if its output is not). In contrast to input-based definitions, output-based definitions tend to provide lists that match popular conceptions of high tech, but rely on judgments that smack of subjectivity.

In March 2004, the Bureau conducted an interagency seminar to evaluate its most recent methodology for defining high-tech industries, as described in a June 1999 review article.[9] The attendees concluded that many factors contribute to an industry's high-tech nature and that the Bureau should explore all of those factors, including the following:

- high proportion of scientists, engineers, and technicians (science, engineering, and technician occupation intensity), as defined in the Bureau's 1999 study;
- high proportion of R&D employment (R&D employment intensity), as defined in the Bureau's 1999 study;
- production of high-tech products, as specified on a Census Bureau list of advanced-technology products;
- use of high-tech production methods, including intense use of high-tech capital goods and services in the production process.

In addition, it was recommended that the relationship between high-tech industries and productivity growth, discussed in Kask and Sieber's article,[10] be explored for the NAICS-based list of industries.

Due to data and conceptual problems, only science, engineering, and technician occupation intensity was used to develop a list of industries in the analysis that follows. R&D employment intensity was not used, because the Occupational Employment Statistics (OES) survey no longer collects data on R&D employment and because National Science Foundation (NSF) R&D employment data, discussed later in this article, have only limited comparability to Bureau data. Had comparable R&D data been available, industries might have been considered high tech only if they met an R&D criterion as well. This was the approach used in the 1999 BLS study.[11] If better information had been available, other combinations of criteria, as well as alternative lists of high-tech industries, also would have been possible. However, all information available on the high-tech nature of industries, as well as on productivity growth, is tabulated and discussed in this article.

Defining high-technology employment

High-technology occupations are scientific, engineering, and technician occupations, the same group of occupations used to define high-tech industries in this and earlier studies. They include the following occupational groups and detailed occupations: computer and mathematical scientists, Standard Occupational Classification (SOC) 15-0000; engineers, SOC 17–2000; drafters, engineering, and mapping technicians, SOC 17–3000; life scientists, SOC 19–1000; physical scientists, SOC 19–2000; life, physical, and social science technicians, SOC 19–4000; computer and information systems managers, SOC 11–3020; engineering managers, SOC 11–9040; and natural sciences managers, SOC 11–9120. Workers in these occupations need an in-depth knowledge of the theories and principles of science, engineering, and mathematics underlying technology, a knowledge generally acquired through specialized post-high school education in some field of technology leading up to an award ranging from a vocational certificate or an associate's degree to a doctorate. Individuals employed in these occupations are collectively referred to as *technology-oriented workers*. Some technology-oriented workers are engaged in R&D, increasing scientific knowledge and using it to develop products and production processes; others apply technology in other activities, including the design of equipment, processes, and structures; computer applications; sales, purchasing, and marketing; quality management; and the management of these activities.[12]

Data for calculating industries' technology-oriented worker intensity are from the BLS National Employment Matrix, which shows occupational employment by four-digit NAICS industry for 2002.[13] The 2002 staffing patterns in the matrix are based on employment data from the 2000, 2001, and 2002 OES surveys, while earnings are from the May 2004 survey.[14] An industry is considered high tech if employment in technology-oriented occupations accounted for a proportion of that industry's total employment that was at least twice the 4.9-percent average for all industries. With this relatively low threshold, 46 four-digit NAICS industries are classified as high tech.[15] Within that group, three levels of high technology were specified. Level I

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includes the 14 industries in which these occupations accounted for a proportion that was at least 5 times the average or greater and constituted 24.7 percent or more of industry employment. Level II includes the 12 industries in which the high-tech occupations were 3.0 to 4.9 times the average (constituting 14.8 percent to 24.7 percent of total employment), and Level III includes the 20 industries with a proportion that was 2.0 to 2.9 times the average (making up 9.8 percent to 14.7 percent of total employment).[16]

These high-tech industries are a heterogeneous group in terms of production processes and output, covering a broad range of industries. Level I includes the computer and electronic products, aerospace, and pharmaceutical and medicine manufacturing industries; the computer software, Internet, and data processing industries in the information sector; and three professional, scientific, and technical services industries, as shown in table 1. Levels I, II, and III combined cover all four-digit industries within computer and electronic products manufacturing (NAICS 334), as well as merchant wholesalers of professional and commercial equipment and supplies (a category that encompasses wholesalers of computers, software, and some electronic instruments). Levels I, II, and III combined also include all but one of the telecommunications industries within the information sector, four machinery-manufacturing industries, and all but one industry in chemical manufacturing.[17] Finally (but not exhausting the list), included as well are (1) four industries within professional, scientific, and technical services; (2) the Federal Government, except the Postal Service; (3) all three pipeline industries in NAICS 486; and (4) management of companies and enterprises, a category with no equivalent in the SIC.[18] Biotechnology and nanotechnology are not on the list of high-tech industries, because they are not identified as industries in the NAICS. Most biotech companies are located in scientific R&D services or pharmaceutical and medicine manufacturing industries, according to a recent Commerce Department survey.[19] No similar information has been found regarding nanotechnology.

Strictly defined, the preceding industries should be called industries that are technology-oriented-occupation intensive. However, data discussed later suggest that almost all Level-I industries are also R&D intensive and that some in Levels II and III may be as well. In addition, all Level-I goods-producing industries have some products defined as high tech by the Census Bureau, as do some Level-II industries. Because of this supporting evidence—and for brevity—the 46 industries on the list are referred to as high tech. Lists of industries based on criteria other than their proportion of technology-oriented occupations would differ from this one.[20]

Employment in 2002

High-tech industries accounted for 14.4 million wage and salary jobs in 2002, about 11 percent of total nonfarm wage and salary jobs in the economy.[21] (See table 1.) Level-I industries accounted for 5.9 million jobs, 4.5 percent of the total. Level-II industries accounted for 4.5 million jobs, 3.4 percent of the total, and Level-III industries accounted for 4 million jobs, 3.1 percent of the total. About 3.8 million (26 percent) of the 14.4 million jobs in high-tech industries in 2002 were in manufacturing. High-tech manufacturing industries made up nearly a quarter of all manufacturing employment that year. Level-I manufacturing industries accounted for 2.2 million jobs.

Employment trends, 1992, 2002, and 2012. Employment in high-tech industries increased 7.5 percent over the 1992–2002 period, compared with 19.7 percent for the economy as a whole, and accounted for 5 percent of total employment growth. (See table 1.) During the same period, high-tech employment declined from 12.2 percent to 11 percent of total employment. Projections for the 2002–12 period show high-tech employment continuing to grow more slowly than the economy overall, at 11.4 percent compared with 16.5 percent. By 2012, high-tech employment is projected to add 1.6 million jobs, about 8 percent of all projected growth, and account for 10.5 percent of total employment. Growth for Level-I industries, at 23.0 percent from 1992 to 2002 and projected at 15.6 percent from 2002 to 2012, is closer to the total for the economy. Employment change among the 46 high-tech industries varies widely. As the following tabulation shows, most projected growth is in eight service-providing industries, including five computer and related industries:

	Projected change in employment, 2002–12	
Industry	*Number (thousands)*	*Percent*
Computer systems design and related services	635	54.6
Management, scientific, and technical consulting services	406	55.4
Management of companies and enterprises	195	11.4
Software publishers	174	67.9
Merchant wholesalers of professional and commercial equipment and supplies (including computers)	130	19.8
Data processing, hosting, and related services	125	40.8
Wireless telecommunications carriers (except satellite)	99	50.5
Internet service providers and web search portals	91	64.2

All of these industries except management of companies and enterprises also are projected to grow faster than the average for all industries. Twenty of the 46 industries are projected to contract. The largest declines are expected for four Level-I manufacturing industries, as well as one Level-III communications industry:

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Table 1. High-technology employment, 1992, 2002, and projected 2012

[Levels in thousands]

NAICS code	Industry	Employment			Employment change				Median annual wage, May 2004[1]
		1992	2002	2012	Change in level, 1992–2002	Change in level, 2002–12	Percent change, 1992–2002	Percent change, 2002–12	
...	Total nonfarm wage and salary, all industries[2]	109,526	131,063	152,690	21,537	21,627	19.7	16.5	$28,770
...	Total, three levels of high-technology industries	13,415	14,422	16,067	1,006	1,646	7.5	11.4	[3]
...	Level-I industries	4,783	5,883	6,804	1,100	921	23.0	15.6	
3254	Pharmaceutical and medicine manufacturing	225	293	361	68	68	30.2	23.2	43,930
3341	Computer and peripheral equipment manufacturing	329	250	182	–79	–68	–24.0	–27.1	61,830
3342	Communications equipment manufacturing	210	191	201	–19	10	–9.0	5.4	45,520
3344	Semiconductor and other electronic component manufacturing	519	531	452	12	–79	2.3	–14.9	39,210
3345	Navigational, measuring, electromedical, and control instruments manufacturing	549	451	396	–98	–55	–17.8	–12.2	47,960
3364	Aerospace product and parts manufacturing	711	468	386	–242	–83	–34.1	–17.6	51,990
5112	Software publishers	114	256	430	142	174	125.0	67.9	69,880
5161	Internet publishing and broadcasting	16	35	49	19	14	116.1	41.1	53,470
5179	Other telecommunications	16	10	8	–6	–2	–39.2	–21.9	45,470
5181	Internet service providers and Web search portals	39	142	233	103	91	265.3	64.2	52,780
5182	Data processing, hosting, and related services	220	305	430	86	125	39.0	40.8	45,570
5413	Architectural, engineering, and related services	902	1,251	1,306	349	54	38.7	4.3	48,570
5415	Computer systems design and related services	445	1,163	1,798	718	635	161.3	54.6	63,350
5417	Scientific research-and-development services	490	537	573	47	36	9.7	6.7	57,890
...	Level-II industries	4,760	4,528	4,998	–231	470	–4.9	10.7	[3]
1131, 32	Forestry	10	10	10	0	0	.0	4.0	–
2111	Oil and gas extraction	182	123	88	–60	–34	–32.8	–27.8	49,290
2211	Electric power generation, transmission, and distribution	537	436	405	–101	–31	–18.8	–7.1	53,330
3251	Basic chemical manufacturing	246	171	140	–76	–31	–30.8	–18.0	45,970
3252	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	151	114	89	–37	–26	–24.5	–22.6	42,730
3332	Industrial machinery manufacturing	142	132	125	–10	–6	–7.1	–4.7	39,480
3333	Commercial and service industry machinery manufacturing	138	132	141	–6	9	-4.6	6.6	35,940
3343	Audio and video equipment manufacturing	58	42	38	–16	–3	–27.7	–7.7	32,460
3346	Manufacturing and reproducing, magnetic and optical media	44	57	63	13	6	30.5	11.1	35,720
4234	Professional and commercial equipment and supplies, merchant wholesalers	584	659	790	76	130	13.0	19.8	41,770
5416	Management, scientific, and technical consulting services	358	732	1,137	374	406	104.4	55.4	45,610
...	Federal Government, excluding Postal Service	2,311	1,922	1,972	–389	50	–16.8	2.6	[4]
...	Level-III industries	3,8723	4,010	4,265	137	255	3.5	6.3	[3]
3241	Petroleum and coal products manufacturing	152	119	102	–33	–18	–21.8	–14.8	48,340
3253	Pesticide, fertilizer, and other agricultural chemical manufacturing	54	45	35	–10	–10	–17.7	–21.3	39,680
3255	Paint, coating, and adhesive manufacturing	81	72	62	–8	–11	–10.3	–14.7	35,110
3259	Other chemical product and preparation manufacturing	144	112	79	–32	–33	–21.9	–29.4	35,390
3336	Engine, turbine, and power transmission equipment manufacturing	111	100	100	–11	0	–9.6	.2	37,310
3339	Other general-purpose machinery manufacturing	317	288	339	–29	51	–9.0	17.7	35,320
3353	Electrical equipment manufacturing	219	176	180	–43	4	–19.4	2.2	32,520
3369	Other transportation equipment manufacturing	36	40	40	4	0	10.3	.5	34,230
4861	Pipeline transportation of crude oil	10	7	7	–3	0	–27.0	–2.7	52,020
4862	Pipeline transportation of natural gas	42	29	30	–13	1	–31.0	2.1	49,650
4869	Other pipeline transportation	7	5	5	-2	0	–25.7	–7.7	50,570
5171	Wired telecommunications carriers	637	662	600	25	–62	4.0	–9.4	50,940
5172	Wireless telecommunications carriers (except satellite)	48	196	295	148	99	309.8	50.5	38,480
5173	Telecommunications resellers	173	1856	188	13	2	7.6	1.3	49,400
5174	Satellite telecommunications	19	19	17	0	–2	1.6	–10.4	50,780
5211	Monetary authorities, central bank	24	23	23	–1	0	–2.5	.9	40,840

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Table 1. Continued—High-technology employment, 1992, 2002, and projected 2012

[Levels in thousands]

NAICS code	Industry	Employment			Employment change				Median annual wage, May 2004[1]
		1992	2002	2012	Change in level, 1992–2002	Change in level, 2002–12	Percent change, 1992–2002	Percent change, 2002–12	
5232	Securities and commodity exchanges	10	10	10	0	1	–4.0	7.3	$61,620
5511	Management of companies and enterprises	1,623	1,711	1,906	88	195	5.4	11.4	43,400
5612	Facilities support services	68	104	146	36	42	52.9	40.4	28,910
8112	Electronic and precision equipment repair and maintenance	99	105	101	6	–4	6.1	–3.8	32,750

[1] Annual earnings rates are hourly rates times 2,080 hours. Data do not cover the Federal Government or forestry.

[2] See Jay M. Berman, "Industry output and employment projections to 2012," *Monthly Labor Review*, February 2004, pp. 58–79, table 3.

[3] Not calculated.

[4] The average salary for full-time nonpostal Federal employees as of March 31, 2004, was $60,517. (See *Pay Structure of the Federal Civil Service* (U.S. Office of Personnel Management, May 2005), p. 2.)

NOTE: Employment data for 1992 in NAICS 4861, 4862, 4869, 5174, 5232, 1131, and 1132 are estimated. Dash indicates industry not surveyed.

SOURCES: Employment data are from Berman, "Industry output," table 3; National Employment Matrix, 2002–12; and unpublished sources. Earnings data are from the Occupational Employment Statistics Survey.

Industry	Projected change, 2002–12, in— Employment: Number (thousands)	Employment: Percent	Output, average annual rate of change
Aerospace products and parts	–83	–17.6	0.1
Semiconductor and other electronic components	–79	–14.9	1.1
Computer and peripheral equipment	–68	–27.1	24.2
Wired telecommunications carriers	–62	–9.4	4.9
Navigational, measuring, electromedical, and control instruments	–55	–12.2	3.2

Despite the projected employment declines, only 3 of the 46 high-tech industries are anticipated to have output declines; in addition, 7 Level-I computer and communications-related industries have the fastest-growing output among all industries for the 2002–12 period.[22] The following tabulation shows the average annual rate of growth for the 7:[23]

Industry	Rate of growth
Computer and peripheral equipment manufacturing	24.2
Communications equipment manufacturing	10.4
Internet publishing and broadcasting	10.3
Internet service providers and web search portals	10.3
Data processing, hosting, and related services	10.3
Computer systems design and related services	9.0
Software publishers	8.4

High-tech manufacturing industries. Employment in the 20 high-tech manufacturing industries, in total, is projected to decline 7 percent from 2002 to 2012, compared with a 1-percent decline in overall manufacturing. Over the 1992–2002 period, these 20 industries declined 15 percent, as opposed to a 9-percent decline for total manufacturing. Employment in the 6 Level-I high-tech manufacturing industries is projected to decline 9 percent during 2002–12; over the 1992–2002 period, employment in these industries declined 14 percent. The only high-tech manufacturing industry with faster-than-average projected employment growth from 2002 to 2012 is Level-I pharmaceuticals and medicine, which is expected to add 68,000 jobs.

The 5 computer information and computer systems design industries (all Level I), including 4 of the 8 with the most growth (see tabulation on page 59), attracted much attention during the late 1990s. As a group, their employment more than doubled from 1992 to 2002 and is projected to grow 54.6 percent during 2002–12. (See table 2.) Despite its prominence, this group is relatively small, with employment of 1.9 million in 2002, less than 1.5 percent of the total. Nevertheless, without these industries, Level-I employment is projected to decline 3.0 percent, compared with 15.6-percent growth with them. Also, without these industries, total high-tech employment is projected to grow only 4.8 percent, as opposed to 11.4 percent with them. Finally, without the 5 industries, neither Level-I nor total high-tech employment changed much over the 1992–2002 period.[24]

High-tech earnings

A number of studies have stated that high-tech jobs are high-paid jobs.[25] Clearly, that was the case for the industries and occupations in this article. The Occupational Employment Statistics survey collected data on 44 of the 46 high-tech

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Table 2. High-technology employment, 1992, 2002, and projected 2012, in five computer information and computer systems design industries

[Levels in thousands]

NAICS code	Industry	Employment			Employment change			
		1992	2002	2012	Change in level, 1992–2002	Change in level, 2002–12	Percent change, 1992–2002	Percent change, 2002–12
...	Total, three levels of high-technology industries	13,415	14,422	16,067	1,006	1,646	7.5	11.4
...	Level-I industries	4,783	5,883	6,804	1,100	921	23.0	15.6
...	Five computer industries	834	1,901	2,940	1,067	1,039	127.9	54.6
5112	Software publishers	114	256	430	142	174	125.0	67.9
5161	Internet publishing and broadcasting	16	35	49	19	14	116.1	41.1
5181	Internet service providers and Web search portals	39	142	233	103	91	265.3	64.2
5182	Data processing, hosting, and related services	220	305	430	86	125	39.0	40.8
5415	Computer systems design and related services	445	1,163	1,798	718	635	161.3	54.6
...	Total, three levels of high-technology industries, except for five computer industries	12,581	12,521	13,127	–61	606	–.5	4.8
...	High-technology level I, except for five computer industries	3,949	3,982	3,864	33	–118	.8	–3.0

SOURCE: Jay M. Berman, "Industry output and employment projections to 2012," *Monthly Labor Review*, February 2004, table 3; and National Employment Matrix.

industries; all had median earnings greater than the median for all industries in May 2004. (See table 1.) In 5 of the industries, wages were at least twice the median for all industries, and in 21 more industries, wages exceeded the median for all industries by 50 percent to 99 percent. Only in facilities support services were they close to the median for all.

Median earnings in all of the 71 technology-oriented occupations exceeded the median for all workers in May 2004, except for forest and conservation technicians, as shown in table 3. In 6 occupations, earnings exceeded 3 times the median; in 34 more, earnings were twice the median; and in another 17, earnings exceeded the median by 50 percent to 99 percent. Thirteen other occupations, almost all technicians and drafters, had earnings that exceeded the median by less than 50 percent.

In sum, high tech is projected to grow more slowly than the average for all industries, but some high-tech industries, including computer-related services, management and technical consulting, and wireless telecommunications, are projected to grow very rapidly. High-tech manufacturing is expected to decline faster than overall manufacturing; however, output in many high-tech industries is projected to grow rapidly, and most high-tech industries and occupations have high earnings.

Other selection criteria

As noted earlier, there is no single widely accepted criterion for defining high-technology industries; accordingly, the interagency group recommended three criteria for selecting lists of such industries, besides the criterion of technology-oriented occupation intensity. The information that follows may be useful to those desiring to amend the list presented in this article or to those wishing to develop their own list. Both R&D employment intensity and having products on a Census Bureau list of high-tech products were judged to be useful criteria, but due to data problems, neither was used to rank industries in terms of being high tech. For a number of reasons, the R&D data were not comparable to BLS data. As for high-tech products, there are no data showing the proportion these products are of each industry's output, and the list of products provides little information about service industries. Still, both sources can provide information which

- supports the inclusion of specific industries on the BLS high-tech list.
- raises doubts about the inclusion of specific industries on the list.
- suggests that some industries not on the list might nonetheless be considered high tech.

All available information on high-tech industries for all criteria is presented in table 4, which ranks industries by their percentage of employment in technology-oriented occupations in 2002.

The R&D data show (on a company basis—see the more detailed discussion of the data that follows) that almost all Level-I industries have a high R&D intensity. The data also suggest that R&D takes place in some Level-II and Level-III industries, but at a lower intensity than in Level-I industries. (See table 4.) Further, the data suggest that several Level-II and Level-III industries have a low intensity of R&D. Among goods-producing industries, all those at Level I have products on the Census Bureau high-tech list, as do some Level-II, but

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Table 3. Median annual wages of wage and salary workers in technology-oriented occupations, May 2004

SOC code	Occupation	Median wages
...	All occupations	$28,770
11–3021	Computer and information systems managers	92,570
11–9041	Engineering managers	97,630
11–9121	Natural sciences managers	88,660
15–1011	Computer and information scientists, research	85,190
15–1021	Computer programmers	62,890
15–1031	Computer software engineers, applications	74,980
15–1032	Computer software engineers, systems software	79,740
15–1041	Computer support specialists	40,430
15–1051	Computer systems analysts	66,460
15–1061	Database administrators	60,650
15–1071	Network and computer systems administrators	58,190
15–1081	Network systems and data communications analysts	60,600
15–2011	Actuaries	76,340
15–2021	Mathematicians	81,240
15–2031	Operations research analysts	60,190
15–2041	Statisticians	58,620
15–2091	Mathematical technicians	38,460
17–2011	Aerospace engineers	79,100
17–2021	Agricultural engineers	56,520
17–2031	Biomedical engineers	67,690
17–2041	Chemical engineers	76,770
17–2051	Civil engineers	64,230
17–2061	Computer hardware engineers	81,150
17–2071	Electrical engineers	71,610
17–2072	Electronics engineers, except computer	75,770
17–2081	Environmental engineers	66,480
17–2111	Health and safety engineers, except mining safety engineers and inspectors	63,730
17–2112	Industrial engineers	65,020
17–2121	Marine engineers and naval architects	72,040
17–2131	Materials engineers	67,110
17–2141	Mechanical engineers	66,320
17–2151	Mining and geological engineers, including mining safety engineers	64,690
17–2161	Nuclear engineers	84,880
17–2171	Petroleum engineers	$88,500
17–3011	Architectural and civil drafters	39,190
17–3012	Electrical and electronics drafters	43,180
17–3013	Mechanical drafters	43,000
17–3021	Aerospace engineering and operations technicians	52,500
17–3022	Civil engineering technicians	38,480
17–3023	Electrical and electronic engineering technicians	46,310
17–3024	Electromechanical technicians	41,440
17–3025	Environmental engineering technicians	38,550
17–3026	Industrial engineering technicians	43,590
17–3027	Mechanical engineering technicians	43,400
17–3031	Surveying and mapping technicians	30,380
19–1011	Animal scientists	49,920
19–1012	Food scientists and technologists	50,840
19–1013	Soil and plant scientists	51,200
19–1021	Biochemists and biophysicists	68,950
19–1022	Microbiologists	54,840
19–1023	Zoologists and wildlife biologists	50,330
19–1031	Conservation scientists	52,480
19–1032	Foresters	48,230
19–1041	Epidemiologists	54,800
19–1042	Medical scientists, except epidemiologists	61,320
19–2011	Astronomers	97,320
19–2012	Physicists	87,450
19–2021	Atmospheric and space scientists	70,100
19–2031	Chemists	56,060
19–2032	Materials scientists	72,390
19–2041	Environmental scientists and specialists, including health	51,080
19–2042	Geoscientists, except hydrologists and geographers	68,730
19–2043	Hydrologists	61,510
19–4011	Agricultural and food science technicians	29,730
19–4021	Biological technicians	33,210
19–4031	Chemical technicians	38,170
19–4041	Geological and petroleum technicians	40,260
19–4051	Nuclear technicians	59,200
19–4091	Environmental science and protection technicians, including health	35,340
19–4092	Forensic science technicians	44,010
19–4093	Forest and conservation technicians	27,330

NOTE: Data are for all industries except agriculture (minus agricultural services, which are covered) and the Federal Government. Data are not shown for eight "all other" occupation categories.

Annual rates are hourly rates times 2,080 hours.

SOURCE: Occupational Employment Statistics Survey.

no Level-III, industries. There also are four industries that are not on the high-tech list, but that produce high-tech products. However, without information on how large a part they are of industry output, it is not possible to make a case for their inclusion within the high-tech sector.

The data on the use of high-tech capital goods and services in the production process is only partially consistent with the technology-oriented occupation-based list. A list based on such data ranks as high some industries designated high tech, others as very low. Also, some industries that neither are on the high-tech list, nor meet an R&D or high-tech product criterion, nor are mentioned on other lists in the high-tech literature rank high by this standard.[26] Therefore, those data were not considered useful in identifying high-tech industries. The discussion that follows covers each criterion in more detail, as well as the connection between high-tech industries and growth in output per hour.

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Table 4. Ranking of industries by percent of employment in science, engineering, and technician (technology-oriented) occupations in 2002, along with data for other criteria, by industry

NAICS code	Industry	Total employment, all occupations (thousands)	Percent in technology-oriented occupations	R&D scientists and engineers[1,2]		Output on census trade product list[3]	Investment from Level-I industries in 1997[1]		Average annual percent change in output per hour, 1987–2001, 1987–2002, or 1987–2003[4]
				Employment, January 2003 (thousands)	Per thousand employees in R&D-performing companies[1]		Percent	Rank	
	Total, wage and salary workers, all industries[5]	132,279	4.9	1,066.1	65	...	...	...	...
	Level I								
5415	Computer systems design and related services	1,163	60.2	90.8	[7]259	4	73.6	2	–
5112	Software publishers	256	56.4	80.8	245	4	70.6	3	17.2
5413	Architectural, engineering, and related services	1,251	51.5	32.2	104	–	66.3	5	–
5417	Scientific research and development services	537	46.4	50.0	302	1	58.9	7	–
5181	Internet service providers and web search portals	142	43.8	[6]23.3	[6]98	–	[6]55.6	12	–
3341	Computer and peripheral equipment manufacturing	250	42.9	15.1	170	3, 4	57.4	8	24.9
5161	Internet publishing and broadcasting	35	38.7	[6]23.3	[6]98	–	[6]55.6	12	–
3345	Navigational, measuring, electromedical, and control instruments manufacturing	451	34.7	75.9	[7]126	2, 4	43.0	28	3.9
5182	Data processing, hosting, and related services	305	34.3	[6]23.3	98	–	70.0	4	–
3364	Aerospace product and parts manufacturing	468	31.3	32.5	[7]43	8	44.2	27	2.2
3342	Communications equipment manufacturing	191	29.2	[7]40.9	[7]264	4	[6]49.4	19	10.5
3344	Semiconductor and other electronic component manufacturing	531	28.7	73.3	180	3,5,7	22.6	77	20.7
3254	Pharmaceutical and medicine manufacturing	293	28.4	51.8	137	1, 2	39.4	30	.9
5179	Other telecommunications	10	27.7	[6,7]8.5	([6,8])	–	[6]56.7	10	–
	Level II								
2111	Oil and gas extraction	123	21.3	([6,8])	([6,8])	No	7.5	116	2.6
1131, 32	Forestry	10	20.3	....		No	[6]5.1	118	–
3333	Commercial and service industry machinery manufacturing	132	20.0	[6]56.5	[6]72	No	37.2	33	.8
3346	Manufacturing and reproducing magnetic and optical media	57	19.6	[6]4.4	[6]171	4, 7	47.0	24	.6
3251	Basic chemical manufacturing	171	18.9	8.5	54	10	32.3	44	1.4
4234	Professional and commercial equipment and supply merchant wholesalers	659	18.5	[6]134.5	[6]84	–	–	–	13.4
3332	Industrial machinery manufacturing	132	17.9	[6]56.5	[6]72	6	25.2	64	2.4
...	Federal Government, excluding Postal Service	1,922	17.3	–	–	–	–	–	–
5416	Management, scientific, and technical consulting services	732	17.2	[6]8.9	[6]28	–	55.9	11	–
3343	Audio and video equipment manufacturing	42	15.9	[6]4.4	[6]171	No	[6]49.4	19	5.4
2211	Electric power generation, transmission, and distribution	436	15.7	[6]–	[6]2	–	22.8	76	3.1
3252	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	114	15.3	12.8	97	–	40.7	29	2.2
	Level III								
5171	Wired telecommunications carriers	662	14.5	[6,7]8.5	([6,8])	–	[6]56.7	10	5.8
5511	Management of companies and enterprises	1,711	14.3	1.5	66	–	50.7	18	–
4862	Pipeline transportation of natural gas	29	13.5	([6,8])	([6,8])	–	[6]32.4	43	–
5211	Monetary authorities—central bank	23	13.3	[6]18.9	[6]24	–	–		–
5172	Wireless telecommunications carriers (except satellite)	196	13.3	[6,7]8.5	([6,8])	–	[6]56.7	10	6.2
5173	Telecommunications resellers	186	13.2	[6,7]8.5	([6,8])	–	[6]56.7	10	–
5174	Satellite telecommunications	19	13.1	[6,7]8.5	([6,8])	–	[6]56.7	10	–
3353	Electrical equipment manufacturing	176	12.9	[6]14.0	[6]40	No	32.7	42	2.8
3259	Other chemical product and preparation manufacturing	112	12.9	[6]13.9	[6,7]68	No	39.0	31	2.8
3339	Other general-purpose machinery manufacturing	288	12.6	[6]56.6	[6]72	No	29.6	49	2.0
3336	Engine, turbine, and power transmission equipment manufacturing	100	12.3	[6]56.6	[6]72	No	28.7	53	3.5
3255	Paint, coating, and adhesive manufacturing	72	12.2	[6]13.9	[6,7]68	No	35.6	35	1.2
3241	Petroleum and coal products manufacturing	119	12.0	[6,7]4.3	[6,7]20	No	28.0	56	3.2
8112	Electronic and precision equipment repair and maintenance	105	11.5	–	–	–	–		–

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Table 4. Continued—Ranking of industries by percent of employment in science, engineering, and technician (technology-oriented) occupations in 2002, along with data for other criteria, by industry

NAICS code	Industry	Total employment, all occupations (thousands)	Percent in technology-oriented occupations	R&D scientists and engineers[1,2]		Output on census trade product list[3]	Investment from Level-I industries in 1997[1]		Average annual percent change in output per hour, 1987–2001, 1987–2002, or 1987–2003[4]
				Employment, January 2003 (thousands)	Per thousand employees in R&D-performing companies[1]		Percent	Rank	
5612	Facilities support services	104	11.3	–	–	–	–	–	–
3253	Pesticide, fertilizer, and other agricultural chemical manufacturing	45	11.2	[6]13.9	[6,7]68	No	38.2	32	1.1
5232	Securities and commodity exchanges	10	–	[6]18.9	[6]24	–	–	–	–
4861	Pipeline transportation of crude oil	7	10.3	([6,8])	([6,8])	–	[6]32.4	43	–
3369	Other transportation equipment manufacturing	40	10.0	[6,7]7.3	[6,7]50	No	[6]30.9	45	5.1
4869	Other pipeline transportation	5	10.0	([6,8])	([6,8])	–	[6]32.4	43	–
	Other industries meeting at least one criterion								
3329	Other fabricated metal product manufacturing	296	9.3	[6]13.1	[6]26	9	[6]29.7	48	.5
3359	Other electrical equipment and component manufacturing	152	9.0	[6]14.0	[6]40	7	25.2	65	2.7
3363	Motor vehicle parts manufacturing	731	8.8	[6]83.2	[6]76	No	[6]26.7	60	2.8
3361	Motor vehicle manufacturing	267	8.3	[6]83.2	[6]76	No	[6]26.7	60	2.6
3335	Metalworking machinery manufacturing	217	8.0	[6]56.5	[6]72	6	34.0	40	1.3
3324	Boiler, tank, and shipping container manufacturing	95	4.9	[6]13.1	[6]26	10	24.0	70	1.4
3362	Motor vehicle body and trailer manufacturing	154	4.7	[6]83.2	[6]76	No	[6]26.7	60	1.1

[1] Data are for 1997 NAICS industries.

[2] Data are for full-time equivalent employment of scientists and engineers. The reporting unit for the survey in which the R&D data were collected is the company. The reporting unit for the Occupational Employment Survey data used to develop the ranking in this table is the establishment. Ratios are based on industry employment during the week containing March 12 and on scientist and engineer employment the following January.

[3] Products were assigned to NAICS industries by the Bureau of Labor Statistics. (See exhibit 1.) Numbers refer to 1 of 10 major technology areas.

[4] Data are available through 2001 for manufacturing industries, through 2002 for service-producing industries and for mining and utilities industries, and through 2003 for wholesale trade, retail trade, and food services and drinking places industries, at **http://www.bls.gov/lpc/**. Data are not available for all four-digit NAICS industries.

[5] Includes 1.216 million primary (but not secondary) jobs in agriculture, forestry, logging, fishing, and hunting that are not included in table 1.

[6] Data are for an industry grouping that is broader than this four-digit NAICS industry.

[7] Imputation of more than 50 percent.

[8] Data have been withheld to avoid disclosing operations of individual companies.

NOTE: Dash indicates data not available or not surveyed.

SOURCES: Data on total employment and on percent in tech-oriented occupations are from the 2002–12 National Employment Matrix; research and development data are from 2002 Survey of Industrial R&D, National Science Foundation, Division of Science Resources. Studies are available at **http://www.nsf.gov/sbe/srs/indus/start.htm**. High-tech investment data are calculated from Douglas S. Meade, Stanislaw J. Rzeznik, and Darlene C. Robinson-Smith, "Business Investment by Industry in the U.S. Economy for 1997," *Current Business*, November 2003, pp. 18–70. Productivity data are from the BLS Office of Productivity and Technology. The Census Bureau list of industries is published in National Science Board, *Science and Engineering Indicators—2002*, NSB-02-1 (Arlington, VA, National Science Foundation, 2002), p. 6–11, and is developed in the BLS Foreign Trade Division.

Proportion of R&D employment. As noted earlier, the R&D data used to define high-tech industries in the 1999 BLS study are no longer collected in the OES survey—the survey that provides data on employment by occupation and industry. The National Science Foundation's annual Survey of Industrial Research and Development collects data on the employment of R&D scientists and engineers, but that survey's definitions and coverage severely limit comparisons with OES-based data.

Nevertheless, data from the 2002 Industrial Research and Development survey are analyzed and presented in table 4. The key differences between the two surveys are as follows:

- The reporting unit for the OES survey (and other BLS industry employment surveys) is the establishment, which generally is a single physical location where business is conducted or where services or industrial operations are performed. Examples of establishments are a factory, a store, a sales office, and a hotel. By contrast, the reporting unit for the NSF survey is the company, firm, or enterprise, a designation that includes all establishments under common ownership or control. All information about each company is classified under a single NAICS code. Therefore, an establishment that falls under one industry in the OES survey may appear in a different industry in the NSF survey, creating doubts about the comparability of industry data from the two surveys. Corresponding data from each survey are thus useful in supporting or questioning whether industries listed in this article are

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high tech only to the extent that there is some reasonably close comparability between the data.

- While most Level-I industries have corresponding four-digit-industry NSF survey data, most Level-II and Level-III industries do not. The most comparable data are for the NAICS industry sectors designated with two digits, industry subsectors (three digits), or other groupings of four-digit industries to which they belong. Since R&D employment could be unevenly distributed among a group's component four-digit industries, the data are only suggestive of R&D for those industries. Nevertheless, if little or no R&D is evident in a broader group, it can reasonably be concluded that there is not much R&D in any four-digit high-tech industries in that group—assuming reasonable comparability between establishment and company data.
- NSF data are for full-time-equivalent employment, rather than being a job count, as are Bureau data, and include scientists and engineers, but not technicians or other R&D workers.
- Data are classified according to the 1997 NAICS, instead of the 2002 NAICS used for the OES employment data. However, there are no significant problems in matching data, except for some industries within NAICS 51, information.
- NSF's calculated ratios of R&D scientists and engineers per 1,000 employees apply to R&D-performing companies only, rather than to all companies in an industry, so that unless all companies perform R&D, the ratio of R&D scientists and engineers to all employees would be lower. The preceding ratios, along with numbers of full-time-equivalent R&D scientists and engineers, are presented in table 4.[27]

Almost all of the high-tech Level-I industries show ratios of R&D scientists and engineers that are well above the average for all industries, suggesting that those industries are among the most R&D intensive. In many Level-II and Level-III industries, data for their broader industry group show significant R&D employment, as well as ratios ranging from well above the average to well below it. However, some broader groups show very low R&D employment: NAICS 22, utilities (which includes NAICS 2211, electric power generation, transmission, and distribution); NAICS 48 and 49, transportation and warehousing (which includes NAICS 4861, 4862, and 4863, pipeline transportation);[28] and NAICS 55, management of companies and enterprises (consisting only of NAICS 5511). This situation suggests that their component four-digit industries have low R&D employment and might be excluded, as were industries with low R&D ratios in the 1999 BLS study. In addition, data for the five telecommunications industries combined exhibit relatively low R&D employment. The data show no four-digit industries with high R&D that are not on the high-tech list, except for three motor vehicle manufacturing industries combined: NAICS 3361, 3362, and 3363. However, it is not clear how much of the reported R&D is in establishments classified within those three industries in the BLS data.[29]

Production of high-tech products. The Census Bureau developed a classification system for exports and imports that embody new or leading-edge technologies, allowing trade to be examined in 10 major technology areas. The system focuses on specific advanced-technology products, rather than the total output of high-tech industries. The Bureau of Labor Statistics assigned products in the 10 categories to four-digit NAICS industries that produce them, as shown in exhibit 1 and table 4. Because there are no data on the proportion these products make up of each industry's output, and because service industry output has limited coverage, no industry ranking can be developed. However, it is possible to identify the goods-producing industries among the 46 that produce high-tech products.

Every Level-I goods-producing or software industry made at least some products on the Census Bureau list. (Some service industries on the list provided services related to the products.) Among level-II goods-producing industries, oil and gas extraction, NAICS 2111; forestry, NAICS 1131 and 1132; commercial and service industry machine manufacturing, NAICS 3333; and audio and video equipment manufacturing, NAICS 3343, had no products on the list, and neither did any level-III industry. Four industries that are not classified as high tech—other fabricated metal products manufacturing, NAICS 3329; other electrical equipment and component manufacturing, NAICS 3359; metalworking machinery, NAICS 3335; and boiler, tank, and shipping container manufacturing, NAICS 3324—produce some high-tech products. However, without data on high-tech products' share of output, it is not possible to make a case for classifying those industries as high-tech industries.

Use of "high-tech" production methods. There do not appear to be any earlier studies that define industries as high tech solely on the basis of their innovative or state-of-the art manufacturing processes. Industries using high-tech production methods could be identified by judgment, by the intensity of their use of high-tech capital goods, or by the intensity of their technology-oriented-occupation employment in production and production-related R&D. Although there do not appear to have been any systematic efforts to list industries judged to be users of high-tech production methods, individual industries, such as mining

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Exhibit 1. Industries producing products in 10 new or leading-edge technology areas

Major technology area	NAICS code	NAICS title
1. *Biotechnology*—the medical and industrial application of advanced genetic research to the creation of drugs, hormones, and other therapeutic products for both agriculture and human uses.	3254 5417	Pharmaceutical and medicine manufacturing Scientific R&D services
2. *Life science technologies*—the application of nonbiological scientific advances to medicine. For example, advances such as nuclear magnetic resonance imaging, echocardiography, and novel chemistry, coupled with the manufacture of new drugs, have led to new products that help control or eradicate disease.	3345 3254	Navigational, measuring, electromedical, and control instrument manufacturing Pharmaceutical and medicine manufacturing
3. *Optoelectronics*—the development of electronics and electronic components that emit or detect light. Among such devices are optical scanners, optical disk players, solar cells, photosensitive semiconductors,and laser printers.	3341 3344	Computer and peripheral equipment manufacturing Semiconductor and other electronic component manufacturing
4. *Information and communications*—the development of products that process increasing amounts of information in shorter periods of time. Among such products are fax machines, telephone switching apparatuses, radar apparatuses, communications satellites, central-processing units, and peripheral units such as disk drives, control units, modems, and computer software.	3341 3342 3345 5112 5415	Computer and peripheral equipment manufacturing Communications equipment manufacturing Navigational, measuring, electromedical, and control instrument manufacturing Software publishers Computer systems design and related services
5. *Electronics*—the development of electronic components (other than optoelectronic components), including integrated circuits, multilayer printed circuit boards, and surface-mounted components, such as capacitors and resistors, that result in improved performance and capacity and, in many cases, reduced size.	3344	Semiconductor and other electronic component manufacturing
6. *Flexible manufacturing*—the development of products for industrial automation that permit greater flexibility in the manufacturing process and reduce human intervention. Among such products are robots, numerically controlled machine tools, and automated guided vehicles.	3332 3335	Industrial machinery manufacturing Metalworking machinery manufacturing

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Exhibit 1. Continued—Industries producing products in 10 new or leading-edge technology areas

Major technology area	NAICS code	NAICS title
7. *Advanced materials*—the development of materials, including semiconductor materials, optical fiber cable, and videodisks, that enhance the application of other advanced technologies.	3344 3346	Semiconductor and other electronic component manufacturing Manufacturing and reproducing magnetic and optical media Other electrical equipment and component
8. *Aerospace*—the development of aircraft technologies, such as the newest military and civilian airplanes, helicopters, spacecraft (with the exception of communications satellites), turbojet aircraft engines, flight simulators, and automatic pilots.	3364	Aerospace product and parts manufacturing
9. *Weapons*—the development of technologies with military applications, including guided missiles, bombs, torpedoes, mines, missile and rocket launchers, and some firearms.	3329	Other fabricated metal products manufacturing
10. *Nuclear technology*—the development of nuclear production apparatuses, including nuclear reactors and parts, isotopic separation equipment, and fuel cartridges. (Nuclear medical apparatuses are included in life sciences rather than this category.)	3324	Boiler, tank, and shipping container manufacturing Basic chemical manufacturing

and textile mills, have been referred to as high tech because they use highly automated production techniques.[30] Note that, although there are no data on the employment of technology-oriented workers in production activities by industry, these workers are included in the employment totals used to define high-tech industries in this article. Therefore, this measure of high-tech production intensity *is* reflected in the industry rankings.

The intensity of high-tech capital-goods use in the production process cannot be measured directly, but can be inferred from data developed by the Commerce Department's Bureau of Economic Analysis. The data show the flow of new capital goods and services between industries in 1997 and permit a calculation of the proportion of each industry's investment in equipment, software, and structures that consisted of high-tech industry output. Absent an independent definition of *high tech*, industries were ranked by the proportion of their investment in equipment, software, and structures that was from Level-I industries. Data generated on the basis of this criterion are mixed. Many of the 46 industries on the high-tech list invest heavily in the output of Level-I industries, as shown in table 4. However, some on the high-tech list, such as Level-I semiconductor and other electronic component manufacturing and Level-II oil and gas extraction and industrial machinery manufacturing, rank low. In general, goods-producing industries rank lower than service-producing industries, due to their fairly high proportion of purchases from non-high-tech construction and machinery industries. However, if industries are ranked by the proportion of their investment that was from both Level-I and Level-II industries, some manufacturing industries rank higher, due primarily to purchases from Level-II industrial machinery manufacturing. By this standard, semiconductor and other electronic com-

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ponent manufacturing ranks 7th out of 123 (compared with 77th on the basis of purchases from Level I alone), largely because industrial machinery manufacturing includes semiconductor-making machinery manufacturing. Industrial machinery manufacturing also includes textile machinery, printing machinery, and cigarette-making machinery, so that textile mills, tobacco manufacturing, and printing and related support activities rank much higher by this standard as well. Interestingly, the standard does not rank mining industries higher, because agricultural, construction, and mining machinery manufacturing is not on the high-tech list.

Twelve of the 30 industries with the most intense investment in equipment, software, and buildings are not on the high-tech list. (See table 5.) Air transportation ranks highest because it invests primarily in aerospace products and navigational and other instruments, with little invested in products from non-high-tech industries. Other highly ranked service industries, including travel arrangement and reservation services and accounting and bookkeeping services, invest primarily in computers and software. Both cable networks and program distribution, on the one hand, and radio and TV broadcasting, on the other, ranked high because they are heavy purchasers of communications equipment.

These industries do not have significant R&D, have few technology-oriented workers, and are not on other lists of high-tech industries.[31] For example, only 2.2 percent of the air transportation industry workforce and 2.6 percent of the travel arrangement and reservation services industry's workforce consisted of technology oriented workers in 2002, well below the 4.9-percent average for all industries. It is difficult to make a case for classifying these industries as high tech solely on the basis of their intense investment in the output of high-tech industries.

Growth in output per hour. In their 2002 *Review* article, Kask and Sieber, of the BLS Office of Productivity and Technology (OPT), examined the 10 most high-tech manufacturing (SIC) industries from the 1999 list and found that only the 3 information technology industries—computer and office

Table 5. Ranking of industries by proportion of total purchases of new equipment, software, and structures that were from high-tech Level-I industries, 1997

NAICS code	Industry	Percent	High-technology status or level
[1]481	Air transportation	77.4	not
5415	Computer systems design and related services	73.6	I
5112	Software publishers	70.6	I
[2]5142	Data processing services	70.0	I
5413	Architectural and engineering services	66.3	I
5412	Accounting and bookkeeping services	59.0	not
5417	Scientific research and development services	58.9	I
3341	Computer and peripheral equipment manufacturing	57.4	I
5615	Travel arrangement and reservation services	57.1	not
[3]5133	Telecommunications	56.7	I and III
5416	Management and technical consulting services	55.9	II
5141	Information services	55.6	I
5132	Cable networks and program distribution	54.1	not
[4]5131	Radio and television broadcasting	54.0	not
5331	Lessors of nonfinancial intangible assets	52.7	not
[1]523	Securities, commodity contracts, and investments	52.4	part is III
5613	Employment services	51.9	not
55	Management of companies and enterprises	50.7	III
3342, 43	Audio, video, and communications equipment manufacturing	49.4	I and II
521, 522	Monetary authorities, credit intermediation, and related activities	48.6	part is III
[1]524	Insurance carriers and related activities	47.7	not
5411	Legal services	47.5	not
[1]483	Water transportation	47.1	not
3346	Magnetic media manufacturing and reproducing	47.0	II
5418	Advertising and related services	45.1	not
3122	Tobacco manufacturing	44.9	not
3364	Aerospace product and parts manufacturing	44.2	I
3345	Electronic instrument manufacturing	43.0	I
3252	Resin, rubber, and artificial fibers manufacturing	40.7	II
3254	Pharmaceutical and medicine manufacturing	39.4	I

[1] Data are for the three-digit industry only.
[2] NAICS 5182 in 2002.
[3] NAICS 5171, 5172, 5173, 5174, and 5179 in 2002.
[4] NAICS 5151 in 2002.

SOURCE: BLS calculation from Douglas S. Meade, Stanislaw J. Rzeznik, and Darlene C. Robinson-Smith, "Business Investment by Industry in the U.S. Economy for 1997," *Survey of Current Business*, November 2003, pp. 18–70, using data available at **www.bea.gov/bea/pub/1103cont.htm**.

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Table 6. Ranking of industries by average annual percent change in output per hour, 1987–2001, 1987–2002, or 1987–2003[1]

NAICS code	Industry	1987–2001	1987–2002	1987–2003	High-technology status or level	Communications or electronics status
...	Nonfarm business sector	1.9	2.1	2.2	...	...
...	Manufacturing sector	3.2	3.4	3.5	...	...
3341	Computer and peripheral equipment manufacturing	24.9	–	–	I	yes
3344	Semiconductors and other electronic components manufacturing	20.7	–	–	I	yes
5112	Software publishers	–	17.2	–	I	yes
4431	Electronics and appliance stores	–	–	14.0	not	yes
4234	Professional and commercial equipment and supplies, merchant wholesalers	–	–	13.4	II	yes
4541	Electronic shopping and mail-order houses	–	–	12.5	not	yes
3342	Communications equipment manufacturing	10.5	–	–	I	yes
4236	Electrical and electronic goods, merchant wholesalers	–	–	9.3	not	yes
4529	Other general merchandise stores	–	–	7.9	not	no
5172	Wireless telecommunications carriers (except satellite)	–	6.2	–	III	yes
3365	Railroad rolling stock manufacturing	6.0	–	–	not	no
5171	Wired telecommunications carriers	–	5.8	–	III	yes
4532	Office supplies, stationery, and gift stores	–	–	5.7	not	no
3343	Audio and video equipment manufacturing	5.4	–	–	II	yes
3369	Other transportation equipment manufacturing	5.1	–	–	III	no
2122	Metal ore mining	–	4.8	–	not	no
4481	Clothing stores	–	–	4.7	not	no
3152	Cut and sew apparel manufacturing	4.6	–	–	not	no
3162	Footwear manufacturing	4.6	–	–	not	no
4511	Sporting goods, hobby, and musical instrument stores	–	–	4.3	not	no
4251	Wholesale electronic markets and agents and brokers	–	–	4.5	not	yes
2121	Coal mining	–	4.4	–	not	no
4483	Jewelry, luggage, and leather goods stores	–	–	4.2	not	no
4482	Shoestores	–	–	4.1	not	no
3352	Household appliances manufacturing	4.0	–	–	not	no
3345	Navigational, measuring, electromedical, and control instruments manufacturing	3.9	–	–	I	yes
3131	Fiber, yarn, and thread mills	3.7			not	no
3311	Iron and steel mills and ferroalloy production	3.7	–	–	not	no
2212	Natural gas distribution	–	3.7	–	not	no
3336	Engine, turbine, and power transmission equipment manufacturing	3.5	–	–	III	no

[1] Data are through 2001 for manufacturing industries, through 2002 for service-producing industries and for mining and utilities industries, and through 2003 for wholesale trade, retail trade, and food services and drinking places industries, at **http://www.bls.gov/lpc/**. Data are not available for all four-digit NAICS industries.

SOURCE: BLS Office of Productivity and Technology.

equipment, communications equipment, and electronic components manufacturing—exhibited particularly strong growth in output per hour over the 1987–99 period.[32] The current article analyzes OPT data, covering all sectors, on average annual percent change in output per hour for 1987–2001, 1987–2002, or 1987–2003, depending on the sector.[33] Growth is greater than 10 percent for 7 NAICS industries, corresponding to the 3 noted by Kask and Sieber—the computer and peripheral equipment, semiconductor and other electronic components, and communications equipment industries—as well as for high-tech software publishers and for merchant wholesalers of professional and commercial equipment and supplies. (See table 6.) Also included in the 7 are 2 non-high-tech electronics-related retail trade industries. Both wired and wireless telecommunications carriers ranked high as well. (Data on some computer-related service industries, such as computer systems design, on the one hand, and Internet service providers and web search portals, on the other, are not available.) However, as Kask and Sieber found, growth in output per hour was at or below average for many high-tech NAICS industries, including the aerospace, pharmaceutical and medicine, and several machinery and chemicals manufacturing industries.[34] (See table 4.) Nineteen of the 30 industries with the fastest growth in output per hour, including electronic shopping and mail-order houses, other general merchandise stores (including warehouse clubs and supercenters), and cut and sew apparel manufacturing, are not on the high-tech list, and few, if any, have significant technology-oriented or R&D employment, produce high-tech products, or are on other high-tech industry lists.[35]

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These results are not surprising. Rapid growth in industry output per hour could result from factors unrelated to whether an industry is high tech, while an industry that uses technology-oriented workers intensively, relies heavily on R&D, and generates products judged to be high tech could have low growth in output per hour.

In sum, the high-tech-investment criterion is not an unequivocal measure of whether an industry should be classified as high tech. Nor do the R&D and Census Bureau product lists provide any strong evidence for adding industries to the list of 46, although the R&D data suggest that at least some parts of motor vehicle manufacturing might be categorized as high tech. The R&D data also suggest that *neither* electric power generation, transmission, and distribution pipelines *nor* management of companies and enterprises should be so categorized. Finally, the Census Bureau product list suggests that oil and gas extraction, forestry, audio and video equipment manufacturing, and all 8 Level-III goods-producing industries be excluded, while the R&D data, although not completely applicable, suggest that some R&D activity goes on in all of these industries except forestry, which is not covered. □

Notes

[1] *The Dynamics of Technology-Based Economic Development, State Science and Technology Indicators*, 4th ed. (Office of Technology Policy, Technology Administration, U.S. Department of Commerce), p. 1-1.

[2] Richard W. Riche, Daniel E. Hecker, and John U. Burgan, "High technology today and tomorrow: a small slice of the employment pie," *Monthly Labor Review*, November, 1983, pp. 50–58; Paul Hadlock, Daniel Hecker, and Joseph Gannon, "High technology employment: another view," *Monthly Labor Review*, July 1991, pp. 26–30; William Luker, Jr., and Donald Lyons, "Employment shifts in high-technology industries, 1988–96," *Monthly Labor Review*, June 1997, pp. 12–25; and Daniel E. Hecker, "High-technology employment: a broader view," *Monthly Labor Review*, June 1999, pp. 18–28.

[3] *Technology, Innovation, and Regional Economic Development* (U.S. Congress, Office of Technology Assessment), Sept. 9, 1982.

[4] *Science and Technology Resources in U.S. Industry*, special report NSF 88–321 (Arlington, VA, National Science Foundation, December 1988), p. vii.

[5] Some studies exclude service industries or industries with little employment.

[6] *Cyberstates 2005: A State-by-State Overview of the High-Technology Industry* (Washington, DC, American Electronic Association, 2005), p. 161.

[7] See National Science Board, *Science and Engineering Indicators—2002*, NSB-02-1 (Arlington,VA, National Science Foundation, 2002), pp. 6-11; see also the last section and exhibit 1 of the current article.

[8] Christopher Kask and Edward Sieber, "Productivity growth in 'high-tech' manufacturing industries," *Monthly Labor Review*, March 2002, pp. 16–31.

[9] See Hecker, "High-technology employment." Attendees were from the BLS Office of Employment and Unemployment Statistics and from other Federal organizations with an interest in defining high-tech industries, including the Department of Commerce, the Employment and Training Administration of the Department of Labor, and the National Science Foundation (NSF).

[10] Kask and Sieber, "Productivity growth."

[11] Hecker, "High-technology employment"; R&D alone was used as the criterion in the 1991 BLS study; see Hadlock, Hecker, and Gannon, "High technology employment."

[12] BLS surveys do not collect data separately for these categories, but the National Science Foundation does. (See Scientists and Engineers Statistical Data System by SRS; on the Internet at **http://srsstats.sbe.nsf.gov/docs/source.html#instruments**.)

[13] Data are available at **http://www.bls.gov/emp**.

[14] Data are available at **http://www.bls.gov/oes**. Federal employment data are from the U.S. Office of Personnel Management, and forestry employment data are from the Bureau's Current Population Survey (CPS).

[15] What one ordinarily might think of as one industry—forestry—is viewed as two industries in NAICS: 1131, timber tract operations; and 1132, forest nurseries and gathering of forest products. Data in the CPS (see previous footnote) are for the two industries combined, which are treated as a single industry in the analysis that follows.

[16] There was a significant break between the lowest-ranked Level I and the highest-ranked Level II industry. This methodology is similar to the one used in Karen Chapple, Ann Markusen, Greg Schrock, Daisaku Yamamoto, and Pingkang Yu, "Gauging Metropolitan 'High-Tech' and 'I-Tech' Activity," *Economic Development Quarterly*, February 2004, pp. 10–29. Using 1998 OES (SIC-based) data, the authors defined high-tech industries as those employing scientists and engineers, but not technicians, at a proportion that was at least 3 times the national average. The 1999 BLS study by Hecker considered industries high tech if employment in both R&D and technology-oriented occupations accounted for a proportion of total employment that was at least twice the average for all industries. The 1999 study also defined a subset of high-tech industries that were even "more" high tech, namely, those industries with both ratios at least 5 times the average.

[17] Cable and other program distribution, NAICS 5175; and soap, cleaning compounds, and toilet preparations (NAICS 3256, within the category of chemical manufacturing) are excluded. Level-I pharmaceutical and medicine manufacturing is part of that industry.

[18] This four-digit industry, NAICS 5511, is the only industry in the category NAICS 55.

[19] "A Survey of the Use of Biotechnology in U.S. Industry" (U.S. Department of Commerce, Technology Administration, October 2003). Data are on a company, rather than establishment, basis.

[20] Data discussed later in this article suggest industries that might be deleted from or added to the list just set forth. For information on other lists of high-tech industries, see table 5 in Hecker, "High-technology employment." Post-June 1999 lists include those in *Cyberstates 2005*; Chapple, Markusen, Schrock, Yamamoto, and Yu,

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"Gauging Metropolitan High Tech"; Joseph Cortright and Heike Mayer, "High Tech Specialization: A Comparison of High Technology Centers," survey series (Washington, DC, The Brookings Institution, Center on Urban and Metropolitan Policy, January 2001); and Ross DeVol, *America's High-tech Economy: Growth, Development, and Risks for Metropolitan Areas*, (Santa Monica, CA, Milken Institute, July 13, 1999). Although most of these lists are formulated on an SIC basis, many industries have coverage that is close to that of high-tech NAICS industries. The Organization for Economic Cooperation and Development (OECD) also has developed a list that the NSF has used in National Science Board, *Science and Engineering Indicators—2002*, pp. 6-6, 6-7.

[21] The 31 three-digit SIC industries covered in Hecker's 1999 *Review* article had 9.3 million employment in 1996, which was 7.8 percent of total nonfarm wage and salary employment. Employment in those industries was projected to reach 11.4 million in 2006, 8.4 percent of total employment. The addition of "Federal Government, excluding Postal Services," with 1.9 million employment, to the 2002 list is a major factor in the difference, as is the addition of the industry titled "management of companies and enterprises," which has no equivalent in the SIC.

[22] See Jay M. Berman, "Industry output and employment projections to 2012," *Monthly Labor Review*, February 2004, pp. 58–79, especially table 5, p. 74. The three industries in question are oil and gas extraction; basic chemical manufacturing; and resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing. (See table 3, pp. 62–70.) Some output projections are for more aggregated industries—for example, pipeline transportation (NAICS 486) and wholesale trade (NAICS 42).

[23] Data for Internet publishing and broadcasting; Internet service providers and web search portals; and data processing, hosting, and related services are for the three industries combined, plus other information services industries.

[24] A description of the methods and assumptions used to develop all of the foregoing projections is presented in the February 2004 *Monthly Labor Review* in a series of articles collectively titled "Employment outlook: 2002–12." Outsourcing is not specifically projected. However, the aforementioned projections are based on an analysis of data that incorporate trends in overseas outsourcing of high-tech jobs through 2002. (For further discussion, see Michael W. Horrigan, "Concepts and content," *Monthly Labor Review*, February 2004, pp. 13–14.

[25] See *Science and Engineering Indicators 2002*, pp. 6-5, 6-16; *Cyberstates 2005*; and Hecker, "High-technology employment."

[26] See notes 2, 6, 16, and 20 for other studies.

[27] Ratios are based on industry employment during the week containing March 12 and on R&D scientist and engineer employment the following January. Data are available at **http://www.nsf.gov/sbe/srs/indus/start.htm**.

[28] Low R&D employment for NAICS 48 and 49 is shown in the 2001 Survey of Industrial Research and Development.

[29] Motor vehicle manufacturing, SIC 371, was included among other high-technology industries in Hecker, "High-technology employment."

[30] Coal mining, NAICS 2121; metal ore mining, NAICS 2122; and fiber, yarn, and thread mills, NAICS 3131, have exhibited rapid increases in output per hour, as shown in table 5.

[31] See notes 2, 6, 16, and 20 for other studies.

[32] Kask and Sieber, "Productivity growth."

[33] Data are available through 2001 for manufacturing industries, through 2002 for service-producing industries and for mining and utilities industries, and through 2003 for wholesale trade, retail trade, and food services and drinking places industries, at **http://www.bls.gov/lpc/**. Data are not available for all four-digit NAICS industries.

[34] Kask and Sieber, "Productivity growth."

[35] See notes 2, 6, 16, and 20 for other studies.

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Wage inequality and technological change

By nearly all measures, inequality in both hourly and weekly earnings among U.S. workers has increased over the last several decades. Not surprisingly, the difference is particularly evident among workers with varying levels of education and technical skills. But the so-called wage gap can also be observed in workers with similar levels of educational attainment. In a recent study entitled "Evidence on Wage Inequality, Worker Education, and Technology," published in the Federal Reserve Bank of St. Louis *Review*, economist Christopher H. Wheeler examines these trends and reaches some interesting results.

The reasons most often cited for the growing wage disparity include increased international trade, declining unionization, rising immigration, and—perhaps most importantly—technological change. Wheeler points out that while economists and other analysts disagree about the relative importance of each of these factors, a near consensus has nevertheless emerged around one theory—what has been called "skill-biased technological change" (SBTC). The basic SBTC hypothesis is as follows: the supply of highly educated workers has grown substantially in recent decades. Between 1950 and 1990, for example, the proportion of U.S. workers with at least some college grew from 17 percent to 57 percent. At the same time, the U.S. economy has experienced tremendous technological growth, especially in the area of information technology. Together these trends have led to increased wages among more highly skilled workers and decreased wages among those with less education and skill.

Using data from the Current Population Survey (CPS), Wheeler looks at various measures of wage inequality in light of union membership, educational attainment, and the use of computers in the workplace. He finds evidence suggesting that, while some of the growing disparity in wages is due to declining union membership and representation, "the vast majority of the rise in U.S. wage inequality over the past two decades is the product of increasing gaps between workers within the same industry rather than between workers across industries." Interestingly, this within-industry wage disparity holds even among workers with similar levels of education. Moreover, such disparity is positively associated with both the "college employment fraction" (the proportion of workers with college degrees) and the frequency of computer usage. Together these findings support the notion that skill-biased technological change has contributed substantially to the growth in wage inequality among U.S. workers in recent decades.

New numbers

Two new statistical indicators of conditions in the labor market came to our attention this month. The Society of Human Resource Management (SHRM) sent us an invitation to receive an e-mail notice of the Leading Indicator of National Employment (LINE) that they have developed in collaboration with the Rutgers University School of Management and Labor Relations. First announced in November of last year, the SHRM/Rutgers LINE data are collected through a survey of human resource executives at more than 500 manufacturing firms. The index is a weighted average of diffusion indexes for five components: total employment (0.6), total vacancies (0.1), recruiting difficulty (0.1), new hire compensation (0.1), and employment expectations (0.1). A LINE reading above 50.0 suggests that manufacturing employment is generally expanding, while an index below 50.0 suggests manufacturing employment is contracting. A diffusion index is calculated as the percentage of respondents reporting an increase plus one-half of the percentage reporting no change. For example, if 45 percent of respondents reported increased recruiting difficulty, 31 percent reported less difficulty, and 24 percent reported no change, the diffusion index for that component would be 45 plus 12, or 57. The SHRM/Rutgers LINE was 63.7 in June, indicating moderate job growth, according to SHRM.

The Conference Board, a business research organization based in New York, issued its first release on help-wanted online on July 19. The Conference Board Help-Wanted OnLine Data Series™ is based on counts of new, unduplicated, first-time job postings on any of approximately 1,200 computer job boards. These job boards include only sites that require an employer to take a positive action to post a job on an external site and exclude in-house boards that list only positions internal to the company. Jobs posted on any new sites that meet these criteria will be added to the data.

The online help-wanted data are presented both as counts rounded to the nearest thousand and as rates per 100 persons in the labor force (employed plus unemployed) as reported by the Bureau of Labor Statistics (BLS). The data are national in coverage and are not stratified by industry or region. There was a total of just over 2 million new online jobs posted in June, representing 1.39 jobs per 100 persons in the labor force. The Conference Board suggests that these data be used cautiously until a longer series is available to understand any seasonal patterns and correlations with other labor market statistics such as the Board's help-wanted index and employment and vacancy data from BLS.

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Alternative dispute resolution

A History of Alternative Dispute Resolution: The Story of a Political, Social, and Cultural Movement. By Jerome T. Barrett and Joseph P. Barrett. San Francisco, Jossey-Bass, 2004, 336 pp., $40/hardcover.

In this wide-ranging and lively book, author Jerome T. Barrett, assisted by his journalist son, Joseph P. Barrett, lays out the ancient roots and modern history of alternative dispute resolution (ADR), an approach to solving conflict that, Barrett argues, existed in various forms long before it was known by that name. Barrett's notion of ADR is very broad, encompassing negotiation, arbitration, mediation, factfinding, and consensus building in a wide range of disputes and conflicts. He defines its history as one of "unsung heroes who have struggled to find a level playing field that allows the weak and strong to address their differences based on rights and interests." His book seeks to provide understanding of how ADR came about and shed light on the obstacles it and its precursors faced. Barrett's hope is that the lessons of history will inform further development of this method of reducing strife and achieving fair results.

In the "ADR Timeline" at the front of the book, the first event listed was in 1800 B.C. when mediation and arbitration were used to settle disputes between kingdoms in the ancient Middle East. Chapter 1, "The Roots of ADR," provides more fascinating examples of ADR precursors among the Bushmen of the Kalihari Desert, the Hawaiian Islanders, the Yoruba of Nigeria and others; it describes roots in a wide range of religious faiths, beginning in the Biblical Wisdom of Solomon in 960 B.C. After surveying ancient to early-modern uses of ADR precursors around the world in business and land disputes and in international relations, Barrett brings the story to the shores of the United States in chapter 2, where the focus largely remains. Following an interesting discussion of dispute resolution from the Colonial to the Civil War eras, he homes in on the meat and potatoes of the history: resolution of labor-management disputes from the Industrial Revolution to modern times. The story broadens again, beginning in the 1960s, as ADR methods were applied to the black Civil Rights revolution, and later were extended to environmental problems, Native American issues, prisoners' rights, and, once again, foreign relations matters. The last third of the book concerns the modern institutionalization of ADR and concludes with a chapter on its status and prospects in the 21st century.

Barrett succeeds admirably in depicting the surprisingly deep and wide roots of ADR in world history. The writing is lively and clear—and a great deal of research has gone into the book, as documented in embedded references and an extensive bibliography. The author has also drawn on a lifetime of experience and research in the labor-management and ADR areas. The flaws are minor. At times the chronological narrative becomes disjointed: for example, after a chapter on diplomacy ending in 1919, the discussion shifts back to 17th century North America. The concept of ADR is occasionally stretched to accommodate historical events that seem questionable, such as Lee's surrender at Appomattox and the Treaty of Versailles ending World War I. Negotiating conclusions to conflicts in which millions died seems more like a failure than a triumph of dispute resolution. Barrett might more appropriately have cited the moment in Wagner's operatic cycle *Ring of the Nibelung* when Wotan, king of the gods, commands to some unruly deities, "Nichts durch Gewalt" ("[resolve] nothing through force"). Nevertheless, the author performs a valuable service by discussing in one place a wide range of resolutions and conclusions of disputes, whether they literally fit the ADR mold or not.

This popularly written book is a valuable contribution to the extensive literature on ADR which, until this point, did not include a history. Perhaps it will spark labor historians to delve in more detail into the roots of ADR. The book is recommended for practitioners and students of ADR and for all who are interested in learning about the centuries-long effort to lay aside weapons and other unfair advantages and resolve differences in a truly civilized manner.

—Judson MacLaury

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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: series on labor force; employment; unemployment; labor compensation; consumer, producer, and international prices; productivity; international comparisons; and injury and illness statistics. In the notes that follow, the data in each group of tables are briefly described; key definitions are given; notes on the data are set forth; and sources of additional information are cited.

General notes

The following notes apply to several tables in this section:

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

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

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

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

Sources of information

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

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

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

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

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

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

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

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

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

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

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

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

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

Symbols

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

Comparative Indicators

(Tables 1–3)

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

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

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

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

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

Notes on the data

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

Employment and Unemployment Data

(Tables 1; 4–29)

Household survey data

Description of the series

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

Definitions

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

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

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

Notes on the data

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

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

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

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

Establishment survey data

Description of the series

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

Definitions

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

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

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in each establishment which reports them.

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

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

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

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

Notes on the data

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

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

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

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

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

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

Unemployment data by State

Description of the series

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

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

Notes on the data

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

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

Quarterly Census of Employment and Wages

Description of the series

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

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

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

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

Notes on the data

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

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

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

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

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

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

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

Job Openings and Labor Turnover Survey

Description of the series

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

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

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

Definitions

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

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

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

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

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

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

Notes on the data

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

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

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

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

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

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

Compensation and Wage Data

(Tables 1–3; 30–36)

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

Employment Cost Index

Description of the series

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

Statistical series on total compensation

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

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

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

Definitions

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

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

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

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

Notes on the data

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

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

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

Employee Benefits Survey

Description of the series

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

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

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

Definitions

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

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

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

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

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

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

Notes on the data

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

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

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

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

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

Work stoppages

Description of the series

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

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

Definitions

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

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

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

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

Notes on the data

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

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

http:/www.bls.gov/cba/

Price Data

(Tables 2; 37–47)

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

Consumer Price Indexes

Description of the series

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

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

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

Notes on the data

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

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

Producer Price Indexes

Description of the series

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

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

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

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

International Price Indexes

Description of the series

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

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

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

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

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

Notes on the data

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

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

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

Productivity Data

(Tables 2; 48–51)

Business and major sectors

Description of the series

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

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

Definitions

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

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

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

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

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

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

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

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

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

Notes on the data

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

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

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

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

Industry productivity measures

Description of the series

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

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

Definitions

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

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

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

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

Notes on the data

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

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

International Comparisons

(Tables 52–54)

Labor force and unemployment

Description of the series

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

Definitions

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

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Unemployment Data: Household survey data.

Notes on the data

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

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

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

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

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

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

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

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

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

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

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

Manufacturing productivity and labor costs

Description of the series

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

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

Definitions

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

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

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

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

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

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

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

Notes on the data

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

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

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

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

Occupational Injury and Illness Data

(Tables 55–56)

Survey of Occupational Injuries and Illnesses

Description of the series

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

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

Definitions

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

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

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

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

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

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

Notes on the data

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

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

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

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

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

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

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

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

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

Census of Fatal Occupational Injuries

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

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

Definition

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

Notes on the data

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

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

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1. Labor market indicators

Selected indicators	2003	2004	2003				2004				2005
			I	II	III	IV	I	II	III	IV	I
Employment data											
Employment status of the civilian noninstitutional population (household survey):[1]											
Labor force participation rate	66.2	66.0	66.3	66.4	66.2	66.1	66.0	66.0	66.0	66.0	65.8
Employment-population ratio	62.3	62.3	62.4	62.3	62.1	62.2	62.2	62.3	62.4	62.4	62.3
Unemployment rate	6.0	5.5	5.8	6.1	6.1	5.9	5.6	5.6	5.5	5.4	5.3
Men	6.3	5.6	6.1	6.5	6.4	6.1	5.7	5.7	5.6	5.6	5.4
16 to 24 years	13.4	12.6	12.8	13.9	13.7	13.0	12.6	12.9	12.5	12.6	13.2
25 years and older	5.0	4.4	5.0	5.2	5.1	4.9	4.5	4.5	4.4	4.3	4.1
Women	5.7	5.4	5.5	5.7	5.8	5.6	5.6	5.4	5.3	5.2	5.1
16 to 24 years	11.4	11.0	11.2	11.8	11.5	10.9	11.1	10.9	10.9	10.9	10.4
25 years and older	4.6	4.4	4.5	4.6	4.7	4.6	4.5	4.4	4.3	4.2	4.1
Employment, nonfarm (payroll data), in thousands:[1]											
Total nonfarm	129,931	131,480	130,093	129,845	129,890	130,168	130,541	131,125	131,731	132,302	132,772
Total private	108,356	109,862	108,467	108,253	108,320	108,614	108,986	109,737	110,095	110,600	111,038
Goods-producing	21,817	21,884	22,036	21,828	21,700	21,684	21,725	21,868	21,932	22,000	220,471
Manufacturing	14,525	14,329	14,787	14,555	14,377	14,313	14,285	14,338	14,353	14,338	14,314
Service-providing	108,114	109,596	108,057	108,017	108,190	108,483	108,816	109,457	109,799	110,302	110,725
Average hours:											
Total private	33.7	33.7	33.8	33.6	33.6	33.7	33.8	33.7	33.7	33.7	33.7
Manufacturing	40.4	40.8	40.3	40.2	40.3	40.7	41.0	40.8	40.8	40.6	40.6
Overtime	4.2	4.6	4.2	4.0	4.1	4.4	4.5	4.5	4.6	4.5	4.5
Employment Cost Index[2]											
Percent change in the ECI, compensation:											
All workers (excluding farm, household and Federal workers)	3.8	3.7	1.4	.8	1.1	.5	1.4	.9	1.0	.5	1.1
Private industry workers	4.0	3.8	1.7	.8	1.0	.4	1.5	.9	.8	.5	1.1
Goods-producing[3]	4.0	4.7	1.8	.9	.7	.5	2.3	.9	.9	.6	1.5
Service-providing[3]	4.0	3.3	1.5	.8	1.1	.5	1.1	1.0	.8	.3	1.0
State and local government workers	3.3	3.5	.7	.4	1.7	.5	.7	.4	1.7	.6	.9
Workers by bargaining status (private industry):											
Union	4.6	5.6	1.6	1.2	1.0	.7	2.8	1.5	.8	.5	.7
Nonunion	3.9	3.4	1.6	.8	1.0	.4	1.3	.8	.9	.4	1.3

[1] Quarterly data seasonally adjusted.

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

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

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

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

Selected measures	2003	2004	2003				2004				2005
			I	II	III	IV	I	II	III	IV	I
Compensation data[1,2]											
Employment Cost Index—compensation (wages, salaries, benefits):											
Civilian nonfarm	3.8	3.7	1.4	0.8	1.1	0.5	1.4	0.9	1.0	0.5	1.1
Private nonfarm	4.0	3.8	1.7	.8	1.0	.4	1.5	.9	.8	.5	1.1
Employment Cost Index—wages and salaries:											
Civilian nonfarm	2.9	2.4	1.0	.6	.9	.3	.6	.6	.9	.3	.7
Private nonfarm	3.0	2.4	1.1	.7	.8	.4	.7	.7	.9	.2	.7
Price data[1]											
Consumer Price Index (All Urban Consumers): All Items	2.3	3.3	1.8	–.3	–.2	–.2	1.2	1.2	.2	.2	1.0
Producer Price Index:											
Finished goods	3.2	4.1	3.7	–.8	.3	.0	1.2	1.2	.0	1.1	2.0
Finished consumer goods	4.2	4.6	2.4	1.8	.3	.0	1.5	1.4	–1.7	.9	–2.6
Capital equipment	.4	2.4	.6	–.6	–.1	.0	.6	.5	.4	1.6	2.1
Intermediate materials, supplies, and components	4.6	9.1	6.5	–2.1	–.1	.0	2.5	3.0	1.9	.9	3.5
Crude materials	25.2	18.0	28.0	–10.6	3.4	14.4	6.0	7.6	–5.1	8.3	9.7
Productivity data[3]											
Output per hour of all persons:											
Business sector	4.4	3.9	3.3	8.4	7.9	1.9	3.9	3.4	1.5	3.8	2.6
Nonfarm business sector	4.3	4.0	3.4	7.2	8.6	2.7	3.8	4.1	.9	2.3	2.9
Nonfinancial corporations[4]	4.1	4.2	2.1	7.8	7.9	3.9	.9	3.3	4.9	9.0	2.7

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

[2] Excludes Federal and private household workers.

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

[4] Output per hour of all employees.

3. Alternative measures of wage and compensation changes

Components	Quarterly change					Four quarters ending—				
	2004				2005	2004				2005
	I	II	III	IV	I	I	II	III	IV	I
Average hourly compensation:[1]										
All persons, business sector	2.8	5.5	5.8	11.1	6.0	4.5	4.2	4.4	6.3	7.1
All persons, nonfarm business sector	2.1	6.0	5.5	10.2	6.3	4.4	4.4	4.4	5.9	7.0
Employment Cost Index—compensation:										
Civilian nonfarm[2]	1.4	.9	1.0	.5	.5	3.8	3.9	3.8	3.7	3.5
Private nonfarm	1.5	.9	.8	.5	.5	3.9	4.0	3.7	3.8	3.4
Union	2.8	1.5	.8	.5	.5	5.7	6.0	5.8	5.6	3.6
Nonunion	1.3	.8	.9	.4	.4	3.6	3.5	3.4	3.4	3.4
State and local governments	.7	.4	1.7	.6	.6	3.3	3.4	3.4	3.5	3.6
Employment Cost Index—wages and salaries:										
Civilian nonfarm[2]	.6	.6	.9	.3	.3	2.5	2.5	2.4	2.4	2.4
Private nonfarm	.7	.7	.9	.2	.2	2.6	2.6	2.6	2.4	2.4
Union	.6	1.0	.8	.4	.4	2.5	2.9	3.0	2.8	2.3
Nonunion	.7	.6	.8	.2	.2	2.6	2.5	2.5	2.4	2.4
State and local governments	.4	.2	1.0	.5	.5	2.1	1.9	2.0	2.1	2.3

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

[2] Excludes Federal and household workers.

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

[Numbers in thousands]

Employment status	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
TOTAL															
Civilian noninstitutional population[1]	221,168	223,357	222,967	223,196	223,422	223,677	223,941	224,192	224,422	224,640	224,837	225,041	225,236	225,441	225,670
Civilian labor force	146,510	147,401	147,018	147,386	147,823	147,676	147,531	147,893	148,313	148,203	147,979	148,132	148,157	148,762	149,122
Participation rate	66.2	66.0	65.9	66.0	66.2	66.0	65.9	66.0	66.1	66.0	65.8	65.8	65.8	66.0	66.1
Employed	137,736	139,252	138,846	139,158	139,639	139,658	139,527	139,827	140,293	140,156	140,241	140,144	140,501	141,099	141,475
Employment-population ratio[2]	62.3	62.3	62.2	62.3	62.5	62.4	62.3	62.4	62.5	62.4	62.4	62.3	62.4	62.6	62.7
Unemployed	8,774	8,149	8,172	8,228	8,184	8,018	8,005	8,066	8,020	8,047	7,737	7,988	7,656	7,663	7,647
Unemployment rate	6.0	5.5	5.6	5.6	5.5	5.4	5.5	5.4	5.5	5.4	5.2	5.4	5.2	5.2	5.1
Not in the labor force	74,658	75,956	75,950	75,809	75,599	76,001	76,410	76,299	76,109	76,437	76,858	76,909	77,079	76,679	76,547
Men, 20 years and over															
Civilian noninstitutional population[1]	98,272	99,476	99,279	99,396	99,512	99,642	99,776	99,904	100,017	99,476	100,219	100,321	100,419	100,520	100,634
Civilian labor force	74,623	75,364	75,095	75,631	75,567	75,615	75,462	75,632	75,866	75,754	75,594	75,816	75,921	76,173	76,439
Participation rate	75.9	75.8	75.6	75.8	75.9	75.9	75.6	75.7	75.9	75.7	75.4	75.6	75.6	75.8	76.0
Employed	70,415	71,572	71,226	71,575	71,830	71,847	71,701	71,895	71,134	72,020	72,029	72,131	72,429	72,817	73,100
Employment-population ratio[2]	71.7	71.9	71.7	72.0	72.2	72.1	71.9	72.0	72.1	71.9	71.9	71.9	72.1	72.4	72.6
Unemployed	4,209	3,791	3,869	3,786	3,737	3,768	3,761	3,736	3,733	3,733	3,565	3,685	3,492	3,356	3,339
Unemployment rate	5.6	5.0	5.2	5.0	4.9	5.0	5.0	4.9	4.9	4.9	4.7	4.9	4.6	4.4	4.4
Not in the labor force	23,649	24,113	24,184	24,035	23,945	24,026	24,314	24,272	24,151	24,372	24,625	24,505	24,498	24,347	24,195
Women, 20 years and over															
Civilian noninstitutional population[1]	106,800	107,658	107,483	107,586	107,687	107,801	107,920	108,032	108,129	107,658	108,316	108,403	108,486	108,573	108,672
Civilian labor force	64,716	64,923	64,803	64,989	65,085	64,909	65,008	65,126	65,244	65,260	65,318	65,270	65,051	65,420	65,479
Participation rate	60.6	60.3	60.3	60.4	60.4	60.2	60.2	60.3	60.3	60.3	60.3	60.2	60.0	60.3	60.3
Employed	61,402	61,773	61,723	61,731	61,902	61,877	61,939	62,024	62,145	62,208	62,295	62,202	62,099	62,384	62,464
Employment-population ratio[2]	57.5	57.4	57.4	57.4	57.5	57.4	57.4	57.4	57.5	57.5	57.5	57.4	57.2	57.5	57.5
Unemployed	3,314	3,150	3,080	3,259	3,183	3,032	3,069	3,102	3,099	3,051	3,023	3,068	2,952	3,036	3,015
Unemployment rate	5.1	4.9	4.8	5.0	4.9	4.7	4.7	4.8	4.7	4.7	4.6	4.7	4.5	4.6	4.6
Not in the labor force	42,083	42,735	42,680	42,597	42,603	42,892	42,912	42,906	42,885	42,961	42,998	43,133	43,435	43,153	43,192
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	16,096	16,222	16,205	16,214	16,222	16,234	16,246	16,257	16,293	16,222	16,302	16,317	16,332	16,347	16,364
Civilian labor force	7,170	7,114	7,120	7,036	7,172	7,152	7,062	7,165	7,202	7,189	7,066	7,046	7,185	7,168	7,204
Participation rate	44.5	43.9	43.9	43.4	44.2	44.1	43.5	43.9	44.2	44.1	43.3	43.2	44.0	43.9	44.0
Employed	5,919	5,907	5,896	5,853	5,907	5,934	5,887	5,908	6,014	5,927	5,917	5,811	5,973	5,897	5,911
Employment-population ratio[2]	36.8	36.4	36.4	36.1	36.4	36.6	36.2	36.3	36.9	36.4	36.3	35.6	36.6	36.1	36.1
Unemployed	1,251	1,208	1,223	1,184	1,265	1,217	1,175	1,227	1,188	1,262	1,150	1,235	1,212	1,271	1,293
Unemployment rate	17.5	17.0	17.2	16.8	17.6	17.0	16.6	17.2	16.5	17.6	16.3	17.5	16.9	17.7	17.9
Not in the labor force	8,926	9,108	9,086	9,178	9,051	9,082	9,184	9,122	9,074	9,104	9,235	9,271	9,147	9,179	9,160
White[3]															
Civilian noninstitutional population[1]	181,292	182,643	182,384	182,531	182,676	182,846	183,022	183,188	183,340	183,483	183,640	183,767	183,888	184,015	184,167
Civilian labor force	120,546	121,686	120,997	121,212	121,383	121,278	120,995	121,273	121,606	121,509	121,553	121,621	121,484	121,961	122,177
Participation rate	66.5	66.3	66.3	66.4	66.4	66.3	66.1	66.2	66.3	66.2	66.2	66.2	66.1	66.3	66.3
Employed	114,235	115,239	115,006	115,199	115,610	115,526	115,318	115,618	115,966	115,910	116,158	116,022	116,135	116,574	116,791
Employment-population ratio[2]	63.0	63.1	63.1	63.1	63.3	63.2	63.0	63.1	63.3	63.2	63.3	63.1	63.2	63.4	63.4
Unemployed	6,311	5,847	5,991	6,013	5,773	5,752	5,677	5,655	5,640	5,600	5,395	5,598	5,349	5,387	5,386
Unemployment rate	5.2	4.8	5.0	5.0	4.8	4.7	4.7	4.7	4.6	4.6	4.4	4.6	4.4	4.4	4.4
Not in the labor force	60,746	61,558	61,387	61,319	61,293	61,568	62,027	61,915	61,735	61,973	62,088	62,146	62,403	62,054	61,989
Black or African American[3]															
Civilian noninstitutional population[1]	25,686	26,065	26,002	26,040	26,078	26,120	26,163	26,204	26,239	26,273	26,306	26,342	26,377	26,413	26,450
Civilian labor force	16,526	16,638	16,480	16,521	16,775	16,721	16,711	16,820	16,728	16,713	16,721	16,708	16,741	16,940	17,050
Participation rate	64.3	63.8	63.4	63.4	64.3	64.0	63.9	62.4	63.8	63.6	63.6	63.4	63.5	64.1	64.5
Employed	14,739	14,909	14,837	14,825	14,937	14,972	14,981	15,012	14,913	14,907	14,946	14,890	15,025	15,184	15,329
Employment-population ratio[2]	57.4	57.2	57.1	56.9	57.3	57.3	57.3	57.3	56.8	56.7	56.8	56.5	57.0	57.5	58.0
Unemployed	1,787	1,729	1,642	1,696	1,838	1,749	1,730	1,808	1,814	1,806	1,775	1,818	1,716	1,756	1,721
Unemployment rate	10.8	10.4	10.0	10.3	11.0	10.5	10.4	10.7	10.8	10.8	10.6	10.9	10.3	10.4	10.1
Not in the labor force	9,161	9,428	9,523	9,520	9,303	9,399	9,452	9,384	9,512	9,559	9,585	9,634	9,636	9,473	9,400

See footnotes at end of table.

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

[Numbers in thousands]

Employment status	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Hispanic or Latino ethnicity															
Civilian noninstitutional population[1]	27,551	28,109	27,968	28,059	28,150	28,243	28,338	28,431	28,520	28,608	28,642	28,729	28,815	28,902	28,989
Civilian labor force	18,813	19,272	19,297	19,302	19,432	19,463	19,444	19,524	19,552	19,544	19,379	19,458	19,541	19,665	19,761
Participation rate	68.3	68.6	69.0	68.8	69.0	68.9	68.6	68.7	68.6	68.3	67.7	67.7	67.8	68.0	68.2
Employed	17,372	17,930	17,959	18,013	18,102	18,128	18,079	18,213	18,238	18,252	18,198	18,211	18,425	18,412	18,578
Employment-population ratio[2]	63.1	63.8	64.2	64.2	64.3	64.2	63.8	64.1	63.9	63.8	63.5	63.4	63.9	63.7	64.1
Unemployed	1,441	1,342	1,338	1,289	1,330	1,335	1,366	1,311	1,313	1,292	1,181	1,248	1,117	1,252	1,183
Unemployment rate	7.7	7.0	6.9	6.7	6.8	6.9	7.0	6.7	6.7	6.6	6.1	6.4	5.7	6.4	6.0
Not in the labor force	8,738	8,837	8,671	8,756	8,717	8,780	8,894	8,907	8,968	9,064	9,263	9,270	9,273	9,237	9,228

[1] The population figures are not seasonally adjusted.

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

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

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

5. Selected employment indicators, monthly data seasonally adjusted

[In thousands]

Selected categories	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Characteristic															
Employed, 16 years and older	137,736	139,252	138,846	139,158	139,639	139,658	139,527	139,827	140,293	140,156	140,241	140,144	140,501	141,099	141,475
Men	73,332	74,524	74,118	74,501	74,811	74,824	74,629	74,852	75,188	74,938	74,934	74,964	75,375	75,735	75,985
Women	64,404	64,728	64,728	64,658	64,828	64,834	64,898	64,975	65,104	65,218	65,307	65,180	65,127	65,364	65,490
Married men, spouse present	44,653	45,084	44,763	44,958	44,948	45,099	45,093	45,127	45,462	45,315	45,171	45,351	45,382	45,482	45,725
Married women, spouse present	34,695	34,600	34,536	34,487	34,607	34,494	34,704	34,808	34,961	34,878	34,739	34,601	34,307	34,539	34,747
Persons at work part time[1]															
All industries:															
Part time for economic reasons	4,701	4,567	4,634	4,504	4,488	4,509	4,476	4,762	4,533	4,474	4,395	4,269	4,344	4,293	4,361
Slack work or business conditions	3,118	2,841	2,845	2,801	2,642	2,816	2,805	3,052	2,761	2,735	2,768	2,629	2,643	2,613	2,741
Could only find part-time work	1,279	1,409	1,449	1,400	1,472	1,403	1,312	1,385	1,420	1,440	1,329	1,296	1,419	1,363	1,346
Part time for noneconomic noneconomic reasons	19,014	19,380	19,570	19,564	19,737	19,657	19,410	19,704	19,499	19,502	19,089	19,555	19,458	19,584	19,435
Nonagricultural industries:															
Part time for economic reasons	4,596	4,469	4,567	4,423	4,390	4,408	4,400	4,656	4,404	4,382	4,303	4,153	4,268	4,186	4,280
Slack work or business conditions	3,052	2,773	2,801	2,753	2,580	2,722	2,750	2,971	2,685	2,682	2,702	2,572	2,592	2,540	2,705
Could only find part-time work	1,264	1,399	1,458	1,382	1,484	1,388	1,320	1,363	1,396	1,397	1,309	1,268	1,411	1,351	1,331
Part time for noneconomic reasons	18,658	19,026	19,145	19,123	19,327	19,204	19,061	19,288	19,141	19,176	18,765	19,254	19,182	19,226	19,160

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

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

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6. Selected unemployment indicators, monthly data seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Characteristic															
Total, 16 years and older	6.0	5.5	5.6	5.6	5.5	5.4	5.4	5.5	5.4	5.4	5.2	5.4	5.2	5.2	5.1
Both sexes, 16 to 19 years	17.5	17.0	17.2	16.8	17.6	17.0	16.6	17.2	16.5	17.6	16.3	17.5	16.9	17.7	17.9
Men, 20 years and older	5.6	5.0	5.2	5.0	4.9	5.0	5.0	4.9	4.9	4.9	4.7	4.9	4.6	4.4	4.4
Women, 20 years and older	5.1	4.9	4.8	5.0	4.9	4.7	4.7	4.8	4.7	4.7	4.6	4.7	4.5	4.6	4.6
White, total[1]	5.2	4.8	5.0	5.0	4.8	4.7	4.7	4.7	4.6	4.6	4.4	4.6	4.4	4.4	4.4
Both sexes, 16 to 19 years	15.2	15.0	15.6	14.8	14.9	15.4	14.7	15.1	14.4	15.7	14.0	15.5	14.5	15.3	15.4
Men, 16 to 19 years	17.1	16.3	18.5	16.2	15.5	15.8	15.9	17.4	15.5	17.9	16.3	18.1	17.7	17.8	17.8
Women, 16 to 19 years	13.3	13.6	12.7	13.3	14.2	15.0	13.5	12.6	13.2	13.4	11.8	12.9	11.0	12.8	13.0
Men, 20 years and older	5.0	4.4	4.7	4.5	4.3	4.4	4.3	4.2	4.2	4.2	4.0	4.1	4.0	3.8	3.8
Women, 20 years and older	4.4	4.2	4.1	4.4	4.2	4.0	4.0	4.0	4.1	3.9	3.9	3.9	3.8	4.0	3.9
Black or African American, total[1]	10.8	10.4	10.0	10.3	11.0	10.5	10.4	10.7	10.8	10.8	10.6	10.9	10.3	10.4	10.1
Both sexes, 16 to 19 years	33.0	31.7	32.3	32.7	37.2	29.4	28.6	34.7	32.7	30.8	30.2	31.5	32.6	35.5	35.8
Men, 16 to 19 years	36.0	35.6	30.4	34.4	37.9	34.9	35.9	37.1	38.1	37.7	30.0	34.1	35.8	37.8	36.3
Women, 16 to 19 years	30.3	28.2	33.9	31.2	36.6	24.2	21.1	32.4	27.0	24.0	30.5	28.6	29.2	32.8	35.3
Men, 20 years and older	10.3	9.9	9.4	9.5	10.3	10.4	10.2	10.2	10.5	10.7	10.4	10.9	9.2	9.3	9.2
Women, 20 years and older	9.2	8.9	8.4	9.0	9.1	8.7	8.9	8.9	9.0	9.1	8.9	9.1	8.9	8.8	8.4
Hispanic or Latino ethnicity	7.7	7.0	6.9	6.7	6.8	6.9	7.0	6.7	6.7	6.6	6.1	6.4	5.7	6.4	6.0
Married men, spouse present	3.8	3.1	3.1	3.2	3.2	3.1	3.0	3.0	3.1	3.1	3.1	3.0	3.0	2.7	2.7
Married women, spouse present	3.7	3.5	3.3	3.7	3.5	3.5	3.1	3.1	3.4	3.4	3.2	3.2	3.0	3.3	3.1
Full-time workers	6.1	5.6	5.7	5.6	5.6	5.5	5.5	5.4	5.4	5.4	5.2	5.4	5.1	5.1	5.0
Part-time workers	5.5	5.3	5.2	5.5	5.2	5.2	5.0	5.5	5.4	5.4	5.3	5.4	5.4	5.3	5.6
Educational attainment[2]															
Less than a high school diploma	8.8	8.5	8.7	8.7	8.3	8.2	8.9	8.2	8.0	8.3	7.5	7.8	7.8	8.4	7.8
High school graduates, no college[3]	5.5	5.0	5.0	5.1	5.0	4.9	4.8	4.9	4.9	4.9	4.7	4.9	4.7	4.4	4.5
Some college or associate degree	4.8	4.2	4.0	4.2	4.2	4.1	4.0	4.2	4.3	4.3	4.1	4.2	4.0	3.9	3.9
Bachelor's degree and higher[4]	3.1	2.7	2.9	2.7	2.7	2.7	2.6	2.5	2.5	2.5	2.4	2.4	2.4	2.5	2.4

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

[2] Data refer to persons 25 years and older.

[3] Includes high school diploma or equivalent.

[4] Includes persons with bachelor's, master's, professional, and doctoral degrees.

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

7. Duration of unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Less than 5 weeks	2,785	2,696	2,731	2,715	2,803	2,605	2,796	2,753	2,611	2,865	2,599	2,755	2,531	2,666	2,699
5 to 14 weeks	2,612	2,382	2,376	2,397	2,458	2,521	2,251	2,290	2,361	2,264	2,343	2,317	2,319	2,268	2,262
15 weeks and over	3,378	3,072	3,059	3,051	2,885	2,924	2,971	3,032	3,012	2,961	2,824	2,888	2,817	2,698	2,667
15 to 26 weeks	1,442	1,293	1,277	1,294	1,198	1,243	1,227	1,261	1,294	1,325	1,201	1,255	1,165	1,093	1,133
27 weeks and over	1,936	1,779	1,783	1,757	1,686	1,681	1,744	1,771	1,718	1,636	1,623	1,633	1,652	1,615	1,534
Mean duration, in weeks	19.2	19.6	19.8	19.8	18.5	19.2	19.6	19.7	19.8	19.3	19.3	19.1	19.5	19.6	18.8
Median duration, in weeks	10.1	9.8	9.9	10.8	8.9	9.5	9.5	9.5	9.8	9.5	9.4	9.3	9.3	8.9	9.1

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

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8. Unemployed persons by reason for unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Job losers[1]	4,838	4,197	4,190	4,117	4,228	3,978	4,014	4,074	4,066	4,108	4,048	3,980	3,784	3,675	3,646
On temporary layoff	1,121	998	920	1,009	1,068	971	919	947	941	965	966	965	961	838	864
Not on temporary layoff	3,717	3,199	3,270	3,108	3,160	3,007	3,094	3,127	3,124	3,144	3,082	3,015	2,823	2,837	2,782
Job leavers	818	858	855	909	896	885	830	829	880	898	819	965	855	897	942
Reentrants	2,477	2,408	2,437	2,426	2,333	2,440	2,417	2,411	2,388	2,361	2,324	2,405	2,364	2,356	2,353
New entrants	641	686	723	642	686	699	697	747	723	709	624	745	711	747	728
Percent of unemployed															
Job losers[1]	55.1	51.5	51.1	50.9	51.9	49.7	50.4	50.5	5.1	50.9	51.8	49.2	49.1	47.9	47.5
On temporary layoff	12.8	12.2	11.2	12.5	13.1	12.1	11.6	11.8	11.7	11.9	12.4	11.9	12.5	10.9	11.3
Not on temporary layoff	42.4	39.3	39.3	38.4	38.8	37.6	38.9	38.8	38.8	38.9	39.4	37.2	36.6	37.0	36.3
Job leavers	9.3	10.5	10.4	11.2	11.0	11.1	10.4	10.3	10.9	11.1	10.5	11.9	11.1	11.7	12.3
Reentrants	28.2	29.5	29.7	30.0	28.6	30.5	30.4	29.9	29.6	29.2	29.7	29.7	30.6	30.7	30.7
New entrants	7.3	8.4	8.8	7.9	8.4	8.7	8.8	9.3	9.0	8.8	8.0	9.2	9.2	9.7	9.5
Percent of civilian labor force															
Job losers[1]	3.3	2.8	2.8	2.8	2.9	2.7	2.7	2.8	2.7	2.8	2.7	2.7	2.6	2.5	2.4
Job leavers	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.6	.6	.6
Reentrants	1.7	1.6	1.7	1.6	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
New entrants	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5

[1] Includes persons who completed temporary jobs.

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

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9. Unemployment rates by sex and age, monthly data seasonally adjusted

[Civilian workers]

Sex and age	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Total, 16 years and older	6.0	5.5	5.6	5.6	5.5	5.4	5.4	5.5	5.4	5.4	5.2	5.4	5.2	5.2	5.1
16 to 24 years	12.4	11.8	12.1	12.0	11.9	11.6	11.8	12.2	11.5	11.7	11.7	12.4	11.6	11.8	11.8
16 to 19 years	17.5	17.0	17.2	16.8	17.6	17.0	16.6	17.2	16.5	17.6	16.3	17.5	16.9	17.7	17.9
16 to 17 years	19.1	20.2	21.5	20.5	20.3	20.7	19.6	20.6	21.2	20.6	19.3	20.6	19.4	19.9	20.0
18 to 19 years	16.4	15.0	14.7	14.4	16.1	14.9	14.9	15.2	13.5	15.4	14.4	15.5	15.0	16.9	16.3
20 to 24 years	10.0	9.4	9.7	9.7	9.2	9.0	9.5	9.8	9.2	8.9	9.5	10.0	9.0	8.9	8.8
25 years and older	4.8	4.4	4.4	4.5	4.4	4.3	4.3	4.3	4.3	4.3	4.1	4.2	4.0	4.0	4.0
25 to 54 years	5.0	4.6	4.5	4.5	4.6	4.4	4.4	4.4	4.4	4.5	4.2	4.3	4.2	4.1	4.2
55 years and older	4.1	3.7	3.9	3.9	3.7	3.7	3.7	3.8	3.7	3.5	3.5	3.6	3.5	3.5	3.2
Men, 16 years and older	6.3	5.6	5.8	5.6	5.5	5.6	5.6	5.6	5.5	5.6	5.3	5.6	5.3	5.1	5.1
16 to 24 years	13.4	12.6	13.0	12.7	12.2	12.5	12.9	13.0	12.4	12.5	12.7	14.1	12.9	13.0	12.5
16 to 19 years	19.3	18.4	19.0	18.0	17.8	18.1	18.2	19.2	18.2	20.3	18.2	20.4	19.9	20.4	20.0
16 to 17 years	20.7	22.0	23.2	22.3	21.2	21.9	20.6	22.1	23.0	24.3	22.0	25.0	22.9	22.2	22.5
18 to 19 years	18.4	16.3	16.6	15.9	15.9	16.1	16.8	17.7	14.8	17.8	16.1	17.7	17.5	19.9	18.4
20 to 24 years	10.6	10.1	10.3	10.4	9.7	10.0	10.5	10.2	9.8	9.0	10.2	11.3	9.7	9.5	9.2
25 years and older	5.0	4.4	4.6	4.4	4.4	4.4	4.3	4.3	4.3	4.4	4.0	4.1	4.0	3.8	3.8
25 to 54 years	5.2	4.6	4.7	4.4	4.5	4.5	4.4	4.4	4.4	4.6	4.1	4.2	4.1	3.9	4.0
55 years and older	4.4	3.9	4.1	4.3	3.8	4.0	3.9	4.1	3.7	3.5	3.9	3.7	3.6	3.5	3.0
Women, 16 years and older	5.7	5.4	5.3	5.6	5.5	5.2	5.2	5.3	5.2	5.2	5.1	5.2	5.0	5.2	5.2
16 to 24 years	11.4	11.0	11.1	11.2	11.6	10.6	10.6	11.3	10.5	10.8	10.5	10.6	10.1	10.4	10.9
16 to 19 years	15.6	15.5	15.4	15.6	17.5	15.9	15.0	15.1	14.6	14.8	14.3	14.6	13.7	14.9	15.8
16 to 17 years	17.5	18.5	20.1	18.9	19.5	19.7	18.6	19.0	19.3	17.2	16.8	16.5	15.8	17.5	17.7
18 t0 19 years	14.2	13.5	12.7	12.7	16.4	13.5	12.8	12.5	12.1	12.9	12.7	13.2	12.2	13.9	14.2
20 to 24 years	9.3	8.7	9.0	9.0	8.7	7.9	8.4	9.4	8.5	8.9	8.7	8.6	8.3	8.2	8.4
25 years and older	4.6	4.4	4.2	4.5	4.4	4.3	4.3	4.2	4.3	4.2	4.1	4.2	4.0	4.2	4.1
25 to 54 years	4.8	4.6	4.4	4.7	4.7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.2	4.4	4.3
55 years and older[1]	3.7	3.6	3.3	3.8	3.8	3.9	3.5	3.3	3.6	3.2	3.3	3.5	3.2	3.2	3.2

[1] Data are not seasonally adjusted.

NOTE: Beginning in January 2003, data reflect revised population controls used in the household survey.

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10. Unemployment rates by State, seasonally adjusted

State	Apr. 2004	Mar. 2005[P]	Apr. 2005[P]	State	Apr. 2004	Mar. 2005[P]	Apr. 2005[P]
Alabama	5.6	4.7	4.4	Missouri	5.4	5.7	5.6
Alaska	7.4	6.6	6.7	Montana	4.4	4.6	4.4
Arizona	5.2	4.7	5.0	Nebraska	3.7	4.0	3.9
Arkansas	5.7	5.2	4.9	Nevada	4.5	3.9	4.0
California	6.4	5.4	5.4	New Hampshire	4.0	3.7	3.4
Colorado	5.5	5.1	5.3	New Jersey	5.1	4.3	4.2
Connecticut	5.0	4.9	4.9	New Mexico	5.8	5.9	6.0
Delaware	4.1	3.9	3.9	New York	6.0	4.6	4.9
District of Columbia	7.9	7.8	7.7	North Carolina	5.7	5.2	5.3
Florida	4.8	4.4	4.2	North Dakota	3.2	3.3	3.2
Georgia	4.4	5.0	5.0	Ohio	6.1	6.3	6.1
Hawaii	3.4	2.8	2.9	Oklahoma	5.0	4.4	4.5
Idaho	4.9	4.2	4.0	Oregon	7.4	6.1	6.5
Illinois	6.2	5.6	5.9	Pennsylvania	5.4	5.4	4.9
Indiana	5.1	5.6	5.4	Rhode Island	5.3	4.5	4.7
Iowa	4.7	5.1	4.5	South Carolina	6.7	6.7	6.5
Kansas	5.5	5.4	5.2	South Dakota	3.4	3.7	3.7
Kentucky	5.5	5.3	5.6	Tennessee	5.4	5.8	5.8
Louisiana	5.7	5.3	5.1	Texas	6.2	5.6	5.5
Maine	4.4	4.7	4.7	Utah	5.2	4.8	4.9
Maryland	4.2	4.3	4.3	Vermont	3.8	3.4	3.3
Massachusetts	5.3	4.9	4.7	Virginia	3.7	3.3	3.6
Michigan	6.7	6.9	7.0	Washington	6.3	5.2	5.5
Minnesota	4.5	4.4	4.0	West Virginia	5.4	5.2	5.1
Mississippi	5.6	7.0	6.8	Wisconsin	5.0	4.6	4.5
				Wyoming	3.6	3.1	3.5

[P] = preliminary

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11. Employment of workers on nonfarm payrolls by State, seasonally adjusted

State	Apr. 2004	Mar. 2005[p]	Apr. 2005[p]	State	Apr. 2004	Mar. 2005[p]	Apr. 2005[p]
Alabama	2,144,932	2,153,150	2,143,531	Missouri	3,027,981	3,016,881	3,023,591
Alaska	331,646	336,833	339,688	Montana	482,151	490,247	490,597
Arizona	2,765,126	2,810,730	2,834,853	Nebraska	982,835	990,127	988,902
Arkansas	1,301,333	1,327,837	1,338,943	Nevada	1,173,229	1,207,926	1,217,259
California	17,495,673	17,656,815	17,746,916	New Hampshire	722,231	729,623	733,778
Colorado	2,510,512	2,543,820	2,559,003	New Jersey	4,389,445	4,396,279	4,413,481
Connecticut	1,798,276	1,789,618	1,807,993	New Mexico	910,377	935,178	942,006
Delaware	422,484	426,866	429,449	New York	9,337,079	9,331,794	9,410,201
District of Columbia	298,181	303,350	303,233	North Carolina	4,254,216	4,286,131	4,301,942
Florida	8,365,395	8,560,910	8,622,259	North Dakota	352,728	356,230	355,964
Georgia	4,372,563	4,456,654	4,469,954	Ohio	5,880,021	5,923,898	5,947,936
Hawaii	614,838	626,179	630,913	Oklahoma	1,709,442	1,720,072	1,725,450
Idaho	701,439	725,376	728,573	Oregon	1,854,928	1,863,090	1,873,284
Illinois	6,381,171	6,448,951	6,495,078	Pennsylvania	6,256,757	6,336,022	6,329,209
Indiana	3,166,330	3,206,971	3,217,082	Rhode Island	563,310	564,027	567,637
Iowa	1,622,439	1,643,096	1,645,255	South Carolina	2,037,413	2,070,732	2,072,512
Kansas	1,461,311	1,465,613	1,471,560	South Dakota	426,992	429,917	430,352
Kentucky	1,977,938	1,983,259	1,993,718	Tennessee	2,916,124	2,902,034	2,907,118
Louisiana	2,054,296	2,081,643	2,101,000	Texas	11,005,460	11,144,714	11,208,511
Maine	696,898	701,658	705,740	Utah	1,199,880	1,224,262	1,233,673
Maryland	2,879,103	2,899,401	2,915,228	Vermont	353,365	352,673	352,288
Massachusetts	3,395,348	3,369,587	3,377,480	Virginia	3,806,027	3,861,448	3,897,576
Michigan	5,062,165	5,099,411	5,142,355	Washington	3,228,281	3,253,606	3,270,470
Minnesota	2,948,472	2,970,372	2,970,541	West Virginia	789,513	797,866	798,117
Mississippi	1,323,535	1,343,373	1,343,322	Wisconsin	3,068,691	3,051,571	3,058,501
				Wyoming	279,740	283,436	283,805

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the data base.

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12. Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	Apr.[p]	May[p]
TOTAL NONFARM	129,999	131,480	131,373	131,479	131,562	131,750	131,880	132,162	132,294	132,449	132,573	132,873	132,995	133,269	133,347
TOTAL PRIVATE	108,416	109,862	109,787	109,908	109,976	110,105	110,203	110,462	110,588	110,749	110,863	111,140	111,264	111,525	111,598
GOODS-PRODUCING	21,816	21,884	21,888	21,890	21,902	21,946	21,947	21,982	21,996	22,022	22,004	22,066	22,093	22,135	22,149
Natural resources and mining	572	591	592	591	596	595	597	595	599	602	607	602	619	622	623
Logging	69.4	67.8	68.9	67.6	67.4	67.5	68.0	67.0	66.9	67.9	68.0	67.3	68.7	64.8	64.7
Mining	502.7	523.2	523.3	523.8	528.9	527.8	528.5	527.7	532.5	534.4	538.7	545.0	549.8	557.5	558.5
Oil and gas extraction	120.2	123.1	123.7	123.2	123.2	123.8	124.0	123.6	124.4	124.1	123.4	122.5	124.0	124.1	124.4
Mining, except oil and gas[1]	202.7	207.1	207.1	208.1	211.8	209.1	208.5	208.4	210.7	211.3	212.9	215.5	215.7	217.9	218.8
Coal mining	70.0	71.7	71.3	72.0	73.5	73.1	72.9	72.7	73.7	73.9	75.4	76.1	76.1	76.6	76.2
Support activities for mining	179.8	193.1	192.5	192.5	193.9	194.9	196.0	195.7	197.4	199.0	202.4	207.0	210.1	215.5	215.3
Construction	6,735	6,964	6,949	6,955	6,965	6,985	6,998	7,043	7,060	7,086	7,090	7,133	7,159	7,207	7,227
Construction of buildings	1,575.8	1,632.2	1,623.1	1,626.7	1,632.2	1,636.3	1,647.8	1,663.0	1,668.3	1,678.9	1,682.4	1,689.2	1,692.5	1,695.1	1,699.1
Heavy and civil engineering	903.1	902.5	903.0	899.8	899.7	901.1	902.1	904.1	906.4	907.8	908.2	911.7	915.7	920.7	926.7
Specialty trade contractors	4,255.7	4,429.7	4,423.3	4,428.6	4,433.1	4,447.6	4,447.8	4,476.1	4,484.8	4,499.2	4,499.6	4,531.8	4,550.9	4,591.4	4,600.8
Manufacturing	14,510	14,329	14,347	14,344	14,341	14,366	14,352	14,344	14,337	14,334	14,307	14,321	14,315	14,306	14,299
Production workers	10,190	10,083	10,093	10,095	10,102	10,131	10,117	10,111	10,104	10,097	10,082	10,085	10,091	10,088	10,090
Durable goods	8,963	8,923	8,925	8,931	8,926	8,965	8,957	8,960	8,954	8,957	8,942	8,962	8,957	8,956	8,959
Production workers	6,152	6,137	6,138	6,147	6,144	6,180	6,172	6,172	6,166	6,170	6,166	6,178	6,182	6,189	6,192
Wood products	537.6	548.4	547.9	549	550	551.7	550.1	554.5	553.3	555.2	554.7	553.6	555.2	551.6	549.7
Nonmetallic mineral products	494.2	504.8	506.3	507.4	507.9	507.6	508.8	509.1	507.9	506.5	504.5	504.0	502.0	504.0	500.8
Primary metals	477.4	465.9	466.1	467.4	468.4	467.4	466.4	466.0	465.8	465.2	465.5	466.9	466.6	466.5	466.6
Fabricated metal products	1,506.8	1,470.3	1,496.5	1,498.3	1,502.6	1,506.8	1,508.5	1,511.5	1,510.9	1,512.8	1,514.3	1,514.1	1,517.3	1,518.4	1,523.1
Machinery	1,149.4	1,141.5	1,140.0	1,142.7	1,146.8	1,151.5	1,148.7	1,147.3	1,147.4	1,146.0	1,145.9	1,148.0	1,151.7	1,153.8	1,155.7
Computer and electronic products[1]	1,355.2	1,326.2	1,327.1	1,327.4	1,332.8	1,334.0	1,332.5	1,329.8	1,327.1	1,325.8	1,327.0	1,327.5	1,326.0	1,328.0	1,328.7
Computer and peripheral equipment	224.0	212.1	213.7	212.2	211.4	212.4	211.9	209.7	209.3	210.4	210.2	211.2	211.3	212.0	212.3
Communications equipment	154.9	150.5	148.9	150.1	151.3	151.6	151.0	150.7	152.7	153.7	155.1	154.5	153.7	153.7	153.4
Semiconductors and electronic components	461.1	452.8	453.3	455.2	457.9	457.4	457.0	454.9	451.9	448.0	447.4	447.1	446.7	446.2	445.5
Electronic instruments	429.7	431.8	431.1	431.2	433.9	434.2	434.6	437.0	435.6	435.7	436.4	436.4	436.2	437.5	439.0
Electrical equipment and appliances	459.6	446.8	446.1	446.8	447.3	447.7	447.0	445.1	447.4	445.8	445.1	445.3	444.5	443.2	444.5
Transportation equipment	1,774.1	1,763.5	1,763.6	1,762.2	1,739.1	1,769.5	1,768.5	1,771.0	1,767.2	1,771.9	1,760.1	1,781.8	1,776.7	1,778.3	1,780.8
Furniture and related products	572.9	572.7	574.5	573.6	574.0	573.3	572.1	571.3	572.2	571.7	570.3	567.5	565.9	562.2	559.5
Miscellaneous manufacturing	663.3	655.5	656.4	656.4	656.8	655.2	654.5	654.1	654.7	656.4	654.3	653.5	651.3	649.5	649.7
Nondurable goods	5,547	5,406	5,422	5,413	5,415	5,401	5,395	5,384	5,383	5,377	5,365	5,359	5,358	5,350	5,340
Production workers	4,038	3,945	3,955	3,948	3,958	3,951	3,945	3,939	3,938	3,927	3,916	3,907	3,909	3,899	3,898
Food manufacturing	1,517.5	1,497.4	1,501.8	1,498.6	1,504.6	1,497.0	1,494.3	1,493.5	1,493.6	1,498.8	1,494.3	1,493.2	1,495.2	1,491.0	1,491.7
Beverages and tobacco products	199.6	194.3	194.0	194.4	194.2	193.4	194.9	192.9	195.1	193.0	192.2	192.5	191.6	191.5	192.1
Textile mills	261.3	238.5	239.7	239.3	238.8	238.1	237.3	236.5	235.0	233.2	231.5	230.1	228.7	226.3	226.4
Textile product mills	179.3	177.7	180.2	178.5	178.2	177.6	177.8	178.1	178.4	178.0	178.1	177.9	177.9	178.2	178.8
Apparel	312.3	284.8	289.1	285.9	283.2	282.6	281.0	276.1	273.4	271.9	269.3	267.2	262.8	262.4	257.9
Leather and allied products	44.5	42.9	42.8	42.6	42.5	42.5	42.7	42.8	43.4	43.1	43.1	43.2	42.9	42.9	42.5
Paper and paper products	516.2	499.1	498.9	496.7	499.2	500.6	499.3	499.4	498.1	497.9	499.9	500.2	502.0	499.6	498.4
Printing and related support activities	680.5	665.0	667.2	668.3	665.2	663.9	661.6	661.0	661.3	660.8	659.6	659.2	658.8	659.3	658.2
Petroleum and coal products	114.3	112.8	112.3	112.9	112.8	113.2	113.2	113.3	113.6	113.8	114.5	115.1	115.0	116.4	117.4
Chemicals	906.1	887.0	889.0	888.8	887.7	885.8	885.5	884.5	882.4	880.5	877.1	876.4	877.5	878.0	876.1
Plastics and rubber products	815.4	806.6	807.3	807.1	808.9	806.6	807.1	806.3	808.6	806.2	804.9	804.1	805.8	804.3	800.4
SERVICE-PROVIDING	108,182	109,596	109,485	109,589	109,660	109,804	109,933	110,180	110,298	110,427	110,569	110,807	110,902	111,134	111,198
PRIVATE SERVICE-PROVIDING	86,599	87,978	87,899	88,018	88,074	88,159	88,256	88,480	88,592	88,727	88,859	89,074	89,171	89,390	89,449
Trade, transportation, and utilities	25,287	25,510	25,511	25,536	25,536	25,537	25,555	25,581	25,621	25,620	25,652	25,714	25,743	25,793	25,824
Wholesale trade	5,607.5	5,654.9	5,651.4	5,653.4	5,660.2	5,662.9	5,672.4	5,674.7	5,680.0	5,683.6	5,679.9	5,688.7	5,702.2	5,709.2	5,719.5
Durable goods	2,940.6	2,949.1	2,942.9	2,948.4	2,955.3	2,957.8	2,960.2	2,962.3	2,960.4	2,964.5	2,965.6	2,968.7	2,975.6	2,977.9	2,983.5
Nondurable goods	2,004.6	2,007.1	2010.6	2006.6	2004.0	2004.0	2008.1	2009.1	2012.6	2009.9	2,005.4	2,006.9	2,011.2	2,012.0	2,012.1
Electronic markets and agents and brokers	662.2	698.8	697.9	698.4	700.9	701.1	704.1	703.3	707.0	709.2	708.9	713.1	715.4	719.3	723.9
Retail trade	14,917.3	15,034.7	15,052.3	15,060.5	15,048.2	15,043.3	15,037.7	15,056.5	15,081.4	15,077.0	15,081.2	15,125.4	15,128.7	15,155.3	15,166.0
Motor vehicles and parts dealers[1]	1,882.9	1,901.2	1,906.9	1,904.1	1,904.4	1,899.8	1,898.4	1,896.4	1,901.2	1,905.9	1,907.4	1,911.2	1,912.6	1,914.9	1,916.7
Automobile dealers	1,254.4	1,254.2	1258.5	1257.1	1254.1	1251.2	1247.3	1245.0	1247.6	1249.1	1247.9	1248.8	1250.2	1252.2	1253.1
Furniture and home furnishings stores	547.3	560.2	558.7	559.1	559.8	561.6	561.9	562.3	565.6	563.7	562.1	562.6	562.3	566.1	567.5
Electronics and appliance stores	512.2	514.4	514.3	514.1	513.4	512.0	513.6	520.2	520.3	516.5	516.1	515.1	518.4	518.4	521.0

See notes at end of table.

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12. Continued—Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
Building material and garden supply stores	1,185.0	1,226.0	1,227.9	1,223.8	1,224.7	1,228.1	1,232.5	1,236.3	1,240.4	1,243.5	1,248.0	1,264.8	1,263.7	1,263.9	1,266.2
Food and beverage stores	2,383.4	2,826.3	2,835.8	2,832.6	2,828.5	2,826.2	2,827.1	2,830.2	2,822.7	2,819.8	2,826.0	2,826.6	2,826.8	2,829.4	2,828.2
Health and personal care stores	938.1	941.7	941.2	941.3	941.0	941.0	942.1	941.6	944.5	946.6	944.8	949.7	949.2	955.4	956.3
Gasoline stations	882.0	877.1	879.1	877.5	876.6	876.5	878.0	877.0	873.7	871.3	872.9	874.6	874.5	875.2	875.3
Clothing and clothing accessories stores	1,304.5	1,361.8	1,357.5	1,367.6	1,369.5	1,374.4	1,371.9	1,376.0	1,377.9	1,381.3	1,375.5	1,380.5	1,384.0	1,386.0	1,389.2
Sporting goods, hobby, book, and music stores	646.5	639.2	639.7	639.4	638.9	639.0	638.7	638.0	639.0	635.8	637.7	636.2	638.3	641.5	642.2
General merchandise stores[1]	2,822.4	2,843.5	2,848.4	2,856.4	2,848.0	2,842.5	2,832.9	2,835.2	2,854.9	2,852.9	2,853.5	2,864.1	2,862.0	2,866.5	2,866.9
Department stores	1,620.6	1,612.5	1,614.2	1,618.0	1,616.1	1,611.4	1,603.3	1,604.2	1,619.1	1,619.3	1,619.1	1,625.7	1,624.2	1,626.6	1,626.4
Miscellaneous store retailers	930.7	918.6	917.0	919.2	918.8	918.9	917.0	920.5	917.4	918.2	918.7	919.9	919.4	919.8	920.7
Nonstore retailers	427.3	424.8	425.8	425.4	424.6	423.3	423.6	422.8	423.8	421.5	418.5	420.1	417.5	418.2	415.8
Transportation and warehousing	4,185.4	4,250.0	4,236.3	4,250.9	4,257.0	4,260.4	4,274.1	4,279.6	4,289.6	4,288.0	4,316.0	4,324.1	4,336.6	4,354.1	4,363.7
Air transportation	528.3	514.8	516.7	517.0	516.3	515.0	513.8	514.2	514.6	512.3	509.4	507.9	508.0	506.6	505.5
Rail transportation	217.7	224.1	223.7	224.7	225.0	224.6	225.5	225.4	224.6	224.0	224.4	223.9	223.7	223.7	224.3
Water transportation	54.5	57.2	57.3	58.2	58.1	56.7	57.2	57.7	57.8	58.6	59.8	60.0	61.6	62.4	63.3
Truck transportation	1,325.6	1,350.7	1,346.3	1,352.2	1,352.5	1,352.5	1,358.5	1,356.0	1,358.9	1,366.5	1,372.6	1,378.0	1,383.2	1,390.5	1,395.3
Transit and ground passenger transportation	382.2	385.5	386.3	381.6	383.2	386.2	388.3	389.3	389.4	391.0	391.7	391.0	388.7	392.9	391.1
Pipeline transportation	40.2	38.8	38.8	38.9	39.0	38.9	39.0	38.9	39.0	38.7	39.3	39.4	39.3	39.5	39.1
Scenic and sightseeing transportation	26.6	26.7	27.0	27.4	26.3	27.7	27.8	25.6	26.1	26.6	24.2	24.9	26.7	27.2	27.9
Support activities for transportation	520.3	535.6	532.6	534.3	535.5	536.9	537.7	539.9	544.6	547.0	549.3	551.5	553.4	553.4	555.3
Couriers and messengers	561.7	560.5	557.0	562.1	563.1	562.6	563.8	564.4	568.7	556.4	577.5	577.6	579.3	583.2	584.2
Warehousing and storage	528.3	556.0	550.6	554.5	558.0	559.3	562.5	568.2	565.9	566.9	567.8	569.9	572.7	574.7	577.7
Utilities	577.0	570.2	571.1	570.8	570.9	570.1	571.1	570.3	570.2	571.3	574.7	576.0	575.2	574.7	574.3
Information	3,188	3,138	3,146	3,151	3,144	3,135	3,127	3,131	3,133	3,127	3,123	3,127	3,134	3,149	3,141
Publishing industries, except Internet	924.8	909.8	911.1	911.9	909.6	909.3	909.2	908.1	908.9	905.7	905.0	905.6	906.8	904.3	901.8
Motion picture and sound recording industries	376.2	389.0	392.3	395.5	394.4	389.3	389.7	395.3	390.6	384.8	380.3	380.9	386.9	398.2	392.2
Broadcasting, except Internet	324.3	326.6	326.3	326.5	327.2	327.8	328.1	329.5	329.7	329.7	331.3	330.4	330.7	330.1	329.7
Internet publishing and broadcasting	29.2	31.3	30.6	31.5	31.4	31.7	32.0	33.0	33.6	34.0	34.8	34.6	35.0	35.5	36.3
Telecommunications	1,082.3	1,042.5	1,046.6	1,044.0	1,041.9	1,037.1	1,028.4	1,024.8	1,030.0	1,031.5	1,030.8	1,032.2	1,029.9	1,036.9	1,035.4
ISPs, search portals, and data processing	402.4	388.1	388.2	389.9	388.6	387.6	387.6	389.2	389.5	390.4	389.9	392.6	393.7	394.1	395.4
Other information services	48.7	50.9	51.3	51.6	51.3	51.7	51.5	50.9	50.7	50.7	51.0	50.9	50.7	50.2	50.1
Financial activities	7,977	8,052	8,037	8,051	8,043	8,058	8,083	8,093	8,107	8,128	8,150	8,165	8,167	8,181	8,185
Finance and insurance	5,922.6	5,965.6	5,956.0	5,965.6	5,958.6	5,970.2	5,982.1	5,994.1	6,001.3	6,014.5	6,030.9	6,037.6	6,039.8	6,049.0	6,054.5
Monetary authorities—central bank	22.6	21.6	21.6	21.6	21.5	21.6	21.5	21.3	20.9	20.6	20.5	20.4	20.4	20.3	20.3
Credit intermediation and related activities[1]	2,792.4	2,832.3	2,826.3	2,833.7	2,829.2	2,833.4	2,841.0	2,847.9	2,859.2	2,871.9	2,882.7	2,891.0	2,896.8	2,901.5	2,903.7
Depository credit intermediation[1]	1,748.5	1,761.2	1,758.2	1,762.1	1,760.6	1,763.0	1,765.1	1,768.1	1,773.3	1,778.8	1,785.6	1,790.3	1,794.0	1,796.1	1,799.0
Commercial banking	1,280.1	1,285.3	1,284.6	1,286.3	1,283.9	1,283.5	1,286.4	1,288.3	1,293.1	1,296.8	1,301.6	1,305.5	1,308.0	1,308.8	1,310.4
Securities, commodity contracts, investments	757.7	766.8	761.9	765.1	766.3	769.9	772.3	777.3	776.9	779.7	782.5	784.8	786.9	788.6	789.5
Insurance carriers and related activities	2,266.0	2,260.3	2,261.6	2,260.9	2,257.0	2,261.0	2,263.3	2,264.1	2,260.4	2,258.1	2,259.6	2,256.7	2,250.9	2,255.1	2,256.8
Funds, trusts, and other financial vehicles	83.9	84.7	84.6	84.3	84.6	84.3	84.0	83.5	83.9	84.2	85.6	84.7	84.8	83.5	84.2
Real estate and rental and leasing	2,053.9	2,086.2	2,081.1	2,085.7	2,084.6	2,088.2	2,101.3	2,099.2	2,105.5	2,113.6	2,119.0	2,127.2	2,126.8	2,131.9	2,130.2
Real estate	1,383.6	1,417.0	1,413.8	1,415.7	1,416.7	1,420.0	1,429.1	1,428.6	1,434.7	1,437.8	1,439.7	1,443.8	1,444.0	1,446.7	1,446.4
Rental and leasing services	643.1	643.9	642.0	645.0	643.0	643.3	647.6	646.3	646.0	650.9	654.1	658.3	657.8	659.5	657.8
Lessors of nonfinancial intangible assets	27.3	25.4	25.3	25.0	24.9	24.9	24.6	24.3	24.8	24.9	25.2	25.1	25.0	25.7	26.0
Professional and business services	15,987	16,414	16,384	16,415	16,453	16,470	16,514	16,614	16,611	16,674	16,694	16,775	16,796	16,829	16,828
Professional and technical services[1]	6,629.5	6,762.0	6,730.0	6,754.0	6,765.1	6,779.7	6,805.4	6,835.3	6,834.4	6,869.9	6,882.1	6,902.7	6,907.3	6,922.1	6,925.2
Legal services	1,142.1	1,161.8	1,160.0	1,163.5	1,165.0	1,163.6	1,166.8	1,167.4	1,163.1	1,164.4	1,160.8	1,161.2	1,161.5	1,161.8	1,162.9
Accounting and bookkeeping services	815.3	816.0	810.7	810.5	813.9	814.2	816.1	821.5	816.6	840.8	858.1	858.1	856.6	859.1	853.0
Architectural and engineering services	1,226.9	1,260.8	1,254.6	1,258.7	1,262.0	1,264.4	1,270.5	1,280.5	1,284.9	1,289.5	1,286.9	1,292.0	1,295.7	1,299.2	1,302.4

See notes at end of table.

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12. Continued—Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
Computer systems design and related services	1,116.6	1,147.4	1,134.0	1,142.3	1,145.9	1,155.0	1,161.1	1,167.3	1,174.1	1,174.3	1,171.8	1,174.2	1,175.5	1,176.2	1,176.9
Management and technical consulting services	744.9	779.0	778.2	783.6	784.7	786.9	787.9	790.5	787.8	789.9	789.3	793.7	795.5	798.3	799.6
Management of companies and enterprises	1,687.2	1,718.0	1,719.8	1,722.6	1,723.7	1,720.7	1,715.0	1,715.3	1,722.5	1,725.6	1,730.7	1,731.3	1,731.5	1,733.5	1,735.6
Administrative and waste services	7,669.8	7,934.0	7,934.1	7,938.3	7,964.0	7,969.7	7,993.2	8,063.1	8,054.3	8,078.0	8,081.6	8,140.9	8,156.7	8,173.2	8,167.6
Administrative and support services[1]	7,347.7	7,608.7	7,609.4	7,611.2	7,637.2	7,643.1	7,667.3	7,736.4	7,728.2	7,751.4	7,755.2	7,813.6	7,831.8	7,849.9	7,845.2
Employment services[1]	3,299.5	3,470.3	3,461.2	3,449.5	3,477.5	3,480.0	3,513.5	3,572.9	3,570.5	3,584.5	3,595.9	3,633.8	3,645.7	3,660.5	3,659.2
Temporary help services	2,224.2	2,393.2	2,385.0	2,383.9	2,398.6	2,411.8	2,438.7	2,486.5	2,484.7	2,479.4	2,479.1	2,508.0	2,506.1	2,516.7	2,512.4
Business support services	749.7	754.5	757.5	760.3	758.1	757.9	752.6	755.9	754.6	757.0	752.8	755.7	754.1	755.6	753.9
Services to buildings and dwellings	1,636.1	1,694.2	1,700.1	1,707.7	1,705.2	1,706.6	1,706.4	1,708.6	1,707.2	1,706.1	1,701.4	1,711.2	1,712.6	1,714.9	1,716.1
Waste management and remediation services	322.1	325.3	324.7	327.1	326.8	326.6	325.9	326.7	326.1	326.6	326.4	327.1	324.9	323.3	322.4
Educational and health services	16,588	16,954	16,913	16,936	16,963	17,010	17,019	17,081	17,108	17,142	17,178	17,186	17,210	17,244	17,284
Educational services	2,695.1	2,766.4	2,754.1	2,755.1	2,765.6	2,772.3	2,773.2	2,794.0	2,797.2	2,805.5	2,825.0	2,810.3	2,814.0	2,819.3	2,827.7
Health care and social assistance	13,892.6	14,187.3	14,158.5	14,180.7	14,197.8	14,237.8	14,246.1	14,287.2	14,310.7	14,336.1	14,353.2	14,375.4	14,396.0	14,424.2	14,456.7
Ambulatory health care services[1]	4,786.4	4,946.4	4,929.9	4,941.9	4,956.2	4,969.2	4,975.0	4,996.9	5,006.7	5,017.0	5,027.0	5,035.0	5,041.6	5,056.1	5,072.1
Offices of physicians	2,002.5	2,053.9	2,046.4	2,051.1	2,054.5	2,059.1	2,064.5	2,074.2	2,077.7	2,084.3	2,085.3	2,090.9	2,093.2	2,103.4	2,113.9
Outpatient care centers	426.8	446.2	445.8	446.6	448.4	449.7	448.7	449.5	449.8	450.3	451.5	451.1	452.6	454.1	456.5
Home health care services	732.6	773.2	768.5	771.7	775.4	778.0	779.5	782.7	789.2	790.7	796.6	796.8	798.8	797.5	798.6
Hospitals	4,244.6	4,293.6	4,290.0	4,292.2	4,296.2	4,305.0	4,306.0	4,311.2	4,319.7	4,323.5	4,329.6	4,337.8	4,344.6	4,352.6	4,358.4
Nursing and residential care facilities[1]	2,786.2	2,814.8	2,811.9	2,814.4	2,818.0	2,819.8	2,825.0	2,827.2	2,827.2	2,827.9	2,827.0	2,830.0	2,830.0	2,830.4	2,834.2
Nursing care facilities	1,579.8	1,575.3	1,575.8	1,576.3	1,576.9	1,576.7	1,576.6	1,576.8	1,576.4	1,574.5	1,571.5	1,571.6	1,572.3	1,570.4	1,571.2
Social assistance[1]	2,075.4	2,132.5	2,126.7	2,132.2	2,127.4	2,143.8	2,140.1	2,151.9	2,157.1	2,167.7	2,169.6	2,172.6	2,179.8	2,185.1	2,192.0
Child day care services	755.3	767.1	762	767.4	770.4	776.1	767.9	772.8	775.3	780.4	780.5	782.5	785.1	786.7	787.8
Leisure and hospitality	12,173	12,479	12,474	12,486	12,497	12,508	12,522	12,546	12,571	12,589	12,611	12,650	12,662	12,725	12,719
Arts, entertainment, and recreation	1,812.9	1,833.0	1,836.6	1,834.8	1,830.9	1,831.0	1,836.2	1,834.4	1,826.4	1,811.0	1,805.4	1,808.4	1,805.8	1,821.5	1,816.4
Performing arts and spectator sports	371.7	364.8	362.8	363.6	359.2	358.4	363.6	364.4	362.5	357.9	355.6	357.0	357.8	362.5	361.7
Museums, historical sites, zoos, and parks	114.7	117.1	117.8	117.8	118.6	118.8	118.3	118.2	116.9	114.8	114.5	113.6	115.8	116.9	118.0
Amusements, gambling, and recreation	1,326.5	1,351.1	1,356.0	1,353.4	1,353.1	1,353.8	1,354.3	1,351.8	1,347.0	1,338.3	1,335.3	1,337.8	1,332.2	1,342.1	1,336.7
Accommodations and food services	10,359.8	10,646.0	10,637.1	10,650.7	10,666.1	10,676.5	10,685.3	10,712.0	10,744.1	10,778.4	10,805.1	10,841.1	10,856.0	10,903.8	10,902.7
Accommodations	1,775.4	1,795.9	1,792.2	1,798.0	1,797.3	1,801.3	1,801.5	1,800.6	1,814.7	1,824.6	1,825.9	1,830.3	1,826.6	1,831.1	1,828.8
Food services and drinking places	8,584.4	8,850.1	8,844.9	8,852.7	8,868.8	8,875.2	8,883.8	8,911.4	8,929.4	8,953.8	8,979.2	9,010.8	9,029.4	9,072.7	9,073.9
Other services	5,401	5,431	5,434	5,443	5,438	5,441	5,436	5,434	5,441	5,447	5,451	5,457	5,459	5,469	5,468
Repair and maintenance	1,233.6	1,227.6	1,229.6	1,226.5	1,227.4	1,225.9	1,226.9	1,227.9	1,227.1	1,229.9	1,229.4	1,233.7	1,235.6	1,239.0	1,241.3
Personal and laundry services	1,263.5	1,274.1	1,281.6	1,283.4	1,278.0	1,276.9	1,271.5	1,267.8	1,271.6	1,276.8	1,280.4	1,280.5	1,282.2	1,287.2	1,286.4
Membership associations and organizations	2,903.6	2,929.1	2,922.3	2,932.7	2,932.8	2,937.9	2,937.9	2,938.1	2,942.3	2,940.6	2,941.4	2,942.9	2,940.8	2,943.0	2,940.3
Government	21,583	21,618	21,586	21,571	21,586	21,645	21,677	21,700	21,706	21,700	21,710	21,733	21,731	21,744	21,749
Federal	2,761	2,728	2,729	2,731	2,726	2,730	2,730	2,723	2,728	2,706	2,717	2,720	2,724	2,718	2,719
Federal, except U.S. Postal Service	1,952.4	1,943.4	1,943.2	1,946.3	1,939.2	1,945.5	1,946.8	1,940.1	1,946.4	1,939.5	1,937.2	1,939.8	1,943.2	1,937.7	1,938.3
U.S. Postal Service	808.6	784.1	785.8	785.1	786.4	784.3	783.4	782.5	781.4	766.4	780.2	780.1	780.8	780.5	781.1
State	5,002	4,985	4,967	4,963	4,976	4,987	5,000	5,007	5,015	5,020	5,025	5,027	5,024	5,027	5,026
Education	2,254.7	2,249.2	2,233.3	2,228.2	2,241.4	2,249.4	2,263.7	2,268.4	2,271.3	2,277.9	2,280.4	2,283.0	2,280.8	2,281.5	2,281.2
Other State government	2,747.6	2,736.2	2,733.2	2,734.4	2,734.4	2,737.8	2,736.4	2,738.2	2,743.4	2,741.9	2,744.4	2,744.4	2,743.2	2,745.7	2,744.7
Local	13,820	13,905	13,890	13,877	13,884	13,928	13,947	13,970	13,963	13,974	13,968	13,986	13,983	13,999	14,004
Education	7,709.4	7,762.5	7,752.9	7,742.5	7,757.8	7,785.7	7,793.2	7,810.8	7,806.3	7,810.8	7,808.8	7,820.7	7,813.5	7,822.5	7,821.0
Other local government	6,110.2	6,143.0	6,137.3	6,134.5	6,126.6	6,142.2	6,153.4	6,159.3	6,156.7	6,163.1	6,159.2	6,165.1	6,169.0	6,176.5	6,182.8

[1] Includes other industries not shown separately.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

p = preliminary.

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13. Average weekly hours of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry, monthly data seasonally adjusted

Industry	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
TOTAL PRIVATE	33.7	33.7	33.8	33.6	33.7	33.7	33.8	33.8	33.7	33.7	33.7	33.7	33.7	33.8	33.8
GOODS-PRODUCING	39.8	40.0	40.2	39.9	40.1	40.0	40.1	39.9	39.9	40.0	39.8	39.9	39.8	40.1	39.9
Natural resources and mining	43.6	44.5	44.2	43.9	44.2	44.4	44.5	44.8	45.0	45.4	45.5	45.1	45.3	45.7	45.9
Construction	38.4	38.3	38.3	38.0	38.3	38.1	38.1	38.2	38.3	38.4	37.6	38.2	38.3	39.0	38.5
Manufacturing	40.4	40.8	41.0	40.7	40.8	40.9	40.8	40.7	40.5	40.5	40.7	40.6	40.4	40.5	40.4
Overtime hours	4.2	4.6	4.6	4.5	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.6	4.5	4.4	4.4
Durable goods	40.8	41.3	41.5	41.2	41.3	41.3	41.2	41.2	40.9	41.1	41.1	41.0	40.8	40.9	40.8
Overtime hours	4.3	4.7	4.8	4.6	4.7	4.7	4.7	4.7	4.6	4.6	4.6	4.7	4.5	4.5	4.4
Wood products	40.4	40.6	41.3	40.6	40.7	40.8	40.4	40.3	40.0	40.3	40.6	39.9	39.5	39.5	39.6
Nonmetallic mineral products	42.2	42.3	42.1	41.8	42.2	42.3	42.4	42.4	42.1	42.3	41.9	42.1	41.7	41.8	41.9
Primary metals	42.3	43.1	43.4	43.4	43.2	43.2	43.1	43.0	42.9	42.8	43.1	43.0	42.9	42.6	42.5
Fabricated metal products	40.7	41.1	41.2	41.0	41.2	41.2	41.2	41.1	40.9	40.9	40.9	40.8	40.7	40.8	40.7
Machinery	40.8	41.9	42.2	42.0	42.1	42.1	42.3	42.2	42.0	42.0	42.0	42.0	42.0	42.2	42.0
Computer and electronic products	40.4	40.4	40.7	40.4	40.7	40.4	40.3	40.1	39.6	39.8	40.0	39.6	39.5	39.8	39.9
Electrical equipment and appliances	40.6	40.7	41.5	40.8	40.8	40.9	40.6	40.6	40.1	40.0	40.1	40.0	40.0	40.1	39.8
Transportation equipment	41.9	42.5	42.7	42.2	42.4	42.5	42.4	42.3	42.2	42.4	42.4	42.4	42.0	41.9	41.7
Furniture and related products	38.9	39.5	40.0	39.6	39.3	39.3	39.3	39.2	39.2	39.5	39.5	39.4	39.4	39.2	39.1
Miscellaneous manufacturing	38.4	38.5	38.8	38.4	38.6	38.5	38.4	38.4	38.2	38.3	38.5	38.6	38.7	38.8	38.5
Nondurable goods	39.8	40.0	40.3	40.1	40.1	40.2	40.1	39.9	39.8	39.8	40.0	40.0	39.7	39.8	39.7
Overtime hours	4.1	4.4	4.4	4.4	4.4	4.5	4.4	4.3	4.3	4.3	4.4	4.5	4.4	4.3	4.3
Food manufacturing	39.3	39.3	39.6	39.4	39.3	39.3	39.3	39.0	39.1	38.8	39.0	39.3	38.8	38.9	38.9
Beverage and tobacco products	39.1	39.2	39.2	38.6	38.9	39.4	39.2	38.6	39.0	39.6	40.5	40.2	40.1	40.1	38.9
Textile mills	39.1	40.1	40.2	40.3	40.5	40.5	40.2	40.1	40.0	39.8	40.2	39.7	40.0	40.1	40.5
Textile product mills	39.6	38.9	38.7	38.9	38.6	38.8	39.1	39.1	39.1	39.0	39.5	39.5	39.4	39.0	39.0
Apparel	35.6	36.0	36.2	35.9	36.0	36.2	36.2	36.0	35.7	35.9	35.9	35.9	35.9	35.7	35.1
Leather and allied products	39.3	38.4	38.4	38.3	37.8	38.1	38.2	38.4	38.2	37.6	37.1	37.2	37.3	37.7	38.5
Paper and paper products	41.5	42.1	42.6	41.9	42.4	42.5	42.2	42.1	42.1	42.0	42.5	42.1	41.9	42.2	42.3
Printing and related support activities	38.2	38.4	38.6	38.5	38.6	38.5	38.3	38.3	38.3	38.5	38.6	38.5	38.3	38.3	38.2
Petroleum and coal products	44.5	44.9	45.0	44.9	45.0	45.9	46.0	45.0	45.5	44.6	44.5	44.7	45.1	46.0	45.9
Chemicals	42.4	42.8	42.9	42.6	42.8	42.9	42.8	42.7	42.4	42.6	42.8	42.3	42.2	42.4	42.2
Plastics and rubber products	40.4	40.4	40.9	40.8	40.5	40.5	40.3	40.1	39.4	39.8	40.0	40.1	39.8	39.7	39.8
PRIVATE SERVICE-PROVIDING	32.4	32.3	32.4	32.2	32.4	32.4	32.5	32.4	32.3	32.4	32.4	32.4	32.4	32.5	32.4
Trade, transportation, and utilities	33.6	33.5	33.6	33.2	33.4	33.5	33.6	33.6	33.5	33.6	33.6	33.6	33.5	33.5	33.5
Wholesale trade	37.9	37.8	37.8	37.6	37.8	37.7	37.8	37.7	37.7	37.6	37.7	37.8	37.7	37.8	37.7
Retail trade	30.9	30.7	30.8	30.4	30.6	30.7	30.8	30.8	30.6	30.8	30.7	30.8	30.7	30.7	30.7
Transportation and warehousing	36.8	37.2	37.3	36.9	37.2	37.2	37.5	37.5	37.5	37.4	37.5	37.3	37.2	37.3	37.1
Utilities	41.1	40.9	41.3	41.1	40.9	40.9	41.4	40.8	40.4	40.7	41.0	40.5	40.3	41.0	41.0
Information	36.2	36.3	36.3	36.5	36.3	36.4	36.3	36.3	36.2	36.4	36.3	36.4	36.5	36.5	36.6
Financial activities	35.5	35.5	35.8	35.5	35.6	35.5	35.5	35.7	35.6	35.7	35.9	35.8	35.9	36.0	36.0
Professional and business services	34.1	34.2	34.2	34.0	34.2	34.3	34.7	34.3	34.2	34.2	34.1	34.0	34.0	34.2	34.1
Education and health services	32.3	32.4	32.4	32.4	32.6	32.5	32.5	32.5	32.4	32.5	32.6	32.6	32.6	32.6	32.6
Leisure and hospitality	25.6	25.7	25.7	25.7	25.6	25.6	25.6	25.7	25.6	25.7	25.6	25.7	25.7	25.8	25.8
Other services	31.4	31.0	31.1	30.9	31.0	31.0	31.0	30.9	30.9	30.8	30.9	30.9	30.9	31.1	31.0

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

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14. Average hourly earnings of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry, monthly data seasonally adjusted

Industry	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
TOTAL PRIVATE															
Current dollars	$15.35	$15.67	$15.62	$15.64	$15.70	$15.74	$15.77	$15.81	$15.82	$15.85	$15.90	$15.91	$15.95	$16.00	$16.03
Constant (1982) dollars	8.27	8.23	8.21	8.20	8.23	8.25	8.25	8.22	8.21	8.23	8.24	8.22	8.19	8.16	8.19
GOODS-PRODUCING	16.80	17.19	17.13	17.16	17.19	17.24	17.30	17.32	17.33	17.36	17.35	17.43	17.45	17.51	17.53
Natural resources and mining	17.56	18.08	18.02	18.16	18.08	18.05	18.06	18.10	18.22	18.37	18.43	18.40	18.27	18.55	18.60
Construction	18.95	19.23	19.19	19.19	19.21	19.25	19.27	19.34	19.31	19.29	19.24	19.31	19.34	19.38	19.37
Manufacturing	15.74	16.14	16.08	16.12	16.16	16.22	16.29	16.27	16.29	16.34	16.37	16.42	16.43	16.46	16.52
Excluding overtime	14.96	15.29	15.23	15.28	15.30	15.36	15.42	15.42	15.43	15.48	15.51	15.54	15.56	15.61	15.67
Durable goods	16.45	16.82	16.75	16.77	16.83	16.90	16.98	16.97	16.99	17.06	17.10	17.18	17.17	17.22	17.26
Nondurable goods	14.63	15.05	15.02	15.07	15.09	15.14	15.18	15.15	15.16	15.16	15.18	15.19	15.23	15.23	15.31
PRIVATE SERVICE-PROVIDING	14.96	15.26	15.21	15.24	15.30	15.34	15.36	15.40	15.42	15.45	15.51	15.51	15.56	15.60	15.63
Trade,transportation, and utilities	14.34	14.59	14.54	14.59	14.63	14.65	14.66	14.69	14.70	14.72	14.82	14.79	14.83	14.88	14.89
Wholesale trade	17.36	17.66	17.60	17.66	17.71	17.69	17.73	17.78	17.80	17.87	17.91	17.95	17.97	18.04	18.02
Retail trade	11.90	12.08	12.04	12.07	12.10	12.13	12.16	12.16	12.20	12.21	12.32	12.29	12.31	12.36	12.38
Transportation and warehousing	16.25	16.53	16.51	16.54	16.58	16.65	16.53	16.61	16.54	16.54	16.58	16.52	16.62	16.62	16.65
Utilities	24.77	25.62	25.51	25.48	25.60	25.66	25.82	26.00	25.77	26.11	26.23	26.04	26.32	26.41	26.41
Information	21.01	21.42	21.43	21.28	21.42	21.52	21.62	21.59	21.58	21.70	21.80	21.67	21.79	21.98	22.00
Financial activities	17.14	17.53	17.47	17.49	17.55	17.57	17.64	17.71	17.65	17.71	17.71	17.74	17.78	17.86	17.79
Professional and business services	17.21	17.46	17.40	17.43	17.48	17.59	17.54	17.63	17.66	17.69	17.79	17.80	17.82	17.89	17.95
Education and health services	15.64	16.16	16.09	16.15	16.24	16.24	16.28	16.31	16.34	16.37	16.40	16.45	16.53	16.54	16.60
Leisure and hospitality	8.76	8.91	8.87	8.86	8.89	8.91	8.95	8.99	9.02	9.01	9.03	9.05	9.05	9.08	9.09
Other services	13.84	13.98	13.95	13.97	13.98	14.00	14.05	14.08	14.12	14.13	14.15	14.17	14.18	14.15	14.21

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.
p = preliminary.

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15. Average hourly earnings of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry

Industry	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
TOTAL PRIVATE	$15.35	$15.67	$15.63	$15.56	$15.59	$15.66	$15.79	$15.82	$15.84	$15.88	$16.00	$15.96	$15.95	$16.01	$16.03
Seasonally adjusted	15.47	–	15.62	15.64	15.70	15.74	15.77	15.81	15.82	15.85	15.90	15.91	15.95	16.00	16.03
GOODS-PRODUCING	16.80	17.19	17.10	17.14	17.18	17.28	17.40	17.39	17.37	17.43	17.31	17.34	17.37	17.48	17.50
Natural resources and mining	17.56	18.08	18.00	18.12	18.02	17.95	17.97	18.07	18.21	18.46	18.53	18.45	18.36	18.67	18.61
Construction	18.95	19.23	19.15	19.12	19.24	19.33	19.42	19.47	19.35	19.31	19.12	19.20	19.25	19.35	19.32
Manufacturing	15.74	16.14	16.04	16.08	16.03	16.16	16.35	16.26	16.32	16.46	16.42	16.43	16.41	16.45	16.48
Durable goods	16.45	16.82	16.70	16.73	16.60	16.84	17.06	16.98	17.04	17.22	17.15	17.20	17.16	17.20	17.21
Wood products	12.71	13.03	13.04	12.99	13.04	1302.00	13.14	13.03	13.13	13.17	13.13	13.04	13.11	13.12	13.16
Nonmetallic mineral products	15.76	16.25	16.16	16.22	16.37	16.28	16.51	16.38	16.45	16.36	16.27	16.20	16.28	16.69	16.59
Primary metals	18.13	18.57	18.47	18.50	18.65	18.57	18.89	18.73	18.66	18.75	18.84	18.78	18.76	18.79	18.85
Fabricated metal products	15.01	15.31	15.20	15.23	15.27	15.27	15.43	15.38	15.43	15.59	15.55	15.67	15.62	15.64	15.66
Machinery	16.30	16.68	16.54	16.56	16.68	16.72	16.85	16.84	16.85	16.99	17.03	17.02	17.02	16.99	16.89
Computer and electronic products	16.69	17.28	17.13	17.22	17.30	17.38	17.48	17.52	17.65	17.92	18.04	18.04	18.00	18.21	18.29
Electrical equipment and appliances	14.36	14.90	14.86	14.92	14.92	15.04	15.08	15.05	15.10	15.12	15.07	15.15	15.10	15.07	15.02
Transportation equipment	21.23	21.49	21.25	21.31	20.73	21.49	21.91	21.78	21.91	22.17	21.90	21.97	21.84	21.79	21.84
Furniture and related products	12.98	13.16	13.05	13.11	13.12	13.28	13.39	13.27	13.29	13.46	13.42	13.34	13.37	13.46	13.45
Miscellaneous manufacturing	13.30	13.85	13.76	13.82	13.90	13.88	13.97	13.92	13.96	14.05	14.07	14.04	14.05	14.03	14.02
Nondurable goods	14.63	15.05	14.97	15.03	15.13	15.08	15.23	15.11	15.16	15.21	15.24	15.17	15.19	15.21	15.27
Food manufacturing	12.80	12.98	12.96	13.01	13.07	13.00	13.09	12.94	12.99	13.03	13.07	13.07	13.02	12.99	13.07
Beverages and tobacco products	17.96	19.12	19.51	19.37	19.26	19.08	19.17	19.18	18.80	18.82	18.44	18.65	18.94	19.20	19.00
Textile mills	11.99	12.13	12.07	12.14	12.06	12.08	12.25	12.11	12.09	12.25	12.33	12.25	12.26	12.30	12.35
Textile product mills	11.23	11.39	11.27	11.27	11.45	11.43	11.49	11.42	11.44	11.43	11.31	11.48	11.56	11.68	11.52
Apparel	9.56	9.75	9.54	9.60	9.73	9.72	9.93	9.97	10.00	10.00	10.15	10.19	10.05	10.07	10.09
Leather and allied products	11.66	11.63	11.48	11.58	11.67	11.67	11.56	11.58	11.62	11.51	11.60	11.42	11.48	11.39	11.30
Paper and paper products	17.33	17.90	17.93	17.91	17.96	17.89	18.21	17.93	18.09	18.07	18.00	17.86	17.93	17.90	17.92
Printing and related support activities	15.37	15.72	15.52	15.56	15.73	15.88	15.96	15.95	15.93	15.80	15.77	15.79	15.70	15.62	15.63
Petroleum and coal products	23.63	24.38	24.39	24.22	24.32	24.05	24.44	24.33	24.71	24.48	24.75	24.74	24.78	24.06	24.59
Chemicals	18.50	19.16	19.00	19.16	19.31	19.24	19.44	19.42	19.44	19.59	19.52	19.32	19.47	19.62	19.75
Plastics and rubber products	14.18	14.58	14.54	14.59	14.69	14.66	14.75	14.55	14.58	14.76	14.81	14.65	14.70	14.73	14.84
PRIVATE SERVICE-PROVIDING	14.96	15.26	15.23	15.13	15.16	15.22	15.35	15.40	15.43	15.46	15.66	15.60	15.59	15.62	15.64
Trade, transportation, and utilities	14.34	14.59	14.58	14.55	14.56	14.58	14.69	14.69	14.67	14.61	14.88	14.86	14.86	14.94	14.92
Wholesale trade	17.36	17.66	17.66	17.57	17.65	17.68	17.71	17.75	17.82	17.87	18.03	17.99	17.91	18.05	18.06
Retail trade	11.90	12.08	12.06	12.07	12.05	12.07	12.21	12.17	12.16	12.10	12.34	12.35	12.35	12.42	12.40
Transportation and warehousing	16.25	16.53	16.45	16.53	16.58	16.62	16.51	16.59	16.56	16.59	16.59	16.57	16.60	16.61	16.58
Utilities	24.77	25.62	25.55	25.34	25.45	25.36	25.89	26.02	26.01	26.00	26.14	25.98	26.34	26.51	26.46
	21.01	21.42	21.40	21.16	21.29	21.43	21.73	21.69	21.70	21.74	21.83	21.67	21.68	21.92	21.99
Financial activities	17.14	17.53	17.64	17.40	17.46	17.59	17.62	17.68	17.61	17.67	17.83	17.73	17.76	17.87	17.94
Professional and business services	17.21	17.46	17.48	17.31	17.35	17.50	17.47	17.54	17.62	17.73	18.06	17.91	17.83	17.85	18.04
Education and health services	15.64	16.16	16.05	16.10	16.23	16.20	16.30	16.30	16.33	16.44	16.47	16.46	16.51	16.53	16.55
Leisure and hospitality	8.76	8.91	8.86	8.79	8.79	8.81	8.94	9.02	9.06	9.11	9.11	9.09	9.07	9.08	9.08
Other services	13.84	13.98	14.00	13.92	13.88	13.93	14.06	14.06	14.12	14.17	14.23	14.23	14.18	14.17	14.25

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

p = preliminary.

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16. Average weekly earnings of production or nonsupervisory workers[1] on private nonfarm payrolls, by industry

Industry	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[p]	May[p]
TOTAL PRIVATE	$517.30	$528.56	$531.42	$524.37	$528.50	$535.57	$530.54	$534.72	$532.22	$536.74	$537.60	$534.66	$534.33	$537.94	$543.42
Seasonally adjusted	–	–	527.96	525.50	529.09	530.44	533.03	534.38	533.13	534.15	535.83	536.17	537.52	540.80	541.81
GOODS-PRODUCING	669.13	688.03	689.13	689.03	687.20	696.38	690.78	697.34	694.80	702.43	683.75	683.20	689.59	697.45	700.00
Natural resources and mining	765.94	804.03	797.40	806.34	801.89	804.16	796.07	820.38	824.91	836.24	833.85	822.87	826.20	845.75	857.92
Construction	726.83	735.70	741.11	736.12	752.28	755.80	730.19	753.49	739.17	737.64	703.62	712.32	727.65	750.78	751.55
Manufacturing	635.99	658.53	659.24	659.28	646.01	660.94	663.81	661.78	665.86	678.15	666.65	663.77	662.96	661.29	665.79
Durable goods	671.21	694.16	694.72	694.30	673.96	695.49	697.75	699.58	702.05	718.07	703.15	703.48	701.84	700.04	702.17
Wood products	514.10	529.46	545.07	535.19	532.03	539.03	521.66	526.41	526.51	532.07	527.83	511.17	512.60	514.30	526.40
Nonmetallic mineral products	664.92	688.05	683.57	689.35	694.09	700.04	709.93	701.06	694.19	688.76	665.44	667.44	669.11	695.97	698.44
Primary metals	767.60	799.77	803.45	808.45	788.90	796.65	808.49	801.64	802.38	813.75	815.77	807.54	806.68	798.58	801.13
Fabricated metal products	610.37	628.80	627.76	627.48	621.49	627.60	628.00	633.66	634.17	648.54	637.55	637.77	634.17	634.98	638.93
Machinery	664.79	699.51	699.64	698.83	692.22	697.22	699.28	707.28	711.07	727.17	718.67	716.54	718.24	713.58	709.38
Computer and electronic products	674.72	698.28	695.48	699.13	695.46	700.41	700.95	704.30	706.00	723.97	716.19	712.58	711.00	717.47	727.94
Electrical equipment and appliances	583.23	606.64	615.20	613.21	602.77	613.63	603.20	614.04	613.06	616.90	605.81	601.46	602.49	599.79	596.29
Transportation equipment	889.48	912.97	911.63	907.81	839.57	909.03	926.79	923.47	926.79	962.18	926.37	933.73	921.65	910.82	915.10
Furniture and related products	505.30	519.78	518.09	521.78	515.62	529.87	519.53	516.20	523.63	546.48	528.75	522.93	526.78	526.29	520.52
Miscellaneous manufacturing	510.82	533.47	535.26	530.69	528.20	534.38	530.86	534.53	536.06	545.14	543.10	543.35	547.95	544.36	539.77
Nondurable goods	582.61	602.48	601.79	604.21	602.17	606.22	610.72	602.89	607.92	612.96	608.08	600.73	601.52	600.80	606.22
Food manufacturing	502.92	509.66	511.92	512.59	513.65	514.80	520.98	508.54	515.70	513.38	505.81	505.81	497.36	497.52	507.12
Beverages and tobacco products	702.45	750.51	772.60	759.30	758.84	761.29	762.97	734.59	731.32	737.74	735.76	738.54	757.60	781.44	742.90
Textile mills	469.33	486.69	486.42	490.46	481.19	489.24	488.78	481.98	483.60	491.23	498.13	485.10	494.08	492.00	502.65
Textile product mills	444.70	443.01	433.90	444.04	433.96	442.34	444.66	447.66	448.45	451.49	445.61	450.02	457.78	452.02	445.82
Apparel	340.12	351.28	346.30	348.48	348.33	352.84	352.52	357.92	360.00	364.00	361.34	363.78	363.81	361.51	355.17
Leather and allied products	457.83	446.73	440.83	442.36	422.45	441.13	430.03	445.83	445.05	437.38	429.20	425.97	431.65	433.96	437.31
Paper and paper products	719.73	753.89	758.44	750.43	752.52	756.75	772.10	756.65	768.83	775.20	768.60	744.76	745.89	751.80	756.22
Printing and related support activities	587.58	604.32	594.42	594.39	600.89	611.38	612.86	614.08	618.08	616.20	607.15	604.76	604.45	593.56	592.38
Petroleum and coal products	1,052.32	1,094.83	1,090.23	1,094.74	1,118.72	1,096.68	1,119.35	1,097.28	1,131.72	1,099.15	1,096.43	1,100.93	1,105.19	1,085.11	1,126.22
Chemicals	783.95	819.59	813.20	818.13	814.88	821.55	830.09	825.35	830.09	844.33	835.46	817.24	821.63	827.96	829.50
Plastics and rubber products	872.26	589.70	594.69	599.65	583.19	590.80	591.48	583.46	578.83	596.30	592.40	586.00	585.06	584.78	592.12
PRIVATE SERVICE-PROVIDING	483.89	493.67	496.50	488.70	492.70	499.22	495.81	498.96	496.85	500.90	507.38	502.32	500.44	504.53	509.86
Trade, transportation, and utilities	481.14	488.58	491.35	487.43	492.13	495.72	493.58	492.12	488.51	490.90	494.02	493.35	493.35	497.50	501.31
Wholesale trade	657.29	666.93	674.61	660.63	665.41	673.61	665.90	669.18	671.81	670.13	681.53	674.25	671.63	680.49	686.28
Retail trade	367.15	371.15	371.45	371.76	375.96	377.79	377.29	373.62	368.45	375.10	372.67	374.21	374.21	377.57	380.68
Transportation and warehousing	598.41	614.90	616.88	611.61	616.78	628.24	617.47	622.13	622.66	625.44	620.47	608.12	610.88	312.91	616.78
Utilities	1,017.27	1,048.82	1,055.22	1,044.01	1,033.27	1,032.15	1,074.44	1,066.82	1,061.21	1,053.00	1,066.51	1,052.19	1,056.23	1,086.91	1,087.51
Information	760.81	777.42	776.82	774.46	772.83	788.62	786.63	787.35	787.71	791.34	798.98	786.62	782.65	791.31	804.83
Financial activities	609.08	622.99	636.80	614.22	618.08	635.00	620.22	627.64	625.16	627.29	649.01	632.96	632.26	637.96	654.81
Professional and business services	587.02	596.96	604.81	590.27	591.64	607.25	593.98	599.87	602.60	604.59	614.04	607.15	604.44	608.69	622.38
Education and health services	505.69	523.83	521.63	520.03	529.10	531.36	528.12	528.12	529.09	534.30	541.86	534.95	534.92	535.57	541.19
Leisure and hospitality	224.30	228.63	229.47	227.66	231.18	234.35	226.18	230.91	229.22	231.39	230.48	231.80	230.38	231.54	236.99
Other services	434.41	433.04	436.80	430.13	431.67	436.01	433.05	434.45	434.90	436.44	439.71	438.28	435.33	437.85	443.18

[1] Data relate to production workers in natural resources and mining and manufacturing, construction workers in construction, and nonsupervisory workers in the service-providing industries.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.
Dash indicates data not available.
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17. Diffusion indexes of employment change, seasonally adjusted

[In percent]

Timespan and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Private nonfarm payrolls, 278 industries											
Over 1-month span:												
2001	49.5	47.7	48.6	32.7	42.4	40.8	36.7	39.0	37.6	33.6	36.9	37.1
2002	41.0	35.6	39.7	39.2	40.5	47.7	42.8	43.0	42.1	39.0	41.5	35.1
2003	44.4	38.7	35.3	41.4	39.4	39.9	42.1	39.4	50.4	48.9	50.0	50.5
2004	50.9	53.4	66.0	67.3	64.6	59.7	55.4	53.8	57.6	58.6	54.7	54.3
2005	54.1	61.2	53.1	63.7	55.8							
Over 3-month span:												
2001	53.2	49.8	49.8	42.3	38.1	34.2	37.8	37.6	34.7	35.4	30.8	32.0
2002	35.3	37.9	36.5	34.2	34.4	39.4	40.6	44.1	37.8	37.1	35.8	36.7
2003	38.3	35.4	33.3	33.5	36.5	41.7	37.8	37.4	43.2	46.4	48.6	50.2
2004	52.5	53.8	56.7	69.4	75.4	71.2	63.5	56.8	57.4	59.9	59.7	56.3
2005	58.5	60.3	63.7	63.1	60.3							
Over 6-month span:												
2001	53.1	50.9	52.0	45.5	43.0	39.7	38.5	33.6	33.5	34.2	33.6	30.9
2002	29.5	29.9	32.0	31.7	30.9	37.4	37.1	38.7	35.3	36.0	37.9	35.1
2003	32.7	32.2	31.3	31.3	33.1	37.6	33.6	32.2	40.3	43.7	46.4	49.3
2004	47.3	50.4	54.9	62.6	64.4	69.6	67.3	68.9	64.6	62.2	59.7	55.9
2005	60.3	62.8	63.7	62.6	62.2							
Over 12-month span:												
2001	59.5	59.5	53.4	49.3	48.6	45.0	43.3	43.9	39.9	37.8	37.1	34.9
2002	33.6	31.7	30.2	30.4	30.2	29.1	32.0	31.3	30.0	29.5	32.9	34.7
2003	34.5	31.5	32.9	33.5	34.2	35.1	32.7	33.1	37.1	36.7	37.2	39.2
2004	40.3	42.1	44.8	48.7	52.0	56.7	57.4	57.6	60.3	62.1	64.6	64.0
2005	61.2	64.7	64.2	65.5	64.4							
	Manufacturing payrolls, 84 industries											
Over 1-month span:												
2001	22.0	17.3	22.0	17.9	16.1	22.6	13.1	15.5	18.5	17.3	14.9	11.9
2002	19.0	19.6	22.0	32.1	26.2	31.0	35.7	23.2	28.6	15.5	18.5	16.7
2003	35.1	19.0	19.0	11.9	19.6	20.8	22.6	24.4	32.7	35.1	39.9	42.9
2004	39.3	49.4	50.0	65.5	60.1	51.8	60.7	48.8	42.9	42.3	46.4	44.6
2005	42.3	44.6	41.1	49.4	46.4							
Over 3-month span:												
2001	32.7	20.8	16.7	14.3	14.3	11.9	11.9	9.5	7.7	12.5	11.3	9.5
2002	10.7	11.9	11.3	17.9	14.9	20.2	25.6	23.8	20.2	13.7	8.9	9.5
2003	16.1	14.3	12.5	8.9	10.7	10.7	14.3	15.5	18.5	27.4	31.5	35.1
2004	42.3	43.5	42.9	58.3	69.0	69.6	62.5	53.6	52.4	44.6	45.2	35.7
2005	45.2	42.9	52.4	47.0	43.5							
Over 6-month span:												
2001	22.6	24.4	21.4	19.6	14.3	11.9	13.1	11.3	10.7	7.1	7.7	5.4
2002	6.0	8.3	8.3	9.5	7.1	13.1	12.5	11.3	14.3	8.3	8.3	7.7
2003	12.5	10.1	7.1	8.3	11.3	10.7	4.8	10.1	13.1	16.7	19.6	26.8
2004	27.4	29.8	33.3	47.0	52.4	57.1	60.1	58.9	58.9	50.6	45.2	42.9
2005	43.5	44.0	42.3	41.7	40.5							
Over 12-month span:												
2001	29.8	32.1	20.8	19.0	13.1	12.5	10.7	11.9	11.9	10.1	8.3	6.0
2002	7.1	6.0	6.0	6.5	7.1	3.6	4.8	6.0	4.8	7.1	4.8	8.3
2003	10.7	6.0	6.5	6.0	8.3	7.1	7.1	8.3	10.7	10.7	9.5	10.7
2004	13.1	14.3	13.1	19.0	25.6	34.5	43.5	40.5	45.8	48.2	49.4	46.4
2005	45.2	45.8	47.6	45.2	41.1							

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing employment.

See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

Data for the two most recent months are preliminary.

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18. Job openings levels and rates by industry and region, seasonally adjusted

Industry and region	Levels[1] (in thousands)							Percent						
	2004		2005					2004		2005				
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[P]	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May[P]
Total[2]	3,277	3,507	3,385	3,569	3,598	3,576	3,465	2.4	2.6	2.5	2.6	2.6	2.6	2.5
Industry														
Total private[2]	2,910	3,106	3,020	3,160	3,212	3,178	3,090	2.6	2.7	2.7	2.8	2.8	2.8	2.7
Construction	118	132	127	133	170	113	111	1.6	1.8	1.8	1.8	2.3	1.5	1.5
Manufacturing	248	266	252	252	258	259	236	1.7	1.8	1.7	1.7	1.8	1.8	1.6
Trade, transportation, and utilities	554	561	564	668	624	627	622	2.1	2.1	2.2	2.5	2.4	2.4	2.4
Professional and business services	620	699	682	607	646	691	645	3.6	4.0	3.9	3.5	3.7	3.9	3.7
Education and health services	543	557	560	602	616	608	604	3.1	3.1	3.2	3.4	3.5	3.4	3.4
Leisure and hospitality	411	450	434	447	440	457	465	3.2	3.4	3.3	3.4	3.4	3.5	3.5
Government	369	396	346	404	383	396	374	1.7	1.8	1.6	1.8	1.7	1.8	1.7
Region[3]														
Northeast	560	620	602	606	615	602	548	2.2	2.4	2.3	2.3	2.4	2.3	2.1
South	1,250	1,329	1,342	1,399	1,447	1,414	1,335	2.6	2.8	2.8	2.9	3.0	2.9	2.7
Midwest	726	740	716	745	737	742	798	2.3	2.3	2.2	2.3	2.3	2.3	2.5
West	759	792	718	823	806	818	801	2.6	2.7	2.4	2.8	2.7	2.7	2.7

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast:** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest**: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The job openings level is the number of job openings on the last business day of the month; the job openings rate is the number of job openings on the last business day of the month as a percent of total employment plus job openings.

[P] = preliminary.

19. Hires levels and rates by industry and region, seasonally adjusted

Industry and region	Levels[1] (in thousands)							Percent						
	2004		2005					2004		2005				
	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May.[P]	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May[P]
Total[2]	4,990	4,639	4,709	4,760	4,841	4,538	4,708	3.8	3.5	3.6	3.6	3.6	3.4	3.5
Industry														
Total private[2]	4,652	4,337	4,374	4,430	4,497	4,212	4,366	4.2	3.9	3.9	4.0	4.0	3.8	3.9
Construction	373	368	339	430	414	412	422	5.3	5.2	4.8	6.0	5.8	5.7	5.8
Manufacturing	386	324	307	336	334	319	345	2.7	2.3	2.1	2.3	2.3	2.2	2.4
Trade, transportation, and utilities	1,077	986	1,056	1,055	1,047	1,042	1,036	4.2	3.8	4.1	4.1	4.1	4.0	4.0
Professional and business services	935	878	882	853	895	792	834	5.6	5.3	5.3	5.1	5.3	4.7	5.0
Education and health services	447	452	445	500	472	487	460	2.6	2.6	2.6	2.9	2.7	2.8	2.7
Leisure and hospitality	858	834	826	771	798	742	750	6.8	6.6	6.6	6.1	6.3	5.8	5.9
Government	335	307	341	329	336	329	338	1.5	1.4	1.6	1.5	1.5	1.5	1.6
Region[3]														
Northeast	851	858	762	820	856	825	768	3.4	3.4	3.0	3.2	3.4	3.3	3.0
South	1,903	1,770	1,880	1,867	1,922	1,701	1,834	4.1	3.8	4.0	4.0	4.1	3.6	3.9
Midwest	1,149	1,043	1,092	1,081	1,034	1,020	1,113	3.7	3.3	3.5	3.5	3.3	3.3	3.5
West	1,014	970	959	1,069	1,036	1,037	1,005	3.5	3.4	3.3	3.7	3.6	3.6	3.4

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast**: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest:** Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The hires level is the number of hires during the entire month; the hires rate is the number of hires during the entire month as a percent of total employment.

[P] = preliminary.

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20. Total separations levels and rates by industry and region, seasonally adjusted

Industry and region	Level[1] (in thousands)							Percent						
	2004		2005					2004		2005				
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[p]	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[p]
Total[2]	4,266	4,435	4,352	4,295	4,502	4,562	4,425	3.2	3.3	3.3	3.2	3.4	3.4	3.4
Industry														
Total private[2]	3,996	4,146	4,091	4,035	4,237	4,306	4,180	3.6	3.7	3.7	3.6	3.8	3.9	3.7
Construction	351	355	417	3	303	421	393	5.0	5.0	5.9	5.7	4.2	5.8	5.4
Manufacturing	327	353	361	341	360	369	357	2.3	2.5	2.5	2.4	2.5	2.6	2.5
Trade, transportation, and utilities	943	1,062	882	940	980	1,018	946	3.7	4.1	3.4	3.7	3.8	3.9	3.7
Professional and business services	822	833	836	772	924	869	924	4.9	5.0	5.0	4.6	5.5	5.2	4.9
Education and health services	408	375	356	389	445	433	413	2.4	2.2	2.1	2.3	2.6	2.5	2.4
Leisure and hospitality	727	758	832	790	743	709	746	5.8	6.0	6.6	6.3	5.9	5.6	5.9
Government	275	274	258	260	267	256	251	1.3	1.3	1.2	1.2	1.2	1.2	1.2
Region[3]														
Northeast	756	773	773	732	802	807	685	3.0	3.0	3.1	2.9	3.2	3.2	2.7
South	1,594	1,707	1,747	1,647	1,763	1,766	1,728	3.4	3.6	3.7	3.5	3.7	3.7	3.6
Midwest	1,041	986	981	937	1,051	982	976	3.3	3.1	3.1	3.0	3.4	3.1	3.1
West	826	953	964	961	926	1,006	984	2.9	3.3	3.3	3.3	3.2	3.4	3.4

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast:** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest:** Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The total separations level is the number of total separations during the entire month; the total separations rate is the number of total separations during the entire month as a percent of total employment. p = preliminary.

21. Quits levels and rates by industry and region, seasonally adjusted

Industry and region	Levels[1] (in thousands)							Percent						
	2004		2005					2004		2005				
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[p]	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[p]
Total[2]	2,436	2,495	2,530	2,307	2,516	2,520	2,493	1.8	1.9	1.9	1.7	1.9	1.9	1.9
Industry														
Total private[2]	2,319	2,366	2,412	2,192	2,383	2,395	2,370	2.1	2.1	2.2	2.0	2.1	2.1	2.1
Construction	159	162	171	139	150	146	151	2.2	2.3	2.4	2.0	2.1	2.0	2.1
Manufacturing	185	194	185	181	186	178	168	1.3	1.4	1.3	1.3	1.3	1.2	1.2
Trade, transportation, and utilities	568	570	563	512	583	577	589	2.2	2.2	2.2	2.0	2.3	2.2	2.3
Professional and business services	401	415	417	410	424	417	413	2.4	2.5	2.5	2.4	2.5	2.5	2.5
Education and health services	250	232	230	259	280	277	260	1.5	1.4	1.3	1.5	1.6	1.6	1.5
Leisure and hospitality	499	506	516	474	458	506	494	4.0	4.0	4.1	3.8	3.6	4.0	3.9
Government	118	129	124	117	124	125	122	.5	.6	.6	.5	.6	.6	.6
Region[3]														
Northeast	359	392	424	340	410	446	364	1.4	1.5	1.7	1.3	1.6	1.8	1.4
South	1,014	1,021	1,053	914	1,003	992	1,024	2.2	2.2	2.2	1.9	2.1	2.1	2.2
Midwest	551	544	539	509	561	540	556	1.8	1.7	1.7	1.6	1.8	1.7	1.8
West	492	536	530	550	562	573	544	1.7	1.9	1.8	1.9	1.9	2.0	1.9

[1] Detail will not necessarily add to totals because of the independent seasonal adjustment of the various series.

[2] Includes natural resources and mining, information, financial activities, and other services, not shown separately.

[3] **Northeast:** Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; **South:** Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; **Midwest**: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; **West:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

NOTE: The quits level is the number of quits during the entire month; the quits rate is the number of quits during the entire month as a percent of total employment.

[p] = preliminary.

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22. Quarterly Census of Employment and Wages: 10 largest counties, fourth quarter 2003.

County by NAICS supersector	Establishments, fourth quarter 2003 (thousands)	Employment		Average weekly wage[1]	
		December 2003 (thousands)	Percent change, December 2002-03[2]	Fourth quarter 2003	Percent change, fourth quarter 2002-03[2]
United States[3]	8,314.1	129,341.5	0.0	$767	3.6
Private industry	8,048.7	108,215.1	.0	769	3.9
Natural resources and mining	123.7	1,557.8	.1	703	4.9
Construction	804.9	6,689.5	1.2	837	2.3
Manufacturing	376.8	14,307.8	-4.2	943	6.7
Trade, transportation, and utilities	1,853.6	25,957.3	-.3	665	3.4
Information	145.2	3,165.9	-4.0	1,139	3.9
Financial activities	767.0	7,874.7	1.2	1,138	5.9
Professional and business services	1,329.4	16,113.2	.6	945	3.8
Education and health services	732.2	15,974.0	2.1	731	3.8
Leisure and hospitality	669.9	12,042.8	1.7	335	3.4
Other services	1,080.6	4,274.1	-.1	494	3.1
Government	265.3	21,126.3	-.2	757	2.4
Los Angeles, CA	356.0	4,075.3	-.5	903	4.2
Private industry	352.2	3,486.3	-.2	898	4.2
Natural resources and mining	.6	11.0	.7	955	16.9
Construction	12.9	133.9	-1.1	883	1.7
Manufacturing	17.8	485.2	-7.1	900	6.5
Trade, transportation, and utilities	53.9	794.6	-1.2	735	2.7
Information	9.2	194.9	-2.0	1,627	5.2
Financial activities	23.0	237.9	.9	1,258	7.0
Professional and business services	40.1	575.0	1.6	1,043	3.7
Education and health services	26.6	456.5	1.9	820	3.9
Leisure and hospitality	25.6	375.9	5.6	766	6.5
Other services	142.1	220.7	3.5	422	5.0
Government	3.8	589.0	-2.3	930	3.3
Cook, IL	126.7	2,539.8	-1.2	922	3.0
Private industry	125.5	2,221.9	-.9	929	3.2
Natural resources and mining	.1	1.3	-3.6	1,037	3.2
Construction	10.5	96.7	.0	1,169	-.8
Manufacturing	7.9	265.7	-5.1	975	6.3
Trade, transportation, and utilities	26.7	499.4	-.8	753	.4
Information	2.5	66.1	-4.1	1,164	.1
Financial activities	13.8	219.4	-.8	1,471	8.1
Professional and business services	26.1	405.5	-1.3	1,206	4.1
Education and health services	12.3	350.8	1.0	791	3.7
Leisure and hospitality	10.5	217.7	2.8	375	-.3
Other services	12.6	95.1	-2.0	655	3.0
Government	1.2	317.9	-3.1	871	.9
New York, NY	111.9	2,253.6	-1.0	1,480	7.2
Private industry	111.7	1,800.4	-.6	1,623	8.1
Natural resources and mining	.0	.1	.0	1,197	-6.5
Construction	2.2	30.0	-4.5	1,567	3.4
Manufacturing	3.5	46.6	-4.9	1,290	6.4
Trade, transportation, and utilities	22.1	247.6	-1.2	1,164	5.5
Information	4.3	130.6	-5.1	1,751	7.9
Financial activities	16.7	352.0	-2.0	3,034	16.1
Professional and business services	22.6	439.7	.5	1,702	2.6
Education and health services	7.8	273.8	2.4	918	7.6
Leisure and hospitality	10.1	188.2	.4	787	6.1
Other services	16.0	82.9	-1.1	871	6.1
Government	.2	453.2	-2.2	912	.1
Harris, TX	89.4	1,841.5	-.9	906	2.1
Private industry	89.0	1,595.2	-1.2	929	2.1
Natural resources and mining	1.2	62.5	8.7	2,185	-.9
Construction	6.3	135.5	-5.0	919	2.6
Manufacturing	4.7	164.0	-4.9	1,106	2.3
Trade, transportation, and utilities	21.1	403.2	-2.1	821	1.0
Information	1.4	33.8	-3.9	1,098	.4
Financial activities	9.7	113.1	1.7	1,181	4.9
Professional and business services	17.0	279.0	-1.7	1,073	3.2
Education and health services	8.8	188.3	1.5	812	1.8
Leisure and hospitality	6.5	155.2	.7	335	-.9
Other services	10.3	56.3	-3.1	539	.4
Government	.4	246.3	1.1	759	3.1
Maricopa, AZ	80.9	1,621.2	([4])	757	4.0
Private industry	80.5	1,401.8	2.2	755	3.9
Natural resources and mining	.5	9.8	-2.6	545	4.4
Construction	8.4	131.7	5.9	779	2.1
Manufacturing	3.3	128.0	-2.5	1,050	8.2
Trade, transportation, and utilities	18.6	336.4	1.5	712	3.2
Information	1.6	36.6	-4.1	872	.5
Financial activities	9.5	133.3	1.5	933	3.7
Professional and business services	18.1	261.5	4.2	776	3.5
Education and health services	7.6	160.5	5.6	842	5.0
Leisure and hospitality	5.6	155.8	.8	364	2.8
Other services	5.7	44.7	-2.6	500	2.2
Government	.5	219.4	1.6	766	3.7

See footnotes at end of table.

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22. Continued—Quarterly Census of Employment and Wages: 10 largest counties, fourth quarter 2003.

County by NAICS supersector	Establishments, fourth quarter 2003 (thousands)	Employment		Average weekly wage[1]	
		December 2003 (thousands)	Percent change, December 2002-03[2]	Fourth quarter 2003	Percent change, fourth quarter 2002-03[2]
Dallas, TX	68.6	1,450.8	-1.4	$952	4.3
Private industry	68.2	1,294.6	-1.4	970	4.8
Natural resources and mining	.5	6.8	-20.5	2,680	22.7
Construction	4.5	73.0	-2.2	909	5.5
Manufacturing	3.5	144.9	-3.1	1,075	6.8
Trade, transportation, and utilities	15.8	326.1	-3.3	898	5.2
Information	1.9	64.0	-5.1	1,272	8.7
Financial activities	8.6	140.0	1.2	1,215	2.9
Professional and business services	14.0	237.7	.0	1,152	4.2
Education and health services	6.3	131.4	2.4	887	2.7
Leisure and hospitality	5.2	127.5	.0	432	4.3
Other services	6.7	40.5	-3.4	587	2.8
Government	.4	156.2	-1.8	800	-.1
Orange, CA	88.8	1,436.6	1.3	874	5.3
Private industry	87.4	1,305.5	2.1	875	5.2
Natural resources and mining	.3	6.1	8.3	579	.2
Construction	6.4	85.5	4.4	969	5.9
Manufacturing	6.1	179.9	-3.0	1,036	11.4
Trade, transportation, and utilities	17.3	278.8	.6	802	2.7
Information	1.5	33.8	-4.4	1,152	5.3
Financial activities	9.7	127.8	9.9	1,354	6.2
Professional and business services	17.4	261.0	1.0	942	2.8
Education and health services	9.1	126.6	6.1	849	3.7
Leisure and hospitality	6.6	159.9	2.5	358	3.8
Other services	12.9	46.0	6.3	518	3.0
Government	1.4	131.1	-5.7	859	6.0
San Diego, CA	85.3	1,278.2	1.3	815	2.6
Private industry	83.9	1,060.2	1.5	809	2.5
Natural resources and mining	.9	11.0	-5.4	491	1.0
Construction	6.4	81.1	4.7	869	.7
Manufacturing	3.6	105.4	-4.2	1,129	11.5
Trade, transportation, and utilities	14.2	220.4	2.2	655	.9
Information	1.4	36.7	-4.5	1,582	-2.0
Financial activities	8.8	81.6	4.8	1,058	.4
Professional and business services	14.9	208.1	1.5	989	2.8
Education and health services	7.6	122.6	1.6	778	5.7
Leisure and hospitality	6.5	141.5	3.5	346	2.4
Other services	19.5	51.6	1.8	449	2.7
Government	1.3	218.0	.1	843	2.9
King, WA	81.6	1,100.6	.2	935	.2
Private industry	81.0	945.5	.1	944	-.3
Natural resources and mining	.4	2.8	-11.3	1,109	.8
Construction	6.2	53.4	-.4	921	1.4
Manufacturing	2.7	101.9	-8.2	1,176	-2.1
Trade, transportation, and utilities	14.8	225.5	1.1	804	2.6
Information	1.5	69.2	.8	1,829	-15.7
Financial activities	6.1	77.5	2.4	1,114	3.5
Professional and business services	11.7	158.3	.7	1,160	8.4
Education and health services	5.9	108.3	1.5	746	4.8
Leisure and hospitality	5.4	100.5	2.9	390	3.7
Other services	26.4	48.1	1.2	463	.4
Government	.6	155.1	1.0	882	3.6
Miami-Dade, FL	80.2	980.8	-.5	765	3.5
Private industry	79.9	827.5	-.7	742	3.6
Natural resources and mining	.5	9.9	-1.8	421	4.0
Construction	4.9	40.7	.3	788	2.7
Manufacturing	2.8	49.4	-9.8	695	5.8
Trade, transportation, and utilities	23.2	247.2	-1.7	689	4.2
Information	1.7	28.5	-3.2	990	1.7
Financial activities	8.2	65.5	.7	1,062	-1.1
Professional and business services	15.9	132.0	-.2	948	5.2
Education and health services	7.8	123.4	1.4	748	2.3
Leisure and hospitality	5.3	92.8	2.1	432	9.9
Other services	7.5	34.5	-1.8	450	3.0
Government	.3	153.3	.5	886	2.8

[1] Average weekly wages were calculated using unrounded data.

[2] Percent changes were computed from quarterly employment and pay data adjusted for noneconomic county reclassifications. See Notes on Current Labor Statistics.

[3] Totals for the United States do not include data for Puerto Rico or the Virgin Islands.

[4] Data do not meet BLS or State agency disclosure standards.

NOTE: Includes workers covered by Unemployment Insurance (UI) and Unemployment Compensation for Federal Employees (UCFE) programs. Data are preliminary.

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23. Quarterly Census of Employment and Wages: by State, fourth quarter 2003.

State	Establishments, fourth quarter 2003 (thousands)	Employment		Average weekly wage[1]	
		December 2003 (thousands)	Percent change, December 2002-03	Fourth quarter 2003	Percent change, fourth quarter 2002-03
United States[2]	8,314.1	129,341.5	0.0	$767	3.6
Alabama	111.8	1,838.1	-.1	657	4.0
Alaska	20.0	282.7	1.1	746	1.1
Arizona	126.9	2,352.1	2.2	710	3.8
Arkansas	75.2	1,133.6	.5	587	4.1
California	1,190.8	14,922.3	.0	869	3.8
Colorado	160.0	2,134.6	-1.1	784	2.0
Connecticut	109.1	1,648.9	-.7	992	3.8
Delaware	27.1	408.4	.5	825	5.0
District of Columbia	30.0	654.8	-.4	1,238	3.9
Florida	504.1	7,424.5	.8	685	3.8
Georgia	245.6	3,845.6	.2	734	2.8
Hawaii	37.4	583.0	1.3	678	3.7
Idaho	48.5	577.5	.6	579	1.8
Illinois	325.7	5,738.7	-1.2	827	3.2
Indiana	152.1	2,852.2	-.3	675	3.5
Iowa	90.6	1,418.5	.0	626	4.7
Kansas	82.2	1,298.3	-.9	631	2.8
Kentucky	105.7	1,740.6	.3	645	3.5
Louisiana	114.0	1,870.9	.5	628	2.4
Maine	47.4	595.8	.7	631	4.6
Maryland	150.4	2,466.4	.7	831	3.6
Massachusetts	206.6	3,154.6	-1.9	954	5.2
Michigan	251.3	4,365.8	-1.1	806	3.9
Minnesota	159.0	2,591.9	-.5	777	3.2
Mississippi	65.6	1,108.1	.4	559	3.7
Missouri	165.4	2,633.6	-.7	676	2.4
Montana	42.0	396.6	1.1	549	4.0
Nebraska	55.3	884.4	.6	613	3.2
Nevada	60.3	1,111.2	4.4	721	5.1
New Hampshire	47.0	614.9	.6	788	4.0
New Jersey	268.1	3,912.8	.1	945	3.4
New Mexico	50.4	757.1	1.4	612	4.1
New York	550.3	8,379.2	-.4	959	5.2
North Carolina	227.8	3,759.6	-.1	679	4.5
North Dakota	24.0	317.6	.9	563	4.3
Ohio	294.2	5,322.4	-.7	713	3.8
Oklahoma	91.6	1,423.4	-1.3	597	4.2
Oregon	118.8	1,579.8	.2	694	3.3
Pennsylvania	326.9	5,524.5	-.2	750	4.7
Rhode Island	34.7	480.5	1.2	738	5.1
South Carolina	108.4	1,781.0	.3	623	3.1
South Dakota	28.1	365.4	.3	559	4.1
Tennessee	128.4	2,648.0	.4	689	4.2
Texas	505.3	9,300.1	-.3	754	3.1
Utah	73.9	1,066.2	1.2	630	2.3
Vermont	24.1	300.7	.3	661	5.1
Virginia	202.6	3,477.5	1.2	786	5.2
Washington	222.7	2,654.7	1.0	759	1.3
West Virginia	47.2	685.2	.1	587	2.1
Wisconsin	157.6	2,715.4	.0	683	4.1
Wyoming	22.0	241.6	1.7	616	4.1
Puerto Rico	50.2	1,074.1	3.5	450	4.7
Virgin Islands	3.2	42.5	-.2	629	2.4

[1] Average weekly wages were calculated using unrounded data.

[2] Totals for the United States do not include data for Puerto Rico or the Virgin Islands.

NOTE: Includes workers covered by Unemployment Insurance (UI) and Unemployment Compensation for Federal Employees (UCFE) programs. Data are preliminary.

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24. Annual data: Quarterly Census of Employment and Wages, by ownership

Year	Average establishments	Average annual employment	Total annual wages (in thousands)	Average annual wage per employee	Average weekly wage
	Total covered (UI and UCFE)				
1993	6,679,934	109,422,571	$2,884,472,282	$26,361	$507
1994	6,826,677	112,611,287	3,033,676,678	26,939	518
1995	7,040,677	115,487,841	3,215,921,236	27,846	536
1996	7,189,168	117,963,132	3,414,514,808	28,946	557
1997	7,369,473	121,044,432	3,674,031,718	30,353	584
1998	7,634,018	124,183,549	3,967,072,423	31,945	614
1999	7,820,860	127,042,282	4,235,579,204	33,340	641
2000	7,879,116	129,877,063	4,587,708,584	35,323	679
2001	7,984,529	129,635,800	4,695,225,123	36,219	697
2002	8,101,872	128,233,919	4,714,374,741	36,764	707
	UI covered				
1993	6,632,221	106,351,431	$2,771,023,411	$26,055	$501
1994	6,778,300	109,588,189	2,918,684,128	26,633	512
1995	6,990,594	112,539,795	3,102,353,355	27,567	530
1996	7,137,644	115,081,246	3,298,045,286	28,658	551
1997	7,317,363	118,233,942	3,553,933,885	30,058	578
1998	7,586,767	121,400,660	3,845,494,089	31,676	609
1999	7,771,198	124,255,714	4,112,169,533	33,094	636
2000	7,828,861	127,005,574	4,454,966,824	35,077	675
2001	7,933,536	126,883,182	4,560,511,280	35,943	691
2002	8,051,117	125,475,293	4,570,787,218	36,428	701
	Private industry covered				
1993	6,454,381	91,202,971	$2,365,301,493	$25,934	$499
1994	6,596,158	94,146,344	2,494,458,555	26,496	510
1995	6,803,454	96,894,844	2,658,927,216	27,441	528
1996	6,946,858	99,268,446	2,837,334,217	28,582	550
1997	7,121,182	102,175,161	3,071,807,287	30,064	578
1998	7,381,518	105,082,368	3,337,621,699	31,762	611
1999	7,560,567	107,619,457	3,577,738,557	33,244	639
2000	7,622,274	110,015,333	3,887,626,769	35,337	680
2001	7,724,965	109,304,802	3,952,152,155	36,157	695
2002	7,839,903	107,577,281	3,930,767,025	36,539	703
	State government covered				
1993	59,185	4,088,075	$117,095,062	$28,643	$551
1994	60,686	4,162,944	122,879,977	29,518	568
1995	60,763	4,201,836	128,143,491	30,497	586
1996	62,146	4,191,726	131,605,800	31,397	604
1997	65,352	4,214,451	137,057,432	32,521	625
1998	67,347	4,240,779	142,512,445	33,605	646
1999	70,538	4,296,673	149,011,194	34,681	667
2000	65,096	4,370,160	158,618,365	36,296	698
2001	64,583	4,452,237	168,358,331	37,814	727
2002	64,447	4,485,071	175,866,492	39,212	754
	Local government covered				
1993	118,626	11,059,500	$288,594,697	$26,095	$502
1994	121,425	11,278,080	301,315,857	26,717	514
1995	126,342	11,442,238	315,252,346	27,552	530
1996	128,640	11,621,074	329,105,269	28,320	545
1997	130,829	11,844,330	345,069,166	29,134	560
1998	137,902	12,077,513	365,359,945	30,251	582
1999	140,093	12,339,584	385,419,781	31,234	601
2000	141,491	12,620,081	408,721,690	32,387	623
2001	143,989	13,126,143	440,000,795	33,521	645
2002	146,767	13,412,941	464,153,701	34,605	665
	Federal Government covered (UCFE)				
1993	47,714	3,071,140	$113,448,871	$36,940	$710
1994	48,377	3,023,098	114,992,550	38,038	731
1995	50,083	2,948,046	113,567,881	38,523	741
1996	51,524	2,881,887	116,469,523	40,414	777
1997	52,110	2,810,489	120,097,833	42,732	822
1998	47,252	2,782,888	121,578,334	43,688	840
1999	49,661	2,786,567	123,409,672	44,287	852
2000	50,256	2,871,489	132,741,760	46,228	889
2001	50,993	2,752,619	134,713,843	48,940	941
2002	50,755	2,758,627	143,587,523	52,050	1,001

NOTE: Detail may not add to totals due to rounding. Data reflect the movement of Indian Tribal Council establishments from private industry to the public sector. See Notes on Current Labor Statistics.

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25. Annual data: Quarterly Census of Employment and Wages, establishment size and employment, private ownership, by supersector, first quarter 2003

Industry, establishments, and employment	Total	Size of establishments								
		Fewer than 5 workers[1]	5 to 9 workers	10 to 19 workers	20 to 49 workers	50 to 99 workers	100 to 249 workers	250 to 499 workers	500 to 999 workers	1,000 or more workers
Total all industries[2]										
Establishments, first quarter	7,933,974	4,768,812	1,331,834	872,241	597,662	203,030	115,598	28,856	10,454	5,487
Employment, March	105,583,548	7,095,128	8,810,097	11,763,253	18,025,655	13,970,194	17,299,058	9,864,934	7,090,739	11,664,490
Natural resources and mining										
Establishments, first quarter	124,527	72,088	23,248	14,773	9,226	2,893	1,593	501	161	44
Employment, March	1,526,176	110,155	153,629	198,895	275,811	198,122	241,559	171,063	108,563	68,379
Construction										
Establishments, first quarter	795,029	523,747	129,201	76,215	46,096	12,837	5,604	1,006	262	61
Employment, March	6,285,841	746,296	846,521	1,021,722	1,371,071	872,274	823,846	338,107	172,944	93,060
Manufacturing										
Establishments, first quarter	381,159	148,469	65,027	57,354	54,261	25,927	19,813	6,506	2,565	1,237
Employment, March	14,606,928	252,443	436,028	788,581	1,685,563	1,815,385	3,043,444	2,245,183	1,732,368	2,607,933
Trade, transportation, and utilities										
Establishments, first quarter	1,851,662	992,180	378,157	239,637	149,960	51,507	31,351	6,681	1,619	570
Employment, March	24,683,356	1,646,304	2,514,548	3,204,840	4,527,709	3,564,316	4,661,898	2,277,121	1,070,141	1,216,479
Information										
Establishments, first quarter	147,062	84,906	20,744	16,130	13,539	5,920	3,773	1,223	575	252
Employment, March	3,208,667	112,409	138,076	220,618	416,670	410,513	576,674	418,113	399,366	516,228
Financial activities										
Establishments, first quarter	753,064	480,485	135,759	76,733	39,003	11,743	6,195	1,794	883	469
Employment, March	7,753,717	788,607	892,451	1,017,662	1,162,498	801,140	934,618	620,183	601,549	935,009
Professional and business services										
Establishments, first quarter	1,307,697	887,875	180,458	111,532	73,599	28,471	17,856	5,153	1,919	834
Employment, March	15,648,435	1,230,208	1,184,745	1,501,470	2,232,506	1,969,466	2,707,203	1,762,251	1,307,870	1,752,716
Education and health services										
Establishments, first quarter	720,207	338,139	164,622	103,683	65,173	24,086	17,122	3,929	1,761	1,692
Employment, March	15,680,834	629,968	1,092,329	1,392,099	1,955,861	1,679,708	2,558,300	1,337,188	1,220,921	3,814,460
Leisure and hospitality										
Establishments, first quarter	657,359	260,149	110,499	118,140	122,168	34,166	9,718	1,609	599	311
Employment, March	11,731,379	411,192	744,144	1,653,470	3,683,448	2,285,550	1,372,780	545,304	404,831	630,660
Other services										
Establishments, first quarter	1,057,236	851,231	116,940	56,238	24,235	5,451	2,561	454	109	17
Employment, March	4,243,633	1,037,360	761,518	740,752	703,957	371,774	376,832	150,421	71,453	29,566

[1] Includes establishments that reported no workers in March 2003.

[2] Includes data for unclassified establishments, not shown separately.

NOTE: Details may not add to totals due to rounding. Data are only produced for first quarter. Data are preliminary.

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26. Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Metropolitan areas[3]	$37,908	$38,423	1.4
Abilene, TX	25,141	25,517	1.5
Akron, OH	32,930	34,037	3.4
Albany, GA	28,877	29,913	3.6
Albany-Schenectady-Troy, NY	35,355	35,994	1.8
Albuquerque, NM	31,667	32,475	2.6
Alexandria, LA	26,296	27,300	3.8
Allentown-Bethlehem-Easton, PA	33,569	34,789	3.6
Altoona, PA	26,869	27,360	1.8
Amarillo, TX	27,422	28,274	3.1
Anchorage, AK	37,998	39,112	2.9
Ann Arbor, MI	37,582	39,220	4.4
Anniston, AL	26,486	27,547	4.0
Appleton-Oshkosh-Neenah, WI	32,652	33,020	1.1
Asheville, NC	28,511	28,771	.9
Athens, GA	28,966	29,942	3.4
Atlanta, GA	40,559	41,123	1.4
Atlantic-Cape May, NJ	31,268	32,201	3.0
Auburn-Opelika, AL	25,753	26,405	2.5
Augusta-Aiken, GA-SC	30,626	31,743	3.6
Austin-San Marcos, TX	40,831	39,540	-3.2
Bakersfield, CA	30,106	31,192	3.6
Baltimore, MD	37,495	38,718	3.3
Bangor, ME	27,850	28,446	2.1
Barnstable-Yarmouth, MA	31,025	32,028	3.2
Baton Rouge, LA	30,321	31,366	3.4
Beaumont-Port Arthur, TX	31,798	32,577	2.4
Bellingham, WA	27,724	28,284	2.0
Benton Harbor, MI	31,140	32,627	4.8
Bergen-Passaic, NJ	44,701	45,185	1.1
Billings, MT	27,889	28,553	2.4
Biloxi-Gulfport-Pascagoula, MS	28,351	28,515	.6
Binghamton, NY	31,187	31,832	2.1
Birmingham, AL	34,519	35,940	4.1
Bismarck, ND	27,116	27,993	3.2
Bloomington, IN	28,013	28,855	3.0
Bloomington-Normal, IL	35,111	36,133	2.9
Boise City, ID	31,624	31,955	1.0
Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH	45,766	45,685	-.2
Boulder-Longmont, CO	44,310	44,037	-.6
Brazoria, TX	35,655	36,253	1.7
Bremerton, WA	31,525	33,775	7.1
Brownsville-Harlingen-San Benito, TX	22,142	22,892	3.4
Bryan-College Station, TX	25,755	26,051	1.1
Buffalo-Niagara Falls, NY	32,054	32,777	2.3
Burlington, VT	34,363	35,169	2.3
Canton-Massillon, OH	29,020	29,689	2.3
Casper, WY	28,264	28,886	2.2
Cedar Rapids, IA	34,649	34,730	.2
Champaign-Urbana, IL	30,488	31,995	4.9
Charleston-North Charleston, SC	28,887	29,993	3.8
Charleston, WV	31,530	32,136	1.9
Charlotte-Gastonia-Rock Hill, NC-SC	37,267	38,413	3.1
Charlottesville, VA	32,427	33,328	2.8
Chattanooga, TN-GA	29,981	30,631	2.2
Cheyenne, WY	27,579	28,827	4.5
Chicago, IL	42,685	43,239	1.3
Chico-Paradise, CA	26,499	27,190	2.6
Cincinnati, OH-KY-IN	36,050	37,168	3.1
Clarksville-Hopkinsville, TN-KY	25,567	26,940	5.4
Cleveland-Lorain-Elyria, OH	35,514	36,102	1.7
Colorado Springs, CO	34,391	34,681	.8
Columbia, MO	28,490	29,135	2.3
Columbia, SC	29,904	30,721	2.7
Columbus, GA-AL	28,412	29,207	2.8
Columbus, OH	35,028	36,144	3.2
Corpus Christi, TX	29,361	30,168	2.7
Corvallis, OR	35,525	36,766	3.5
Cumberland, MD-WV	25,504	26,704	4.7
Dallas, TX	42,706	43,000	.7
Danville, VA	25,465	26,116	2.6

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Davenport-Moline-Rock Island, IA-IL	$31,275	$32,118	2.7
Dayton-Springfield, OH	33,619	34,327	2.1
Daytona Beach, FL	25,953	26,898	3.6
Decatur, AL	30,891	30,370	-1.7
Decatur, IL	33,354	33,215	-.4
Denver, CO	42,351	42,133	-.5
Des Moines, IA	34,303	35,641	3.9
Detroit, MI	42,704	43,224	1.2
Dothan, AL	28,026	29,270	4.4
Dover, DE	27,754	29,818	7.4
Dubuque, IA	28,402	29,208	2.8
Duluth-Superior, MN-WI	29,415	30,581	4.0
Dutchess County, NY	38,748	38,221	-1.4
Eau Claire, WI	27,680	28,760	3.9
El Paso, TX	25,847	26,604	2.9
Elkhart-Goshen, IN	30,797	32,427	5.3
Elmira, NY	28,669	29,151	1.7
Enid, OK	24,836	25,507	2.7
Erie, PA	29,293	29,780	1.7
Eugene-Springfield, OR	28,983	29,427	1.5
Evansville-Henderson, IN-KY	31,042	31,977	3.0
Fargo-Moorhead, ND-MN	27,899	29,053	4.1
Fayetteville, NC	26,981	28,298	4.9
Fayetteville-Springdale-Rogers, AR	29,940	31,090	3.8
Flagstaff, AZ-UT	25,890	26,846	3.7
Flint, MI	35,995	36,507	1.4
Florence, AL	25,639	26,591	3.7
Florence, SC	28,800	29,563	2.6
Fort Collins-Loveland, CO	33,248	34,215	2.9
Fort Lauderdale, FL	33,966	34,475	1.5
Fort Myers-Cape Coral, FL	29,432	30,324	3.0
Fort Pierce-Port St. Lucie, FL	27,742	29,152	5.1
Fort Smith, AR-OK	26,755	27,075	1.2
Fort Walton Beach, FL	26,151	27,242	4.2
Fort Wayne, IN	31,400	32,053	2.1
Fort Worth-Arlington, TX	36,379	37,195	2.2
Fresno, CA	27,647	28,814	4.2
Gadsden, AL	25,760	26,214	1.8
Gainesville, FL	26,917	27,648	2.7
Galveston-Texas City, TX	31,067	31,920	2.7
Gary, IN	31,948	32,432	1.5
Glens Falls, NY	27,885	28,931	3.8
Goldsboro, NC	25,398	25,821	1.7
Grand Forks, ND-MN	24,959	25,710	3.0
Grand Junction, CO	27,426	28,331	3.3
Grand Rapids-Muskegon-Holland, MI	33,431	34,214	2.3
Great Falls, MT	24,211	25,035	3.4
Greeley, CO	30,066	31,104	3.5
Green Bay, WI	32,631	33,698	3.3
Greensboro–Winston-Salem–High Point, NC	31,730	32,369	2.0
Greenville, NC	28,289	29,055	2.7
Greenville-Spartanburg-Anderson, SC	30,940	31,726	2.5
Hagerstown, MD	29,020	30,034	3.5
Hamilton-Middletown, OH	32,325	32,985	2.0
Harrisburg-Lebanon-Carlisle, PA	33,408	34,497	3.3
Hartford, CT	43,880	44,387	1.2
Hattiesburg, MS	25,145	26,051	3.6
Hickory-Morganton-Lenoir, NC	27,305	27,996	2.5
Honolulu, HI	32,531	33,978	4.4
Houma, LA	30,343	30,758	1.4
Houston, TX	42,784	42,712	-.2
Huntington-Ashland, WV-KY-OH	27,478	28,321	3.1
Huntsville, AL	36,727	38,571	5.0
Indianapolis, IN	35,989	36,608	1.7
Iowa City, IA	31,663	32,567	2.9
Jackson, MI	32,454	33,251	2.5
Jackson, MS	29,813	30,537	2.4
Jackson, TN	29,414	30,443	3.5
Jacksonville, FL	32,367	33,722	4.2
Jacksonville, NC	21,395	22,269	4.1

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Jamestown, NY	$25,913	$26,430	2.0
Janesville-Beloit, WI	31,482	32,837	4.3
Jersey City, NJ	47,638	49,562	4.0
Johnson City-Kingsport-Bristol, TN-VA	28,543	29,076	1.9
Johnstown, PA	25,569	26,161	2.3
Jonesboro, AR	25,337	26,165	3.3
Joplin, MO	26,011	26,594	2.2
Kalamazoo-Battle Creek, MI	32,905	34,237	4.0
Kankakee, IL	29,104	30,015	3.1
Kansas City, MO-KS	35,794	36,731	2.6
Kenosha, WI	31,562	32,473	2.9
Killeen-Temple, TX	26,193	27,299	4.2
Knoxville, TN	30,422	31,338	3.0
Kokomo, IN	39,599	40,778	3.0
La Crosse, WI-MN	27,774	28,719	3.4
Lafayette, LA	29,693	30,104	1.4
Lafayette, IN	31,484	31,700	.7
Lake Charles, LA	29,782	30,346	1.9
Lakeland-Winter Haven, FL	28,890	29,505	2.1
Lancaster, PA	31,493	32,197	2.2
Lansing-East Lansing, MI	34,724	35,785	3.1
Laredo, TX	24,128	24,739	2.5
Las Cruces, NM	24,310	25,256	3.9
Las Vegas, NV-AZ	32,239	33,280	3.2
Lawrence, KS	25,923	26,621	2.7
Lawton, OK	24,812	25,392	2.3
Lewiston-Auburn, ME	27,092	28,435	5.0
Lexington, KY	31,593	32,776	3.7
Lima, OH	29,644	30,379	2.5
Lincoln, NE	29,352	30,614	4.3
Little Rock-North Little Rock, AR	30,858	31,634	2.5
Longview-Marshall, TX	28,029	28,172	.5
Los Angeles-Long Beach, CA	40,891	41,709	2.0
Louisville, KY-IN	33,058	33,901	2.6
Lubbock, TX	26,577	27,625	3.9
Lynchburg, VA	28,859	29,444	2.0
Macon, GA	30,595	31,884	4.2
Madison, WI	34,097	35,410	3.9
Mansfield, OH	28,808	30,104	4.5
McAllen-Edinburg-Mission, TX	22,313	23,179	3.9
Medford-Ashland, OR	27,224	28,098	3.2
Melbourne-Titusville-Palm Bay, FL	32,798	33,913	3.4
Memphis, TN-AR-MS	34,603	35,922	3.8
Merced, CA	25,479	26,771	5.1
Miami, FL	34,524	35,694	3.4
Middlesex-Somerset-Hunterdon, NJ	49,950	50,457	1.0
Milwaukee-Waukesha, WI	35,617	36,523	2.5
Minneapolis-St. Paul, MN-WI	40,868	41,722	2.1
Missoula, MT	26,181	27,249	4.1
Mobile, AL	28,129	28,742	2.2
Modesto, CA	29,591	30,769	4.0
Monmouth-Ocean, NJ	37,056	37,710	1.8
Monroe, LA	26,578	27,614	3.9
Montgomery, AL	29,150	30,525	4.7
Muncie, IN	28,374	29,017	2.3
Myrtle Beach, SC	24,029	24,672	2.7
Naples, FL	30,839	31,507	2.2
Nashville, TN	33,989	35,036	3.1
Nassau-Suffolk, NY	39,662	40,396	1.9
New Haven-Bridgeport-Stamford-Waterbury-Danbury, CT	52,198	51,170	-2.0
New London-Norwich, CT	38,505	38,650	.4
New Orleans, LA	31,089	32,407	4.2
New York, NY	59,097	57,708	-2.4
Newark, NJ	47,715	48,781	2.2
Newburgh, NY-PA	29,827	30,920	3.7
Norfolk-Virginia Beach-Newport News, VA-NC	29,875	30,823	3.2
Oakland, CA	45,920	46,877	2.1
Ocala, FL	26,012	26,628	2.4
Odessa-Midland, TX	31,278	31,295	.1
Oklahoma City, OK	28,915	29,850	3.2

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Olympia, WA	$32,772	$33,765	3.0
Omaha, NE-IA	31,856	33,107	3.9
Orange County, CA	40,252	41,219	2.4
Orlando, FL	31,276	32,461	3.8
Owensboro, KY	27,306	28,196	3.3
Panama City, FL	26,433	27,448	3.8
Parkersburg-Marietta, WV-OH	27,920	29,529	5.8
Pensacola, FL	28,059	28,189	.5
Peoria-Pekin, IL	33,293	34,261	2.9
Philadelphia, PA-NJ	40,231	41,121	2.2
Phoenix-Mesa, AZ	35,514	36,045	1.5
Pine Bluff, AR	27,561	28,698	4.1
Pittsburgh, PA	35,024	35,625	1.7
Pittsfield, MA	31,561	32,707	3.6
Pocatello, ID	24,621	25,219	2.4
Portland, ME	32,327	33,309	3.0
Portland-Vancouver, OR-WA	37,285	37,650	1.0
Providence-Warwick-Pawtucket, RI	33,403	34,610	3.6
Provo-Orem, UT	28,266	28,416	.5
Pueblo, CO	27,097	27,763	2.5
Punta Gorda, FL	25,404	26,119	2.8
Racine, WI	33,319	34,368	3.1
Raleigh-Durham-Chapel Hill, NC	38,691	39,056	.9
Rapid City, SD	25,508	26,434	3.6
Reading, PA	32,807	33,912	3.4
Redding, CA	28,129	28,961	3.0
Reno, NV	34,231	34,744	1.5
Richland-Kennewick-Pasco, WA	33,370	35,174	5.4
Richmond-Petersburg, VA	35,879	36,751	2.4
Riverside-San Bernardino, CA	30,510	31,591	3.5
Roanoke, VA	30,330	31,775	4.8
Rochester, MN	37,753	39,036	3.4
Rochester, NY	34,327	34,827	1.5
Rockford, IL	32,104	32,827	2.3
Rocky Mount, NC	28,770	28,893	.4
Sacramento, CA	38,016	39,354	3.5
Saginaw-Bay City-Midland, MI	35,429	35,444	.0
St. Cloud, MN	28,263	29,535	4.5
St. Joseph, MO	27,734	28,507	2.8
St. Louis, MO-IL	35,928	36,712	2.2
Salem, OR	28,336	29,210	3.1
Salinas, CA	31,735	32,463	2.3
Salt Lake City-Ogden, UT	31,965	32,600	2.0
San Angelo, TX	26,147	26,321	.7
San Antonio, TX	30,650	31,336	2.2
San Diego, CA	38,418	39,305	2.3
San Francisco, CA	59,654	56,602	-5.1
San Jose, CA	65,931	63,056	-4.4
San Luis Obispo-Atascadero-Paso Robles, CA	29,092	29,981	3.1
Santa Barbara-Santa Maria-Lompoc, CA	33,626	34,382	2.2
Santa Cruz-Watsonville, CA	35,022	35,721	2.0
Santa Fe, NM	30,671	32,269	5.2
Santa Rosa, CA	36,145	36,494	1.0
Sarasota-Bradenton, FL	27,958	28,950	3.5
Savannah, GA	30,176	30,796	2.1
Scranton--Wilkes-Barre--Hazleton, PA	28,642	29,336	2.4
Seattle-Bellevue-Everett, WA	45,299	46,093	1.8
Sharon, PA	26,707	27,872	4.4
Sheboygan, WI	30,840	32,148	4.2
Sherman-Denison, TX	30,397	30,085	-1.0
Shreveport-Bossier City, LA	27,856	28,769	3.3
Sioux City, IA-NE	26,755	27,543	2.9
Sioux Falls, SD	28,962	29,975	3.5
South Bend, IN	30,769	31,821	3.4
Spokane, WA	29,310	30,037	2.5
Springfield, IL	36,061	37,336	3.5
Springfield, MO	27,338	27,987	2.4
Springfield, MA	32,801	33,972	3.6
State College, PA	29,939	30,910	3.2
Steubenville-Weirton, OH-WV	28,483	29,129	2.3

See footnotes at end of table.

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26. Continued—Annual data: Quarterly Census of Employment and Wages, by metropolitan area, 2001-02

Metropolitan area[1]	Average annual wage[2]		
	2001	2002	Percent change, 2001-02
Stockton-Lodi, CA	$30,818	$31,958	3.7
Sumter, SC	24,450	24,982	2.2
Syracuse, NY	32,254	33,752	4.6
Tacoma, WA	31,261	32,507	4.0
Tallahassee, FL	29,708	30,895	4.0
Tampa-St. Petersburg-Clearwater, FL	31,678	32,458	2.5
Terre Haute, IN	27,334	28,415	4.0
Texarkana, TX-Texarkana, AR	26,492	27,717	4.6
Toledo, OH	32,299	33,513	3.8
Topeka, KS	30,513	31,707	3.9
Trenton, NJ	46,831	47,969	2.4
Tucson, AZ	30,690	31,673	3.2
Tulsa, OK	31,904	32,241	1.1
Tuscaloosa, AL	29,972	30,745	2.6
Tyler, TX	30,551	31,050	1.6
Utica-Rome, NY	27,777	28,500	2.6
Vallejo-Fairfield-Napa, CA	33,903	34,543	1.9
Ventura, CA	37,783	38,195	1.1
Victoria, TX	29,068	29,168	.3
Vineland-Millville-Bridgeton, NJ	32,571	33,625	3.2
Visalia-Tulare-Porterville, CA	24,732	25,650	3.7
Waco, TX	28,245	28,885	2.3
Washington, DC-MD-VA-WV	47,589	48,430	1.8
Waterloo-Cedar Falls, IA	29,119	29,916	2.7
Wausau, WI	29,402	30,292	3.0
West Palm Beach-Boca Raton, FL	35,957	36,550	1.6
Wheeling, WV-OH	26,282	26,693	1.6
Wichita, KS	32,983	33,429	1.4
Wichita Falls, TX	25,557	26,387	3.2
Williamsport, PA	27,801	27,988	.7
Wilmington-Newark, DE-MD	42,177	43,401	2.9
Wilmington, NC	29,287	29,157	-.4
Yakima, WA	24,204	24,934	3.0
Yolo, CA	35,352	35,591	.7
York, PA	31,936	32,609	2.1
Youngstown-Warren, OH	28,789	29,799	3.5
Yuba City, CA	27,781	28,967	4.3
Yuma, AZ	22,415	23,429	4.5
Aguadilla, PR	18,061	19,283	6.8
Arecibo, PR	16,600	18,063	8.8
Caguas, PR	18,655	19,706	5.6
Mayaguez, PR	17,101	17,500	2.3
Ponce, PR	17,397	18,187	4.5
San Juan-Bayamon, PR	20,948	21,930	4.7

[1] Includes data for Metropolitan Statistical Areas (MSA) and Primary Metropolitan Statistical Areas (PMSA) as defined by OMB Bulletin No. 99-04. In the New England areas, the New England County Metropolitan Area (NECMA) definitions were used.

[2] Each year's total is based on the MSA definition for the specific year. Annual changes include differences resulting from changes in MSA definitions.

[3] Totals do not include the six MSAs within Puerto Rico.

NOTE: Includes workers covered by Unemployment Insurance (UI) and Unemployment Compensation for Federal Employees (UCFE) programs.

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27. Annual data: Employment status of the population

[Numbers in thousands]

Employment status	1994[1]	1995	1996	1997[1]	1998[1]	1999[1]	2000[1]	2001	2002	2003	2004
Civilian noninstitutional population	196,814	198,584	200,591	203,133	205,220	207,753	212,577	215,092	217,570	221,168	223,357
Civilian labor force	131,056	132,304	133,943	136,297	137,673	139,368	142,583	143,734	144,863	146,510	147,401
Labor force participation rate	66.6	66.6	66.8	67.1	67.1	67.1	67.1	66.8	66.6	66.2	66.0
Employed	123,060	124,900	126,708	129,558	131,463	133,488	136,891	136,933	136,485	137,736	139,252
Employment-population ratio	62.5	62.9	63.2	63.8	64.1	64.3	64.4	63.7	62.7	62.3	62.3
Unemployed	7,996	7,404	7,236	6,739	6,210	5,880	5,692	6,801	8,378	8,774	8,149
Unemployment rate	6.1	5.6	5.4	4.9	4.5	4.2	4.0	4.7	5.8	6.0	5.5
Not in the labor force	65,758	66,280	66,647	66,836	67,547	68,385	69,994	71,359	72,707	74,658	75,956

[1] Not strictly comparable with prior years.

28. Annual data: Employment levels by industry

[In thousands]

Industry	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total private employment	95,016	97,866	100,169	103,113	106,021	108,686	110,996	110,707	108,828	108,416	109,862
Total nonfarm employment	114,291	117,298	119,708	122,770	125,930	128,993	131,785	131,826	130,341	129,999	131,480
Goods-producing	22,774	23,156	23,410	23,886	24,354	24,465	24,649	23,873	22,557	21,816	21,884
Natural resources and mining	659	641	637	654	645	598	599	606	583	572	591
Construction	5,095	5,274	5,536	5,813	6,149	6,545	6,787	6,826	6,716	6,735	6,964
Manufacturing	17,021	17,241	17,237	17,419	17,560	17,322	17,263	16,441	15,259	14,510	14,329
Private service-providing	72,242	74,710	76,759	79,227	81,667	84,221	86,346	86,834	86,271	86,599	87,978
Trade, transportation, and utilities	23,128	23,834	24,239	24,700	25,186	25,771	26,225	25,983	25,497	25,287	25,510
Wholesale trade	5,247.3	5,433.1	5,522.0	5,663.9	5,795.2	5,892.5	5,933.2	5,772.7	5,652.3	5,607.5	5,654.9
Retail trade	13,490.8	13,896.7	14,142.5	14,388.9	14,609.3	14,970.1	15,279.8	15,238.6	15,025.1	14,917.3	15,034.7
Transportation and warehousing	3,701.0	3,837.8	3,935.3	4,026.5	4,168.0	4,300.3	4,410.3	4,372.0	4,223.6	4,185.4	4,250.0
Utilities	689.3	666.2	639.6	620.9	613.4	608.5	601.3	599.4	596.2	577.0	570.2
Information	2,738	2,843	2,940	3,084	3,218	3,419	3,631	3,629	3,395	3,188	3,138
Financial activities	6,867	6,827	6,969	7,178	7,462	7,648	7,687	7,807	7,847	7,977	8,052
Professional and business services	12,174	12,844	13,462	14,335	15,147	15,957	16,666	16,476	15,976	15,987	16,414
Education and health services	12,807	13,289	13,683	14,087	14,446	14,798	15,109	15,645	16,199	16,588	16,954
Leisure and hospitality	10,100	10,501	10,777	11,018	11,232	11,543	11,862	12,036	11,986	12,173	12,479
Other services	4,428	4,572	4,690	4,825	4,976	5,087	5,168	5,258	5,372	5,401	5,431
Government	19,275	19,432	19,539	19,664	19,909	20,307	20,790	21,118	21,513	21,583	21,618

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29. Annual data: Average hours and earnings of production or nonsupervisory workers on nonfarm payrolls, by industry

Industry	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Private sector:											
Average weekly hours	34.5	34.3	34.3	34.5	34.5	34.3	34.3	34.0	33.9	33.7	33.7
Average hourly earnings (in dollars)	11.32	11.64	12.03	12.49	13.00	13.47	14.00	14.53	14.95	15.35	15.67
Average weekly earnings (in dollars)	390.73	399.53	412.74	431.25	448.04	462.49	480.41	493.20	506.07	517.30	528.56
Goods-producing:											
Average weekly hours	41.1	40.8	40.8	41.1	40.8	40.8	40.7	39.9	39.9	39.8	40.0
Average hourly earnings (in dollars)	12.63	12.96	13.38	13.82	14.23	14.71	15.27	15.78	16.33	16.80	17.19
Average weekly earnings (in dollars)	519.58	528.62	546.48	568.43	580.99	599.99	621.86	630.04	651.61	669.13	688.03
Natural resources and mining											
Average weekly hours	45.3	45.3	46.0	46.2	44.9	44.2	44.4	44.6	43.2	43.6	44.5
Average hourly earnings (in dollars)	14.41	14.78	15.10	15.57	16.20	16.33	16.55	17.00	17.19	17.56	18.08
Average weekly earnings (in dollars)	653.14	670.32	695.07	720.11	727.28	721.74	734.92	757.92	741.97	765.94	804.03
Construction:											
Average weekly hours	38.8	38.8	38.9	38.9	38.8	39.0	39.2	38.7	38.4	38.4	38.3
Average hourly earnings (in dollars)	14.38	14.73	15.11	15.67	16.23	16.80	17.48	18.00	18.52	18.95	19.23
Average weekly earnings (in dollars)	558.53	571.57	588.48	609.48	629.75	655.11	685.78	695.89	711.82	726.83	735.70
Manufacturing:											
Average weekly hours	41.7	41.3	41.3	41.7	41.4	41.4	41.3	40.3	40.5	40.4	40.8
Average hourly earnings (in dollars)	12.04	12.34	12.75	13.14	13.45	13.85	14.32	14.76	15.29	15.74	16.14
Average weekly earnings (in dollars)	502.12	509.26	526.55	548.22	557.12	573.17	590.65	595.19	618.75	635.99	658.53
Private service-providing:											
Average weekly hours	32.7	32.6	32.6	32.8	32.8	32.7	32.7	32.5	32.5	32.4	32.3
Average hourly earnings (in dollars)	10.87	11.19	11.57	12.05	12.59	13.07	13.60	14.16	14.56	14.96	15.26
Average weekly earnings (in dollars)	354.97	364.14	376.72	394.77	412.78	427.30	445.00	460.32	472.88	483.89	493.67
Trade, transportation, and utilities:											
Average weekly hours	34.3	34.1	34.1	34.3	34.2	33.9	33.8	33.5	33.6	33.6	33.5
Average hourly earnings (in dollars)	10.80	11.10	11.46	11.90	12.39	12.82	13.31	13.70	14.02	14.34	14.59
Average weekly earnings (in dollars)	370.38	378.79	390.64	407.57	423.30	434.31	449.88	459.53	471.27	481.14	488.58
Wholesale trade:											
Average weekly hours	38.8	38.6	38.6	38.8	38.6	38.6	38.8	38.4	38.0	37.9	37.8
Average hourly earnings (in dollars)	12.93	13.34	13.80	14.41	15.07	15.62	16.28	16.77	16.98	17.36	17.66
Average weekly earnings (in dollars)	501.17	515.14	533.29	559.39	582.21	602.77	631.40	643.45	644.38	657.29	666.93
Retail trade:											
Average weekly hours	30.9	30.8	30.7	30.9	30.9	30.8	30.7	30.7	30.9	30.9	30.7
Average hourly earnings (in dollars)	8.61	8.85	9.21	9.59	10.05	10.45	10.86	11.29	11.67	11.90	12.08
Average weekly earnings (in dollars)	501.17	515.14	533.29	559.39	582.21	602.77	631.40	643.45	644.38	657.29	666.93
Transportation and warehousing:											
Average weekly hours	39.5	38.9	39.1	39.4	38.7	37.6	37.4	36.7	36.8	36.8	37.2
Average hourly earnings (in dollars)	12.84	13.18	13.45	13.78	14.12	14.55	15.05	15.33	15.76	16.25	16.53
Average weekly earnings (in dollars)	507.27	513.37	525.60	542.55	546.86	547.97	562.31	562.70	579.75	598.41	614.90
Utilities:											
Average weekly hours	42.3	42.3	42.0	42.0	42.0	42.0	42.0	41.4	40.9	41.1	40.9
Average hourly earnings (in dollars)	18.66	19.19	19.78	20.59	21.48	22.03	22.75	23.58	23.96	24.77	25.62
Average weekly earnings (in dollars)	789.98	811.52	830.74	865.26	902.94	924.59	955.66	977.18	979.09	1,017.27	1,048.82
Information:											
Average weekly hours	36.0	36.0	36.4	36.3	36.6	36.7	36.8	36.9	36.5	36.2	36.3
Average hourly earnings (in dollars)	15.32	15.68	16.30	17.14	17.67	18.40	19.07	19.80	20.20	21.01	21.42
Average weekly earnings (in dollars)	551.28	564.98	592.68	622.40	646.52	675.32	700.89	731.11	738.17	760.81	777.42
Financial activities:											
Average weekly hours	35.5	35.5	35.5	35.7	36.0	35.8	35.9	35.8	35.6	35.5	35.5
Average hourly earnings (in dollars)	11.82	12.28	12.71	13.22	13.93	14.47	14.98	15.59	16.17	17.14	17.53
Average weekly earnings (in dollars)	419.20	436.12	451.49	472.37	500.95	517.57	537.37	558.02	575.51	609.08	622.99
Professional and business services:											
Average weekly hours	34.1	34.0	34.1	34.3	34.3	34.4	34.5	34.2	34.2	34.1	34.2
Average hourly earnings (in dollars)	12.15	12.53	13.00	13.57	14.27	14.85	15.52	16.33	16.81	17.21	17.46
Average weekly earnings (in dollars)	414.16	426.44	442.81	465.51	490.00	510.99	535.07	557.84	574.66	587.02	596.96
Education and health services:											
Average weekly hours	32.0	32.0	31.9	32.2	32.2	32.1	32.2	32.3	32.4	32.3	32.4
Average hourly earnings (in dollars)	11.50	11.80	12.17	12.56	13.00	13.44	13.95	14.64	15.21	15.64	16.16
Average weekly earnings (in dollars)	368.14	377.73	388.27	404.65	418.82	431.35	449.29	473.39	492.74	505.69	523.83
Leisure and hospitality:											
Average weekly hours	26.0	25.9	25.9	26.0	26.2	26.1	26.1	25.8	25.8	25.6	25.7
Average hourly earnings (in dollars)	6.46	6.62	6.82	7.13	7.48	7.76	8.11	8.35	8.58	8.76	8.91
Average weekly earnings (in dollars)	168.00	171.43	176.48	185.81	195.82	202.87	211.79	215.19	221.26	224.30	228.63
Other services:											
Average weekly hours	32.7	32.6	32.5	32.7	32.6	32.5	32.5	32.3	32.0	31.4	31.0
Average hourly earnings (in dollars)	10.18	10.51	10.85	11.29	11.79	12.26	12.73	13.27	13.72	13.84	13.98
Average weekly earnings (in dollars)	332.44	342.36	352.62	368.63	384.25	398.77	413.41	428.64	439.76	434.41	433.04

NOTE: Data reflect the conversion to the 2002 version of the North American Industry Classification System (NAICS), replacing the Standard Industrial Classification (SIC) system. NAICS-based data by industry are not comparable with SIC-based data.

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30. Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	2003				2004				2005	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 2005	
Civilian workers[2]	164.5	165.8	167.6	168.4	170.7	172.2	173.9	174.7	176.6	1.1	3.5
Workers, by occupational group:											
White-collar workers	166.7	167.9	169.9	170.7	172.7	174.0	175.8	176.6	178.8	1.2	3.5
Professional specialty and technical	164.1	165.0	167.0	168.0	170.2	171.2	173.6	174.7	176.8	1.2	3.9
Executive, administrative, and managerial	171.1	172.0	174.0	174.9	175.8	177.1	178.2	179.4	182.0	1.4	3.5
Administrative support, including clerical	168.3	170.0	171.7	172.5	175.3	177.2	178.7	180.0	182.0	1.1	3.8
Blue-collar workers	159.8	161.4	162.9	163.7	166.9	168.8	170.1	170.9	172.4	.9	3.3
Service occupations	164.1	165.0	166.8	167.9	169.7	170.9	172.7	173.6	174.9	.7	3.1
Workers, by industry division:											
Goods-producing	163.1	164.6	165.8	166.8	170.4	171.9	173.4	174.4	177.0	1.5	3.9
Manufacturing	164.0	165.4	166.5	167.1	171.7	173.2	174.9	175.4	178.2	1.6	3.8
Service-producing	165.0	166.2	168.2	169.1	170.8	172.3	174.0	174.7	176.5	1.0	3.3
Services	165.3	166.3	168.5	169.5	171.2	172.3	174.5	175.5	177.0	.9	3.4
Health services	166.4	167.6	169.3	170.7	173.0	174.4	176.7	177.7	179.9	1.2	4.0
Hospitals	169.9	170.8	173.1	174.8	176.8	178.2	180.5	181.8	184.3	1.4	4.2
Educational services	163.6	164.2	166.9	167.6	168.5	168.9	171.8	172.9	173.9	.6	3.2
Public administration[3]	163.4	164.3	167.3	168.1	170.1	171.4	174.1	175.4	177.6	1.3	4.4
Nonmanufacturing	164.5	165.8	167.8	168.6	170.4	171.8	173.5	174.4	176.1	1.0	3.3
Private industry workers	165.0	166.4	168.1	168.8	171.4	173.0	174.4	175.2	177.2	1.1	3.4
Excluding sales occupations	165.1	166.6	168.1	169.0	171.6	173.2	174.6	175.6	177.7	1.2	3.6
Workers, by occupational group:											
White-collar workers	168.1	169.4	171.2	172.0	174.2	175.7	177.3	178.1	180.4	1.3	3.6
Excluding sales occupations	169.1	170.4	172.1	173.0	175.3	176.7	178.3	179.5	182.0	1.4	3.8
Professional specialty and technical occupations	166.5	167.7	169.4	170.5	173.4	174.7	176.8	178.1	180.8	1.5	4.3
Executive, administrative, and managerial occupations	172.1	173.1	175.0	175.9	176.8	178.1	179.2	180.2	183.0	1.6	3.5
Sales occupations	163.5	165.1	167.2	167.1	169.2	171.2	173.1	171.4	173.1	1.0	2.3
Administrative support occupations, including clerical	169.0	170.9	172.3	173.2	176.1	178.1	179.4	180.7	182.8	1.2	3.8
Blue-collar workers	159.7	161.4	162.8	163.6	166.9	168.8	170.1	170.8	172.3	.9	3.2
Precision production, craft, and repair occupations	160.0	162.0	163.1	164.2	167.1	169.1	170.2	171.2	173.1	1.1	3.6
Machine operators, assemblers, and inspectors	159.9	161.1	162.6	163.2	168.7	170.5	172.2	172.5	173.3	.5	2.7
Transportation and material moving occupations	153.2	155.1	156.7	156.9	158.5	160.6	161.8	162.3	163.7	.9	3.3
Handlers, equipment cleaners, helpers, and laborers	164.9	166.8	168.6	169.5	171.7	173.2	174.3	175.3	176.9	.9	3.0
Service occupations	161.7	162.6	163.8	164.3	166.9	168.2	168.9	169.7	170.9	.7	2.4
Production and nonsupervisory occupations[4]	162.6	164.1	165.7	166.6	169.3	171.0	172.4	173.0	174.6	.9	3.1
Workers, by industry division:											
Goods-producing	163.0	164.5	165.7	166.5	170.3	171.8	173.3	174.3	176.9	1.5	3.9
Excluding sales occupations	162.4	163.8	165.0	165.9	169.8	171.2	172.5	173.7	176.3	1.5	3.8
White-collar occupations	167.8	169.2	170.1	170.5	173.5	174.7	176.4	177.8	182.2	2.5	5.0
Excluding sales occupations	166.3	167.5	168.5	169.2	172.2	173.3	174.5	176.4	180.9	2.6	5.1
Blue-collar occupations	159.9	161.5	162.9	163.9	168.1	169.8	171.3	172.0	173.4	.8	3.2
Construction	159.1	161.1	162.3	163.3	164.6	165.9	167.0	167.3	169.1	1.1	2.7
Manufacturing	164.0	165.4	166.5	167.1	171.7	173.2	174.9	175.4	178.2	1.6	3.8
White-collar occupations	167.1	168.7	169.5	169.6	173.2	174.6	176.4	176.7	181.4	2.7	4.7
Excluding sales occupations	165.1	166.4	167.4	167.8	171.3	172.6	174.1	174.7	179.4	2.7	4.7
Blue-collar occupations	161.6	162.8	164.1	165.1	170.4	172.0	173.7	174.3	175.8	.9	3.2
Durables	164.4	165.5	166.6	167.3	172.4	174.0	175.8	176.3	179.5	1.8	4.1
Nondurables	163.1	164.9	166.0	166.6	170.4	171.7	173.1	173.6	175.8	1.3	3.2
Service-producing	165.6	167.0	168.8	169.7	171.6	173.3	174.7	175.3	177.1	1.0	3.2
Excluding sales occupations	166.6	168.0	169.7	170.6	172.5	174.2	175.6	176.5	178.4	1.1	3.4
White-collar occupations	167.9	169.2	171.2	172.0	174.1	175.7	177.3	177.8	179.7	1.1	3.2
Excluding sales occupations	169.9	171.3	173.1	174.2	176.2	177.8	179.4	180.4	182.4	1.1	3.5
Blue-collar occupations	158.7	160.8	162.2	162.6	164.1	166.4	167.4	168.1	169.9	1.1	3.5
Service occupations	161.1	162.0	163.2	164.3	166.1	167.4	168.1	168.9	170.1	.7	2.4
Transportation and public utilities	163.2	165.4	166.5	167.0	169.8	172.5	173.6	173.5	174.5	.6	2.8
Transportation	157.8	158.9	159.4	159.6	162.0	164.7	166.2	166.2	165.5	.4	2.2
Public utilities	170.5	174.2	176.4	177.0	180.4	183.1	183.6	183.4	186.9	1.9	3.6
Communications	171.3	175.5	178.4	179.0	182.2	183.6	183.6	183.5	186.0	1.4	2.1
Electric, gas, and sanitary services	169.5	172.6	173.8	174.6	178.2	182.4	183.3	183.3	188.0	2.6	5.5
Wholesale and retail trade	161.3	162.5	164.3	165.0	166.3	168.1	169.1	169.1	170.9	1.1	2.8
Excluding sales occupations	161.8	162.7	165.0	165.9	167.4	168.6	169.6	170.4	172.3	1.1	2.9
Wholesale trade	169.5	171.3	172.0	172.0	173.8	175.9	177.8	176.6	179.1	1.4	3.0
Excluding sales occupations	168.4	169.9	171.2	171.3	173.7	174.0	175.3	176.3	179.2	1.6	3.2
Retail trade	156.6	157.4	159.9	161.0	162.1	163.7	164.2	164.7	166.2	.9	2.5
General merchandise stores	156.4	159.2	161.2	165.6	165.8	166.2	168.8	169.5	172.3	1.7	3.9
Food stores	157.5	158.6	159.3	160.3	162.1	163.5	163.5	164.0	165.0	.6	1.8

See footnotes at end of table.

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30. Continued—Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	2003				2004				2005	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 2005	
Finance, insurance, and real estate	176.7	178.3	180.2	180.9	182.5	183.6	184.8	186.0	188.9	1.6	3.5
Excluding sales occupations	182.0	184.0	1,853.0	186.1	186.6	188.7	190.9	191.2	194.3	1.6	4.1
Banking, savings and loan, and other credit agencies	204.3	206.3	207.6	209.0	207.2	208.9	210.5	212.3	213.7	.7	3.1
Insurance	172.1	173.9	175.1	176.2	177.8	180.5	182.1	183.6	186.3	1.5	4.8
Services	167.1	168.4	170.4	171.4	173.5	175.1	176.9	177.9	179.7	1.0	3.6
Business services	168.5	169.2	171.9	172.6	174.8	176.9	178.5	179.1	180.1	.6	3.0
Health services	166.5	167.9	169.4	170.8	173.3	174.8	177.0	178.0	180.3	1.3	4.0
Hospitals	170.8	171.9	173.9	175.9	178.1	179.7	181.8	183.2	185.8	1.4	4.3
Educational services	176.3	177.1	180.2	181.3	183.1	184.2	187.0	188.5	190.0	.8	3.8
Colleges and universities	174.5	175.4	178.4	179.4	181.2	182.5	185.2	186.2	187.6	.8	3.5
Nonmanufacturing	164.9	166.4	168.1	169.0	170.9	172.5	173.9	174.7	176.5	1.0	3.3
White-collar workers	168.0	169.3	171.2	172.1	174.1	175.7	177.2	178.0	180.0	1.1	3.4
Excluding sales occupations	170.0	171.4	173.2	174.2	176.2	177.7	179.3	180.6	182.7	1.2	3.7
Blue-collar occupations	157.5	159.7	161.1	161.7	163.4	165.5	166.4	167.3	168.8	.9	3.3
Service occupations	161.1	162.0	163.2	162.4	166.0	167.3	168.0	168.9	170.1	.7	2.5
State and local government workers	162.6	163.2	165.9	166.8	168.0	168.7	171.5	172.6	174.1	.9	3.6
Workers, by occupational group:											
White-collar workers	161.7	162.2	164.9	165.7	166.8	167.5	170.0	171.2	172.6	.8	3.5
Professional specialty and technical	160.2	160.8	163.4	164.1	165.1	165.6	168.4	169.4	170.4	.6	3.2
Executive, administrative, and managerial	165.3	165.7	168.0	169.1	170.1	171.0	172.1	174.3	176.7	1.4	3.9
Administrative support, including clerical	163.8	164.4	167.9	168.5	170.4	171.8	174.3	175.5	177.2	1.0	4.0
Blue-collar workers	161.3	161.7	163.6	165.2	166.7	167.5	169.9	171.0	172.6	.9	3.5
Workers, by industry division:											
Services	161.8	162.3	164.9	165.7	166.5	166.8	169.7	170.8	171.8	.6	3.2
Services excluding schools[5]	164.0	164.2	166.8	168.2	169.4	170.1	173.0	173.8	175.6	1.0	3.7
Health services	166.4	166.7	169.5	171.0	172.2	172.9	175.7	176.8	178.9	1.2	3.9
Hospitals	167.0	167.3	170.3	171.4	172.4	173.2	176.3	177.4	179.1	1.0	3.9
Educational services	161.1	161.7	164.3	165.0	165.7	165.9	168.8	169.9	170.9	.6	3.1
Schools	161.4	162.0	164.7	165.3	166.0	166.3	169.2	170.3	171.2	.5	3.1
Elementary and secondary	159.4	160.0	163.0	163.7	164.4	164.6	168.0	169.2	169.8	.4	3.3
Colleges and universities	167.0	167.5	169.2	170.0	170.7	171.0	172.4	173.2	175.1	1.1	2.6
Public administration[3]	163.4	164.3	167.3	168.1	170.1	171.4	174.1	175.4	177.6	1.3	4.4

[1] Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

[2] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[3] Consists of legislative, judicial, administrative, and regulatory activities.

[4] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[5] Includes, for example, library, social, and health services.

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

[June 1989 = 100]

Series	2003				2004				2005	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 2005	
Civilian workers[1]	159.3	160.3	161.8	162.3	163.3	164.3	165.7	166.2	167.3	0.7	2.4
Workers, by occupational group:											
White-collar workers	161.9	162.9	164.5	165.1	166.1	167.1	168.7	169.1	170.3	.7	2.5
Professional specialty and technical	159.3	160.1	161.8	162.5	163.8	164.4	166.5	167.0	168.1	.7	2.6
Executive, administrative, and managerial	167.9	169.0	170.5	171.2	171.4	172.4	173.4	174.4	175.9	.9	2.6
Administrative support, including clerical	161.8	163.1	164.3	164.9	166.3	167.5	168.8	169.7	170.9	.7	2.8
Blue-collar workers	153.8	154.8	155.8	156.3	157.3	158.4	159.7	160.0	161.0	.6	2.4
Service occupations	158.0	158.7	159.8	160.6	161.2	161.9	162.8	163.6	164.4	.5	2.0
Workers, by industry division:											
Goods-producing	156.3	157.5	158.3	160.6	159.9	161.0	162.3	162.4	163.8	.7	2.3
Manufacturing	158.0	159.0	159.7	160.1	161.3	162.4	163.8	164.0	165.3	.8	2.5
Service-producing	160.5	161.4	163.0	163.6	164.6	165.5	167.0	167.5	168.6	.7	2.4
Services	161.9	162.8	164.7	165.4	166.5	167.4	167.3	170.1	171.2	.6	2.8
Health services	162.0	163.2	164.7	165.9	167.7	168.6	170.8	171.7	173.2	.9	3.3
Hospitals	163.5	164.4	166.3	167.7	169.0	169.9	171.8	173.2	174.7	.9	3.4
Educational services	160.4	160.7	162.7	163.2	163.6	163.8	166.0	166.8	167.5	.4	2.4
Public administration[2]	157.2	158.0	159.4	160.0	161.1	161.4	162.6	163.5	165.0	.9	2.4
Nonmanufacturing	159.6	160.5	162.1	162.7	163.7	164.6	166.0	166.5	167.6	.7	2.4
Private industry workers	159.3	160.4	161.7	162.3	163.4	164.5	165.9	166.2	167.4	.7	2.4
Excluding sales occupations	159.4	160.5	161.7	162.4	163.5	164.5	165.8	166.5	167.6	.7	2.5
Workers, by occupational group:											
White-collar workers	162.6	163.8	165.3	165.9	167.1	168.2	169.7	170.0	171.3	.8	2.5
Excluding sales occupations	163.6	164.8	166.2	167.0	168.1	169.2	170.6	171.4	172.7	.8	2.7
Professional specialty and technical occupations	159.5	160.5	162.1	163.0	164.7	165.5	167.6	168.0	169.4	.8	2.9
Executive, administrative, and managerial occupations	169.1	170.3	171.8	172.5	172.7	173.9	174.9	175.7	177.2	.9	2.6
Sales occupations	158.1	159.3	161.6	161.1	162.6	163.9	165.9	164.0	164.9	.5	1.4
Administrative support occupations, including clerical	162.6	164.0	165.1	165.7	167.2	168.6	169.7	170.8	172.0	.7	2.9
Blue-collar workers	153.6	154.6	155.6	156.1	157.2	158.3	159.5	159.9	160.8	.6	2.3
Precision production, craft, and repair occupations	153.4	154.7	155.5	156.2	157.1	158.3	159.3	159.7	160.4	.4	2.1
Machine operators, assemblers, and inspectors	154.7	155.3	156.8	156.9	158.6	159.8	161.6	161.6	162.6	.6	2.5
Transportation and material moving occupations	147.8	149.0	149.8	149.8	150.4	151.8	152.9	153.3	154.4	.7	2.7
Handlers, equipment cleaners, helpers, and laborers	158.4	159.0	159.9	160.6	161.8	162.7	163.6	164.5	165.6	.7	2.3
Service occupations	155.5	156.1	157.1	157.8	158.4	159.3	159.8	160.6	161.4	.5	1.9
Production and nonsupervisory occupations[3]	156.4	157.4	158.8	159.4	160.7	161.7	163.1	163.4	164.5	.7	2.4
Workers, by industry division:											
Goods-producing	156.3	157.4	158.3	158.7	159.9	160.9	162.3	162.4	163.6	.7	2.3
Excluding sales occupations	155.4	156.5	157.4	158.0	159.2	160.2	161.2	161.6	162.8	.7	2.3
White-collar occupations	160.0	161.4	161.9	162.1	163.2	164.5	166.0	165.9	167.3	.8	2.5
Excluding sales occupations	158.0	159.2	159.9	160.4	161.5	162.7	163.6	164.1	165.3	.7	2.4
Blue-collar occupations	153.8	154.8	155.9	156.4	157.7	158.6	159.8	160.1	161.2	.3	2.2
Construction	150.6	152.4	153.6	154.0	155.1	155.9	157.1	157.0	157.7	.4	1.7
Manufacturing	158.0	159.0	159.7	160.1	161.3	162.4	163.8	164.0	165.3	.8	2.5
White-collar occupations	160.1	161.6	162.0	162.1	163.3	164.7	166.1	166.1	167.6	.9	2.6
Excluding sales occupations	157.7	158.9	159.5	160.0	161.2	162.5	163.5	163.9	165.1	.7	2.4
Blue-collar occupations	156.3	156.9	157.9	158.5	159.8	160.6	162.1	162.4	163.6	.7	2.4
Durables	158.8	159.7	160.6	160.9	161.9	162.9	164.5	164.7	165.9	.7	2.5
Nondurables	156.6	157.8	158.3	158.7	160.4	161.6	162.8	162.9	164.5	1.0	2.6
Service-producing	160.6	161.7	163.3	163.9	165.0	166.1	167.5	167.9	169.0	.7	2.4
Excluding sales occupations	161.7	162.8	164.2	165.0	166.0	167.1	168.5	169.3	170.4	.6	2.7
White-collar occupations	163.0	164.1	166.0	166.6	167.8	168.9	170.4	170.8	172.1	.8	2.6
Excluding sales occupations	165.3	166.5	168.2	169.0	170.2	171.2	172.8	173.6	175.0	.8	2.8
Blue-collar occupations	153.2	154.3	155.1	155.4	156.2	157.8	158.9	159.4	160.1	.4	2.5
Service occupations	155.1	155.6	156.6	157.4	158.0	158.8	159.4	160.2	160.9	.4	1.8
Transportation and public utilities	154.8	155.6	156.0	156.5	157.6	159.1	160.4	160.5	159.8	–.4	1.4
Transportation	150.5	150.6	150.4	150.8	151.7	153.4	155.0	155.1	153.4	–1.1	1.1
Public utilities	160.4	162.1	163.4	164.1	165.3	166.4	167.5	167.5	168.2	.4	1.8
Communications	161.9	163.4	165.4	165.9	167.0	167.5	168.8	168.3	168.4	.1	.8
Electric, gas, and sanitary services	158.6	160.4	161.0	161.8	163.3	165.1	165.9	166.6	167.9	.8	2.8
Wholesale and retail trade	156.7	157.5	159.2	159.5	160.3	161.6	162.5	162.1	163.4	.8	1.9
Wholesale trade	163.4	164.7	164.8	165.3	166.2	167.8	169.7	167.5	169.5	1.2	2.0
Excluding sales occupations	163.9	165.2	165.7	166.3	167.8	167.6	168.6	168.9	171.5	1.5	2.2
Retail trade	153.1	153.8	156.3	156.5	157.3	158.4	158.7	159.3	160.3	.6	1.9
General merchandise stores	149.8	152.0	153.1	153.6	154.1	154.9	157.5	158.1	159.3	.8	3.4
Food stores	151.0	151.6	152.2	152.8	153.8	154.3	154.5	155.0	155.8	.5	1.3

See footnotes at end of table.

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31. Continued—Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	2003				2004				2005	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 2005	
Finance, insurance, and real estate	171.1	172.4	174.1	174.5	175.2	175.3	176.5	177.7	179.2	0.8	2.3
Excluding sales occupations	176.7	178.5	179.2	210.2	179.2	180.5	181.8	182.9	184.6	.9	3.0
Banking, savings and loan, and other credit agencies	206.4	208.7	209.1	164.5	206.7	207.6	209.5	211.3	210.7	–.3	1.9
Insurance	161.6	163.0	163.9	164.5	165.1	167.2	168.9	170.4	171.7	.8	4.0
Services	162.8	164.0	165.9	166.7	168.1	169.3	171.1	172.0	173.4	.8	3.2
Business services	165.6	166.4	169.1	169.8	171.0	172.7	174.3	175.0	175.5	.3	2.6
Health services	161.9	163.2	164.6	135.8	167.8	168.8	170.9	171.9	173.4	.9	3.3
Hospitals	163.6	164.6	166.5	167.9	169.4	170.5	172.4	173.8	175.4	.9	3.5
Educational services	167.1	167.5	170.3	171.0	171.9	172.6	175.5	176.8	177.9	.6	3.5
Colleges and universities	164.4	165.1	167.6	168.4	169.5	170.0	172.9	173.6	174.6	.6	3.0
Nonmanufacturing	159.4	160.5	162.1	162.6	163.7	164.8	166.2	166.6	167.7	.7	2.4
White-collar workers	162.8	163.9	165.7	166.3	167.5	168.6	170.1	170.5	171.7	.7	2.5
Excluding sales occupations	164.9	166.1	167.7	168.5	169.7	170.7	172.3	173.1	174.4	.8	2.8
Blue-collar occupations	151.1	152.4	153.4	153.8	154.7	156.1	157.1	157.5	158.2	.4	2.3
Service occupations	155.0	155.5	156.5	157.3	157.9	158.7	159.2	160.1	160.8	.4	1.8
State and local government workers	162.6	163.2	165.9	166.8	168.0	168.7	171.5	172.6	174.1	.6	2.3
Workers, by occupational group:											
White-collar workers	158.9	159.2	161.0	161.5	162.1	162.4	164.1	164.9	165.9	.6	2.3
Professional specialty and technical	158.8	159.1	161.0	161.4	162.1	162.3	164.4	165.0	165.7	.4	2.2
Executive, administrative, and managerial	160.9	161.0	162.5	163.3	163.5	163.8	164.3	166.1	168.2	1.3	2.9
Administrative support, including clerical	156.9	157.2	159.1	159.5	160.4	160.8	162.6	163.0	163.9	.6	2.2
Blue-collar workers	156.2	156.5	157.6	158.3	158.9	159.2	160.7	161.4	162.4	.6	2.2
Workers, by industry division:											
Services	159.5	159.8	161.6	162.1	162.6	162.7	164.8	165.5	166.2	.4	2.2
Services excluding schools[4]	161.4	161.8	163.2	164.5	165.1	165.6	167.5	168.3	169.4	.7	2.6
Health services	162.9	163.5	165.1	166.7	167.4	167.8	169.6	170.7	171.9	.7	2.7
Hospitals	163.1	163.8	165.5	166.7	167.4	167.9	169.9	171.0	172.0	.6	2.7
Educational services	159.1	159.3	161.2	161.6	162.0	162.1	164.2	164.9	165.5	.4	2.2
Schools	159.2	159.5	161.4	161.8	162.1	162.3	164.3	165.0	165.6	.4	2.2
Elementary and secondary	158.2	158.5	160.6	160.9	161.3	161.5	163.8	164.5	164.8	.2	2.2
Colleges and universities	162.1	162.1	163.5	164.0	164.3	164.4	165.4	166.3	167.9	1.0	2.2
Public administration[2]	157.2	158.0	159.4	160.0	161.1	161.4	162.6	163.5	165.0	.9	2.4

[1] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[2] Consists of legislative, judicial, administrative, and regulatory activities.

[3] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[4] Includes, for example, library, social, and health services.

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32. Employment Cost Index, benefits, private industry workers by occupation and industry group

[June 1989 = 100]

Series	2003				2004				2005	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 2005	
Private industry workers	179.6	182.0	184.3	185.8	192.2	195.3	196.9	198.7	203.3	2.3	5.8
Workers, by occupational group:											
White-collar workers	183.6	185.5	187.7	189.2	194.4	197.4	199.1	201.1	206.8	2.8	6.4
Blue-collar workers	172.7	176.1	178.4	179.9	188.3	191.8	193.3	194.9	197.8	1.5	5.0
Workers, by industry division:											
Goods-producing	178.0	180.2	182.3	183.8	193.7	196.2	198.1	201.2	207.0	2.9	6.9
Service-producing	179.9	182.3	184.7	186.2	190.6	194.1	195.5	196.5	200.5	2.0	5.2
Manufacturing	176.9	179.0	181.1	182.3	194.4	196.9	199.2	200.4	206.7	3.1	6.3
Nonmanufacturing	180.3	182.8	185.1	186.7	190.9	194.3	195.7	197.6	201.6	2.0	5.6

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33. Employment Cost Index, private industry workers by bargaining status, region, and area size

[June 1989 = 100]

Series	2003				2004				2005	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 2005	
COMPENSATION											
Workers, by bargaining status[1]											
Union	162.1	164.1	165.7	166.8	171.4	173.9	175.3	176.2	177.5	0.7	3.6
Goods-producing	161.4	163.4	164.7	165.9	172.3	174.6	176.0	176.7	178.2	.8	3.4
Service-producing	162.6	164.6	166.5	167.5	170.2	172.9	174.4	175.4	176.6	.7	3.8
Manufacturing	162.3	163.8	165.0	166.3	175.0	177.0	178.4	178.9	180.6	1.0	3.2
Nonmanufacturing	161.4	163.7	165.5	166.5	168.8	171.6	173.0	174.1	175.2	.6	3.8
Nonunion	165.4	166.8	168.4	169.1	171.3	172.7	174.2	174.9	177.1	1.3	3.4
Goods-producing	163.6	164.9	166.1	166.7	169.7	170.9	172.4	173.5	176.5	1.7	4.0
Service-producing	165.9	167.2	169.0	169.8	171.6	173.2	174.6	175.1	177.0	1.1	3.1
Manufacturing	164.5	165.8	166.9	167.3	170.6	172.0	173.8	174.3	177.5	1.8	4.0
Nonmanufacturing	165.4	166.7	168.5	139.3	171.1	172.6	174.0	174.7	176.6	1.1	3.2
Workers, by region[1]											
Northeast	163.8	165.2	166.9	167.9	170.2	172.3	173.7	174.2	176.1	1.1	3.5
South	160.6	161.6	163.2	163.9	166.4	167.9	169.5	170.6	172.5	1.1	3.7
Midwest (formerly North Central)	169.0	170.4	171.7	172.5	174.7	176.2	177.6	177.9	180.0	1.2	3.0
West	167.3	169.5	171.4	172.2	175.3	176.8	178.1	179.0	181.4	1.3	3.5
Workers, by area size[1]											
Metropolitan areas	165.2	166.6	168.3	169.1	171.5	173.1	174.6	175.3	177.4	1.2	3.4
Other areas	163.5	165.0	166.1	166.9	170.2	172.1	173.3	174.3	176.4	1.2	3.6
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	153.3	154.3	155.3	156.2	157.2	158.7	160.0	160.6	160.8	.1	2.3
Goods-producing	152.4	153.9	154.8	155.4	156.3	157.5	158.7	158.9	159.6	.4	2.1
Service-producing	154.6	155.1	156.3	157.3	158.5	160.3	161.7	162.6	162.3	–.2	2.4
Manufacturing	154.6	155.9	156.7	157.1	158.1	159.2	160.5	160.7	161.5	.5	2.2
Nonmanufacturing	152.5	153.5	154.6	155.6	156.6	158.4	159.6	160.4	160.3	–.1	2.4
Nonunion	160.4	161.5	163.0	163.4	164.6	165.6	167.0	167.3	168.6	.8	2.4
Goods-producing	157.8	158.9	159.7	160.1	161.4	162.4	163.8	163.9	165.2	.8	2.4
Service-producing	161.2	162.3	164.0	164.5	165.6	166.6	168.0	168.4	169.7	.8	2.5
Manufacturing	159.3	160.2	160.9	161.3	162.6	163.7	165.2	165.3	166.8	.9	2.6
Nonmanufacturing	160.4	161.5	163.1	163.7	164.7	165.7	167.1	167.5	168.7	.7	2.4
Workers, by region[1]											
Northeast	157.3	158.4	160.0	160.9	162.0	163.6	164.9	165.0	166.0	.6	2.5
South	155.3	156.1	157.4	157.9	159.1	160.1	161.6	162.3	163.6	.8	2.8
Midwest (formerly North Central)	164.1	165.0	166.1	166.5	166.9	167.7	169.2	169.2	170.6	.8	2.2
West	161.3	163.1	164.7	165.2	166.8	167.9	169.1	169.5	170.3	.5	2.1
Workers, by area size[1]											
Metropolitan areas	159.6	160.7	162.2	162.7	163.8	164.9	163.3	166.6	167.7	.7	2.4
Other areas	156.8	158.0	158.9	159.5	160.8	162.1	162.1	163.8	165.1	.8	2.7

[1] The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the *Monthly Labor Review* Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

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34. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, medium and large private establishments, selected years, 1980–97

Item	1980	1982	1984	1986	1988	1989	1991	1993	1995	1997
Scope of survey (in 000's)	21,352	21,043	21,013	21,303	31,059	32,428	31,163	28,728	33,374	38,409
Number of employees (in 000's):										
With medical care	20,711	20,412	20,383	20,238	27,953	29,834	25,865	23,519	25,546	29,340
With life insurance	20,498	20,201	20,172	20,451	28,574	30,482	29,293	26,175	29,078	33,495
With defined benefit plan	17,936	17,676	17,231	16,190	19,567	20,430	18,386	16,015	17,417	19,202
Time-off plans										
Participants with:										
Paid lunch time	10	9	9	10	11	10	8	9	–	–
Average minutes per day	–	25	26	27	29	26	30	29	–	–
Paid rest time	75	76	73	72	72	71	67	68	–	–
Average minutes per day	–	25	26	26	26	26	28	26	–	–
Paid funeral leave	–	–	–	88	85	84	80	83	80	81
Average days per occurrence	–	–	–	3.2	3.2	3.3	3.3	3.0	3.3	3.7
Paid holidays	99	99	99	99	96	97	92	91	89	89
Average days per year	10.1	10.0	9.8	10.0	9.4	9.2	10.2	9.4	9.1	9.3
Paid personal leave	20	24	23	25	24	22	21	21	22	20
Average days per year	–	3.8	3.6	3.7	3.3	3.1	3.3	3.1	3.3	3.5
Paid vacations	100	99	99	100	98	97	96	97	96	95
Paid sick leave [1]	62	67	67	70	69	68	67	65	58	56
Unpaid maternity leave	–	–	–	–	33	37	37	60	–	–
Unpaid paternity leave	–	–	–	–	16	18	26	53	–	–
Unpaid family leave	–	–	–	–	–	–	–	–	84	93
Insurance plans										
Participants in medical care plans	97	97	97	95	90	92	83	82	77	76
Percent of participants with coverage for:										
Home health care	–	–	46	66	76	75	81	86	78	85
Extended care facilities	58	62	62	70	79	80	80	82	73	78
Physical exam	–	–	8	18	28	28	30	42	56	63
Percent of participants with employee contribution required for:										
Self coverage	26	27	36	43	44	47	51	61	67	69
Average monthly contribution	–	–	$11.93	$12.80	$19.29	$25.31	$26.60	$31.55	$33.92	$39.14
Family coverage	46	51	58	63	64	66	69	76	78	80
Average monthly contribution	–	–	$35.93	$41.40	$60.07	$72.10	$96.97	$107.42	$118.33	$130.07
Participants in life insurance plans	96	96	96	96	92	94	94	91	87	87
Percent of participants with:										
Accidental death and dismemberment insurance	69	72	74	72	78	71	71	76	77	74
Survivor income benefits	–	–	–	10	8	7	6	5	7	6
Retiree protection available	–	64	64	59	49	42	44	41	37	33
Participants in long-term disability insurance plans	40	43	47	48	42	45	40	41	42	43
Participants in sickness and accident insurance plans	54	51	51	49	46	43	45	44	–	–
Participants in short-term disability plans [1]	–	–	–	–	–	–	–	–	53	55
Retirement plans										
Participants in defined benefit pension plans	84	84	82	76	63	63	59	56	52	50
Percent of participants with:										
Normal retirement prior to age 65	55	58	63	64	59	62	55	52	52	52
Early retirement available	98	97	97	98	98	97	98	95	96	95
Ad hoc pension increase in last 5 years	–	–	47	35	26	22	7	6	4	10
Terminal earnings formula	53	52	54	57	55	64	56	61	58	56
Benefit coordinated with Social Security	45	45	56	62	62	63	54	48	51	49
Participants in defined contribution plans	–	–	–	60	45	48	48	49	55	57
Participants in plans with tax-deferred savings arrangements	–	–	–	33	36	41	44	43	54	55
Other benefits										
Employees eligible for:										
Flexible benefits plans	–	–	–	2	5	9	10	12	12	13
Reimbursement accounts [2]	–	–	–	5	12	23	36	52	38	32
Premium conversion plans	–	–	–	–	–	–	–	–	5	7

[1] The definitions for paid sick leave and short-term disability (previously sickness and accident insurance) were changed for the 1995 survey. Paid sick leave now includes only plans that specify either a maximum number of days per year or unlimited days. Short-terms disability now includes all insured, self-insured, and State-mandated plans available on a per-disability basis, as well as the unfunded per-disability plans previously reported as sick leave. Sickness and accident insurance, reported in years prior to this survey, included only insured, self-insured, and State-mandated plans providing per-disability benefits at less than full pay.

[2] Prior to 1995, reimbursement accounts included premium conversion plans, which specifically allow medical plan participants to pay required plan premiums with pretax dollars. Also, reimbursement accounts that were part of flexible benefit plans were tabulated separately.

NOTE: Dash indicates data not available.

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35. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, small private establishments and State and local governments, 1987, 1990, 1992, 1994, and 1996

Item	Small private establishments				State and local governments			
	1990	1992	1994	1996	1987	1990	1992	1994
Scope of survey (in 000's)	32,466	34,360	35,910	39,816	10,321	12,972	12,466	12,907
Number of employees (in 000's):								
With medical care	22,402	24,396	23,536	25,599	9,599	12,064	11,219	11,192
With life insurance	20,778	21,990	21,955	24,635	8,773	11,415	11,095	11,194
With defined benefit plan	6,493	7,559	5,480	5,883	9,599	11,675	10,845	11,708
Time-off plans								
Participants with:								
Paid lunch time	8	9	–	–	17	11	10	–
Average minutes per day	37	37	–	–	34	36	34	–
Paid rest time	48	49	–	–	58	56	53	–
Average minutes per day	27	26	–	–	29	29	29	–
Paid funeral leave	47	50	50	51	56	63	65	62
Average days per occurrence	2.9	3.0	3.1	3.0	3.7	3.7	3.7	3.7
Paid holidays	84	82	82	80	81	74	75	73
Average days per year[1]	9.5	9.2	7.5	7.6	10.9	13.6	14.2	11.5
Paid personal leave	11	12	13	14	38	39	38	38
Average days per year	2.8	2.6	2.6	3.0	2.7	2.9	2.9	3.0
Paid vacations	88	88	88	86	72	67	67	66
Paid sick leave [2]	47	53	50	50	97	95	95	94
Unpaid leave	17	18	–	–	57	51	59	–
Unpaid paternity leave	8	7	–	–	30	33	44	–
Unpaid family leave	–	–	47	48	–	–	–	93
Insurance plans								
Participants in medical care plans	69	71	66	64	93	93	90	87
Percent of participants with coverage for:								
Home health care	79	80	–	–	76	82	87	84
Extended care facilities	83	84	–	–	78	79	84	81
Physical exam	26	28	–	–	36	36	47	55
Percent of participants with employee contribution required for:								
Self coverage	42	47	52	52	35	38	43	47
Average monthly contribution	$25.13	$36.51	$40.97	$42.63	$15.74	$25.53	$28.97	$30.20
Family coverage	67	73	76	75	71	65	72	71
Average monthly contribution	$109.34	$150.54	$159.63	$181.53	$71.89	$117.59	$139.23	$149.70
Participants in life insurance plans	64	64	61	62	85	88	89	87
Percent of participants with:								
Accidental death and dismemberment insurance	78	76	79	77	67	67	74	64
Survivor income benefits	1	1	2	1	1	1	1	2
Retiree protection available	19	25	20	13	55	45	46	46
Participants in long-term disability insurance plans	19	23	20	22	31	27	28	30
Participants in sickness and accident insurance plans	6	26	26	–	14	21	22	21
Participants in short-term disability plans [2]	–	–	–	29	–	–	–	–
Retirement plans								
Participants in defined benefit pension plans	20	22	15	15	93	90	87	91
Percent of participants with:								
Normal retirement prior to age 65	54	50	–	47	92	89	92	92
Early retirement available	95	95	–	92	90	88	89	87
Ad hoc pension increase in last 5 years	7	4	–	–	33	16	10	13
Terminal earnings formula	58	54	–	53	100	100	100	99
Benefit coordinated with Social Security	49	46	–	44	18	8	10	49
Participants in defined contribution plans	31	33	34	38	9	9	9	9
Participants in plans with tax-deferred savings arrangements	17	24	23	28	28	45	45	24
Other benefits								
Employees eligible for:								
Flexible benefits plans	1	2	3	4	5	5	5	5
Reimbursement accounts [3]	8	14	19	12	5	31	50	64
Premium conversion plans	–	–	–	7	–	–	–	–

[1] Methods used to calculate the average number of paid holidays were revised in 1994 to count partial days more precisely. Average holidays for 1994 are not comparable with those reported in 1990 and 1992.

[2] The definitions for paid sick leave and short-term disability (previously sickness and accident insurance) were changed for the 1996 survey. Paid sick leave now includes only plans that specify either a maximum number of days per year or unlimited days. Short-term disability now includes all insured, self-insured, and State-mandated plans available on a per-disability basis, as well as the unfunded per-disability plans previously reported as sick leave. Sickness and accident insurance, reported in years prior to this survey, included only insured, self-insured, and State-mandated plans providing per-disability benefits at less than full pay.

[3] Prior to 1996, reimbursement accounts included premium conversion plans, which specifically allow medical plan participants to pay required plan premiums with pretax dollars. Also, reimbursement accounts that were part of flexible benefit plans were tabulated separately.

NOTE: Dash indicates data not available.

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36. Work stoppages involving 1,000 workers or more

Measure	Annual totals		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May[P]
Number of stoppages:															
Beginning in period	14	17	2	3	0	2	2	1	2	3	0	0	2	3	1
In effect during period	15	18	2	4	1	2	3	3	4	4	2	2	4	5	2
Workers involved:															
Beginning in period (in thousands)	129.2	170.7	103.0	27.6	.0	3.7	4.5	10.0	3.2	9.8	.0	.0	4.7	11.0	1.9
In effect during period (in thousands)	130.5	316.5	103.0	28.6	1.6	3.7	6.5	16.1	16.1	8.5	2.5	2.6	7.3	14.0	3.2
Days idle:															
Number (in thousands)	4,091.2	3,344.1	204.0	94.0	3.2	52.5	57.0	300.0	114.9	97.5	50.0	49.4	86.0	48.5	38.7
Percent of estimated working time[1]	.01	.01	.01	([2])	([2])	([2])	([2])	.01	([2])	([2])	([2])	([2])	([2])	([2])	([2])

[1] Agricultural and government employees are included in the total employed and total working time; private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in "Total economy measures of strike idleness," *Monthly Labor Review*, October 1968, pp. 54–56.

[2] Less than 0.005.

NOTE: P = preliminary.

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37. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS															
All items	184.0	188.9	189.1	189.7	189.4	189.5	189.9	190.9	191.0	190.3	190.7	191.8	193.3	194.6	194.4
All items (1967 = 100)	551.1	565.8	566.4	568.2	567.5	567.6	568.7	571.9	572.2	570.1	571.2	574.5	579.0	582.9	582.4
Food and beverages	180.5	186.6	186.5	186.8	187.2	187.3	187.2	188.4	188.6	188.9	189.5	189.3	189.6	190.7	191.1
Food	180.0	186.2	186.1	186.3	186.8	186.8	186.7	187.9	188.2	188.5	189.1	188.8	189.1	190.2	190.6
Food at home	179.4	186.2	186.6	186.8	187.1	186.7	186.1	187.9	188.1	188.5	188.9	188.0	188.1	189.8	190.3
Cereals and bakery products	202.8	206.0	206.1	206.8	207.2	207.2	206.4	207.0	206.8	206.4	207.6	208.4	208.5	209.1	209.7
Meats, poultry, fish, and eggs	169.3	181.7	181.1	182.3	183.7	183.7	183.4	182.9	182.4	183.1	183.4	183.9	184.3	184.7	185.0
Dairy and related products[1]	167.9	180.2	185.9	188.8	187.7	184.9	181.6	182.1	180.9	180.1	183.3	181.8	181.4	182.2	183.3
Fruits and vegetables	225.9	232.7	231.7	226.7	224.5	224.0	226.0	240.0	248.3	250.8	242.9	234.8	233.7	240.1	244.7
Nonalcoholic beverages and beverage materials	139.8	140.4	169.9	139.8	140.5	140.3	140.3	140.6	139.6	140.4	142.2	142.5	143.6	144.8	144.3
Other foods at home	162.6	164.9	165.4	165.8	166.0	166.2	165.2	165.4	164.4	163.6	165.6	165.3	165.7	167.5	166.3
Sugar and sweets	162.0	163.2	163.5	162.8	163.8	164.4	163.5	162.6	163.1	161.3	163.0	164.2	162.6	164.9	163.3
Fats and oils	157.4	167.8	169.4	171.3	171.9	169.7	170.4	170.2	167.8	167.4	170.4	169.3	167.0	169.4	167.8
Other foods	178.8	179.7	180.1	180.5	180.3	180.9	179.4	180.1	178.9	178.3	180.3	179.7	181.3	183.0	182.0
Other miscellaneous foods[1,2]	110.3	110.4	110.8	110.9	109.4	111.5	110.5	109.9	110.5	110.8	110.1	110.3	111.9	110.8	110.8
Food away from home[1]	182.1	187.5	186.7	187.0	187.8	188.4	188.9	189.4	189.6	189.9	190.8	191.4	191.7	192.8	192.6
Other food away from home[1,2]	121.3	125.3	124.8	124.8	125.1	125.4	125.9	126.8	126.7	127.0	127.5	128.7	129.4	129.6	130.3
Alcoholic beverages	187.2	192.1	191.7	192.4	192.2	192.5	193.4	193.6	194.0	193.9	194.3	195.2	195.7	195.9	195.5
Housing	184.8	189.5	188.9	190.3	190.9	191.2	191.0	191.0	190.8	190.7	191.8	192.7	194.1	194.4	194.5
Shelter	213.1	218.8	218.7	219.2	220.0	220.3	220.2	220.6	219.9	219.8	221.0	222.5	224.4	224.4	224.0
Rent of primary residence	205.5	211.0	210.2	210.7	211.2	211.9	212.4	212.8	213.2	213.9	214.5	215.0	215.5	216.0	216.4
Lodging away from home	119.3	125.9	128.2	129.1	132.2	130.6	127.2	128.0	121.9	118.7	122.6	128.9	138.3	136.2	131.7
Owners' equivalent rent of primary residence[3]	219.9	224.9	224.3	224.7	225.1	225.7	226.1	226.5	226.8	227.2	227.8	228.4	228.7	229.0	229.4
Tenants' and household insurance[1,2]	114.8	116.2	116.1	116.2	116.1	116.3	116.6	116.3	117.7	118.7	118.5	118.7	119.0	118.2	118.0
Fuels and utilities	154.5	161.9	158.1	165.5	166.6	167.7	166.7	162.8	165.6	165.7	166.9	166.4	166.7	169.6	171.7
Fuels	138.2	144.4	140.4	148.5	149.5	150.5	149.3	144.9	147.8	148.0	149.0	148.1	148.4	151.5	153.7
Fuel oil and other fuels	139.5	160.5	150.4	150.7	151.1	157.4	161.6	177.3	186.6	183.7	181.2	188.5	195.5	199.5	193.9
Gas (piped) and electricity	145.0	150.6	146.8	155.8	156.9	157.6	156.0	150.0	152.7	153.0	154.3	152.9	152.7	155.9	158.7
Household furnishings and operations	126.1	125.5	125.4	125.6	125.2	124.8	125.0	126.1	125.8	125.5	126.1	126.1	126.1	126.3	126.7
Apparel	120.9	120.4	123.4	120.1	115.9	116.5	121.2	124.1	123.0	118.8	116.1	118.7	123.5	123.7	122.4
Men's and boys' apparel	118.0	117.5	120.3	117.7	115.2	113.8	116.2	118.3	118.9	116.3	115.0	116.3	119.6	120.4	119.7
Women's and girls' apparel	113.1	113.0	116.9	112.3	106.1	107.5	114.4	119.2	116.8	110.0	105.1	109.3	117.1	116.6	114.2
Infants' and toddlers' apparel[1]	122.1	118.5	118.1	116.2	114.5	115.0	119.5	120.6	120.3	118.6	117.5	118.1	119.0	121.3	119.8
Footwear	119.6	119.3	120.3	118.4	115.1	117.3	121.7	122.1	121.8	120.3	119.4	121.1	122.8	123.8	123.2
Transportation	157.6	163.1	165.2	165.7	164.0	162.9	162.9	166.4	167.2	164.8	164.0	166.1	168.8	173.2	172.1
Private transportation	153.6	159.4	161.5	161.9	160.0	159.1	159.4	162.9	163.6	161.3	160.5	162.6	165.2	169.6	168.3
New and used motor vehicles[2]	96.5	94.2	94.0	93.6	93.5	93.4	93.9	94.3	95.2	95.4	95.8	95.9	95.6	95.6	95.7
New vehicles	137.9	137.1	137.4	137.2	135.9	134.9	134.9	135.9	137.9	138.8	139.8	139.9	139.1	138.8	138.7
Used cars and trucks[1]	142.9	133.3	131.8	130.6	132.1	133.8	136.5	136.8	136.7	137.3	137.5	137.6	137.7	138.1	138.8
Motor fuel	135.8	160.4	170.5	173.3	165.2	162.0	161.2	173.1	171.9	161.2	156.4	164.3	175.9	193.9	188.2
Gasoline (all types)	135.1	159.7	169.8	172.7	164.5	161.2	160.5	172.2	171.0	160.4	155.6	163.4	175.0	193.9	187.3
Motor vehicle parts and equipment	107.8	108.7	107.9	108.2	108.8	109.0	109.3	109.5	109.9	109.9	110.6	110.9	110.9	110.8	111.0
Motor vehicle maintenance and repair	195.6	200.2	199.0	199.7	200.3	200.8	200.7	201.7	202.9	203.3	204.0	203.9	204.7	205.0	205.6
Public transportation	209.3	209.1	210.7	212.3	214.4	209.7	205.3	206.5	208.6	205.4	204.4	205.9	210.1	215.0	218.0
Medical care	297.1	310.1	309.0	310.0	311.0	311.6	312.3	313.3	314.1	314.9	316.8	319.3	320.7	321.5	322.2
Medical care commodities	262.8	269.3	269.1	269.6	269.9	270.0	270.9	271.7	271.2	270.8	271.6	272.8	273.2	273.5	274.6
Medical care services	306.0	321.3	319.8	321.0	322.3	323.1	323.7	324.8	326.0	327.3	329.5	332.5	334.3	335.2	335.9
Professional services	261.2	271.5	270.9	271.6	272.3	273.3	273.3	273.7	274.2	274.6	276.2	278.6	279.7	281.0	281.6
Hospital and related services	394.8	417.9	414.6	416.9	419.1	418.8	420.3	422.5	425.0	428.0	431.0	434.7	437.3	437.1	437.3
Recreation[2]	107.5	108.6	108.8	108.9	108.7	108.5	108.6	108.7	108.7	108.5	108.9	109.0	109.0	109.2	109.5
Video and audio[1,2]	103.6	104.2	104.6	104.4	104.4	104.1	104.0	104.2	104.0	103.9	104.2	104.3	104.6	104.8	104.6
Education and communication[2]	109.8	111.6	110.6	110.8	110.9	111.7	112.9	112.5	112.7	112.6	112.7	112.8	112.7	112.9	112.7
Education[2]	134.4	143.7	140.9	141.6	142.1	145.1	147.9	148.3	148.4	148.5	148.8	149.2	149.3	149.5	149.9
Educational books and supplies	335.4	351.0	349.6	350.6	349.5	353.3	352.8	353.8	354.4	355.9	357.4	359.9	360.6	361.3	362.3
Tuition, other school fees, and child care	362.1	414.3	405.6	407.6	409.4	418.3	427.4	428.2	428.7	428.9	429.7	430.6	430.9	431.4	432.7
Communication[1,2]	89.7	86.7	86.9	86.8	86.5	86.1	86.2	85.5	85.6	85.4	85.4	85.4	85.2	85.4	84.9
Information and information processing[1,2]	87.8	84.6	84.8	84.7	84.5	84.0	84.1	83.4	83.5	83.3	83.2	83.3	83.1	83.2	82.7
Telephone services[1,2]	98.3	95.8	95.9	95.8	95.6	95.0	95.3	94.6	94.5	94.8	94.8	95.1	95.0	95.3	94.8
Information and information processing other than telephone services[1,4]	16.1	14.8	14.9	14.9	14.8	14.7	14.7	14.5	14.3	14.2	14.2	14.0	14.0	13.9	13.8
Personal computers and peripheral equipment[1,2]	17.6	15.3	15.7	15.5	15.3	15.1	15.0	14.6	14.2	13.9	14.0	13.5	13.4	13.4	13.2
Other goods and services	298.7	304.7	303.8	304.1	305.1	305.5	306.3	306.8	307.0	307.8	309.3	310.8	311.2	311.5	312.5
Tobacco and smoking products	469.0	478.0	473.5	476.0	480.5	481.6	482.9	482.3	481.7	484.8	493.9	496.1	496.6	497.0	498.0
Personal care[1]	178.0	181.7	181.4	181.4	181.7	181.9	182.3	182.8	83.0	183.3	183.5	184.4	184.7	184.9	185.5
Personal care products[1]	153.5	153.9	154.6	153.8	153.4	152.8	153.5	154.0	153.8	153.4	153.1	153.9	153.0	153.4	154.4
Personal care services[1]	193.2	197.6	196.6	196.9	197.5	198.9	199.1	199.4	200.0	201.2	201.9	202.9	203.3	203.3	202.8

See footnotes at end of table.

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37. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Miscellaneous personal services	283.5	293.9	293.1	293.6	294.4	295.2	295.9	296.3	296.9	297.7	298.5	299.8	300.8	301.4	302.8
Commodity and service group:															
Commodities	151.2	154.7	156.0	155.8	154.5	154.2	154.9	157.1	157.2	155.8	155.4	156.5	158.2	160.3	159.8
Food and beverages	180.5	186.6	186.5	186.8	187.2	187.3	187.2	188.4	188.6	188.9	189.5	189.3	189.6	190.7	191.1
Commodities less food and beverages	134.5	136.7	138.6	138.2	136.1	135.6	136.7	139.4	139.4	137.2	136.4	138.1	140.4	142.9	142.0
Nondurables less food and beverages	149.7	157.2	160.9	160.5	156.7	156.1	157.8	162.6	162.0	157.4	155.2	158.6	163.7	168.9	167.0
Apparel	120.9	120.4	123.4	120.1	115.9	116.5	121.2	124.1	123.0	118.8	116.1	118.7	123.5	123.7	122.4
Nondurables less food, beverages, and apparel	171.5	183.9	188.2	189.5	185.8	184.4	184.4	190.6	190.2	185.2	183.3	187.3	192.7	201.0	198.6
Durables	117.5	114.8	114.8	114.5	114.1	113.7	114.1	114.7	115.3	115.5	116.0	116.0	115.7	115.6	115.7
Services	216.5	222.8	221.9	223.3	224.1	224.5	224.5	224.5	224.6	224.6	225.6	226.8	228.0	228.6	228.8
Rent of shelter[3]	221.9	227.9	227.7	228.3	229.2	229.4	229.3	229.8	229.0	228.9	230.1	231.7	233.7	233.7	233.2
Transporatation services	216.3	220.6	220.0	220.5	221.6	220.8	220.1	221.4	222.8	221.8	221.7	222.4	223.3	224.4	225.1
Other services	254.4	261.3	259.6	260.2	260.5	261.9	263.8	263.7	264.2	264.3	265.1	265.8	266.1	266.7	266.9
Special indexes:															
All items less food	184.7	189.4	189.6	190.3	189.9	189.9	190.4	191.4	191.5	190.6	190.9	192.3	194.0	195.3	195.1
All items less shelter	174.6	179.3	179.6	180.2	179.6	179.5	180.1	181.4	181.9	180.9	180.9	181.9	183.2	185.1	185.0
All items less medical care	178.1	182.7	182.9	183.5	183.2	183.2	183.6	184.6	184.7	183.9	184.2	185.3	186.8	188.1	187.9
Commodities less food	136.5	138.8	140.6	140.3	138.2	137.7	138.8	141.1	141.4	139.3	138.6	140.2	142.5	144.9	144.0
Nondurables less food	151.9	159.3	162.8	162.4	158.8	158.2	159.9	164.2	163.9	159.5	157.5	160.8	165.6	170.6	168.7
Nondurables less food and apparel	172.1	183.8	187.7	189.0	185.6	184.3	184.4	190.0	189.7	185.1	183.5	187.2	192.1	199.7	197.5
Nondurables	165.3	172.2	174.1	174.0	172.2	171.9	172.8	175.8	175.6	173.3	172.5	174.2	177.0	180.3	179.4
Services less rent of shelter[3]	226.4	233.5	231.7	234.2	235.0	235.6	235.9	235.1	236.4	236.5	237.4	238.0	238.5	239.8	240.7
Services less medical care services	208.7	214.5	213.6	215.0	215.8	216.2	216.1	216.0	216.1	216.0	217.0	218.0	219.2	219.7	219.9
Energy	136.5	151.4	154.1	159.7	156.3	155.3	154.3	157.7	158.6	153.7	151.9	155.2	160.8	170.9	169.4
All items less energy	190.6	194.4	194.3	194.4	194.5	194.7	195.2	196.0	1196.0	195.8	196.4	197.3	198.3	198.6	198.6
All items less food and energy	193.2	196.6	196.5	196.6	196.6	196.8	197.4	198.2	198.1	197.8	198.4	199.5	200.7	200.9	200.8
Commodities less food and energy	140.9	139.6	140.2	139.4	138.2	138.1	139.4	140.5	140.6	139.8	139.7	140.3	141.1	141.2	141.1
Energy commodities	136.7	161.2	170.1	172.8	165.1	162.5	162.0	174.2	173.6	163.4	158.7	166.6	178.0	195.2	189.4
Services less energy	223.8	230.2	229.6	230.2	231.0	231.4	231.6	232.1	231.9	231.9	232.9	234.3	235.7	236.0	235.9
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS															
All items	179.8	184.5	184.7	185.3	184.9	185.0	185.4	186.5	186.8	186.0	186.3	187.3	188.6	190.2	190.0
All items (1967 = 100)	535.6	549.5	550.2	551.9	550.8	551.0	552.4	555.7	556.3	554.2	554.9	557.9	561.9	566.4	566.0
Food and beverages	179.9	186.2	186.0	186.4	186.8	186.9	186.8	187.9	188.1	188.4	189.0	188.8	189.1	190.1	190.4
Food	179.4	185.7	185.6	185.9	186.3	186.4	186.2	187.4	187.6	187.9	188.5	188.2	188.5	189.6	190.0
Food at home	178.5	185.4	185.8	186.1	186.3	186.1	185.5	187.1	187.3	187.6	188.0	187.2	187.4	188.9	189.4
Cereals and bakery products	202.8	206.0	206.0	206.7	207.2	207.0	206.3	206.9	206.8	206.3	207.6	208.5	208.5	209.0	209.7
Meats, poultry, fish, and eggs	169.2	181.8	181.1	182.4	183.7	183.7	183.4	183.0	182.4	183.2	183.4	183.9	184.3	184.5	184.9
Dairy and related products[1]	167.6	180.0	186.1	189.0	187.8	184.9	181.4	181.8	180.8	179.9	183.2	181.6	181.3	182.1	183.1
Fruits and vegetables	224.3	230.4	228.9	224.3	222.3	222.2	223.9	238.0	246.4	248.6	240.1	232.2	231.3	237.5	242.2
Nonalcoholic beverages and beverage materials	139.1	139.7	139.3	139.3	139.8	139.6	139.7	140.0	138.9	140.0	141.6	141.8	143.0	144.1	143.7
Other foods at home	162.2	164.5	165.1	165.5	165.6	165.8	164.8	165.0	163.8	163.2	165.3	165.0	165.3	167.0	165.8
Sugar and sweets	161.6	162.5	162.9	162.2	162.9	163.8	163.1	162.2	162.1	160.6	162.2	163.6	161.8	163.9	162.3
Fats and oils	157.4	167.8	169.4	171.4	172.0	169.9	170.3	170.0	167.7	167.3	170.4	169.1	167.2	169.4	168.0
Other foods	179.2	180.1	180.5	180.8	180.7	181.4	179.7	180.5	179.2	178.6	180.8	180.2	181.7	183.4	182.3
Other miscellaneous foods[1,2]	110.8	110.9	111.2	111.4	109.7	112.0	111.0	110.3	111.1	111.3	110.7	110.9	112.5	111.1	111.3
Food away from home[1]	182.0	187.4	186.6	186.8	187.6	188.2	188.8	189.3	189.5	189.7	190.6	191.2	191.6	192.0	192.4
Other food away from home[1,2]	121.5	125.1	124.6	124.7	124.9	125.2	125.8	126.8	126.8	127.0	127.3	128.4	129.1	129.2	129.6
Alcoholic beverages	187.1	192.4	192.0	192.7	192.2	192.8	194.0	193.9	194.2	194.2	194.4	195.2	196.0	196.2	195.3
Housing	180.4	185.0	184.1	185.6	186.2	186.6	186.5	186.2	186.4	186.4	187.3	188.1	188.9	189.4	189.7
Shelter	206.9	212.2	211.8	212.2	213.0	213.4	213.4	213.8	213.4	213.5	214.4	215.7	216.8	216.9	216.8
Rent of primary residence	204.7	210.2	209.4	209.9	210.3	211.0	211.6	212.0	212.4	213.0	213.7	214.2	214.6	215.2	215.5
Lodging away from home[2]	119.8	126.4	128.2	128.8	133.0	131.6	127.7	128.3	121.8	118.6	122.2	129.1	137.1	135.2	131.1
Owners' equivalent rent of primary residence[3]	199.7	204.1	203.6	203.9	204.2	204.7	205.1	205.5	205.8	206.1	206.6	207.2	207.4	207.7	208.0
Tenants' and household insurance[1,2]	114.7	116.4	116.4	116.5	116.3	116.5	116.8	116.5	118.1	118.9	118.8	118.9	119.4	118.5	118.3
Fuels and utilities	153.9	161.2	157.4	165.0	166.1	167.2	166.2	161.9	164.5	164.7	166.0	165.4	165.7	168.6	170.7
Fuels	137.0	143.2	139.3	147.4	148.4	149.3	148.2	143.5	146.2	146.4	147.4	146.6	146.8	149.8	152.1
Fuel oil and other fuels	138.7	160.0	149.6	149.8	150.2	156.8	161.1	177.2	186.5	183.4	180.9	187.7	195.3	199.2	193.6
Gas (piped) and electricity	144.1	149.8	146.1	155.1	156.2	156.8	155.3	149.1	151.7	152.0	153.3	152.0	151.8	155.0	157.7
Household furnishings and operations	121.9	121.1	121.1	121.3	120.7	120.4	120.6	121.7	121.5	121.3	121.9	121.9	121.9	122.1	122.5
Apparel	120.0	120.0	122.8	119.6	115.6	115.9	120.6	123.5	122.6	118.6	116.1	118.6	123.0	123.2	121.9
Men's and boys' apparel	117.5	117.3	120.3	117.8	115.2	113.3	115.6	117.8	118.6	115.7	114.6	116.1	119.6	119.9	119.2
Women's and girls' apparel	112.1	112.8	116.7	112.2	106.0	106.9	114.0	119.3	116.9	110.2	105.3	109.3	116.8	124.1	113.9
Infants' and toddlers' apparel[1]	124.1	121.3	120.9	118.8	117.0	117.6	122.3	123.3	123.1	121.4	120.5	121.0	121.9	122.7	122.5
Footwear	119.1	118.2	119.0	117.0	114.4	116.3	120.4	120.6	120.6	119.4	118.8	120.6	121.7	122.7	122.4
Transportation	156.3	161.5	163.6	164.0	162.2	161.4	161.6	165.3	165.8	163.4	1632.6	164.7	167.6	172.2	171.0
Private transportation	153.5	158.8	160.9	161.3	159.3	158.6	159.1	162.7	163.2	160.9	160.0	162.2	164.9	169.5	168.2
New and used motor vehicles[2]	96.0	92.8	92.5	92.1	92.1	92.2	92.3	93.3	94.0	94.3	94.6	94.7	94.5	94.5	94.7

See footnotes at end of table.

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37. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
New vehicles	139.0	138.1	138.5	138.2	137.0	136.0	136.0	136.9	138.9	139.8	140.7	140.7	140.0	139.7	139.6
Used cars and trucks[1]	143.7	134.1	132.6	131.4	133.0	134.6	137.3	137.6	137.5	138.1	138.3	138.4	138.5	138.9	139.6
Motor fuel	136.1	160.9	171.1	173.8	165.6	162.4	161.7	173.6	172.3	161.7	156.9	164.9	176.5	194.5	188.7
Gasoline (all types)	135.5	160.2	170.4	173.2	165.0	161.7	161.0	172.9	171.6	160.9	156.1	164.1	175.7	193.7	187.9
Motor vehicle parts and equipment	107.3	108.2	107.5	107.8	108.2	108.4	108.7	108.9	109.4	109.3	110.1	110.4	110.5	110.4	110.5
Motor vehicle maintenance and repair	197.3	202.0	200.8	201.5	202.1	202.7	202.7	203.8	204.9	205.3	206.0	206.1	206.9	207.2	207.9
Public transportation	206.0	207.1	208.8	210.0	212.1	208.0	203.1	204.2	207.1	204.2	203.4	204.9	209.0	213.3	215.8
Medical care	296.3	309.5	308.4	309.4	310.4	311.0	311.7	312.7	313.6	314.4	316.3	318.9	320.3	321.1	321.9
Medical care commodities	257.4	263.2	263.3	263.8	263.7	263.8	264.8	265.4	264.9	264.4	265.2	266.3	266.6	266.9	267.9
Medical care services	305.9	321.5	320.0	321.2	322.4	323.2	323.9	325.0	326.3	327.7	330.0	333.0	334.8	335.8	336.5
Professional services	263.4	274.0	273.5	274.1	274.8	275.8	275.9	276.3	276.9	277.2	278.9	281.2	282.3	283.6	284.3
Hospital and related services	391.2	414.0	410.7	413.0	415.2	414.9	416.4	418.5	421.0	424.2	427.4	430.9	433.6	433.4	433.7
Recreation[2]	105.5	106.3	106.6	106.7	106.3	106.1	106.2	106.2	106.3	106.1	106.5	106.5	106.5	106.8	107.0
Video and audio[1,2]	102.9	103.4	103.9	103.7	103.7	103.4	103.3	103.5	103.3	103.2	103.4	103.5	103.9	104.0	103.9
Education and communication[2]	109.0	110.0	109.2	109.4	109.4	109.9	110.8	110.5	110.6	110.5	110.6	110.7	110.7	110.8	110.6
Education[2]	133.8	142.5	139.9	140.6	141.0	143.6	146.3	146.7	146.8	147.0	147.3	147.7	147.8	148.0	148.5
Educational books and supplies	336.5	352.2	350.4	351.5	350.4	354.7	354.8	355.6	356.1	357.6	359.0	361.5	362.4	363.1	364.0
Tuition, other school fees, and child care	377.3	402.5	394.6	396.7	398.1	405.8	414.0	415.2	415.6	415.8	416.8	417.6	418.0	418.5	419.8
Communication[1,2]	91.2	88.3	88..4	88.4	88.1	87.6	87.8	87.1	87.2	87.0	87.0	87.0	86.8	87.0	86.5
Information and information processing[1,2]	89.9	86.8	87.0	86.9	86.7	86.2	86.3	85.6	85.7	85.5	85.5	85.5	85.3	85.5	85.0
Telephone services[1,2]	98.5	96.0	96.1	96.1	95.8	95.2	95.5	94.8	95.1	95.0	94.9	95.3	95.1	95.4	94.9
Information and information processing other than telephone services[1,4]	16.7	15.3	15.4	15.4	15.3	15.3	15.2	15.0	14.9	14.8	14.8	14.6	14.5	14.5	14.3
Personal computers and peripheral equipment[1,2]	17.3	15.0	15.4	15.2	15.0	14.9	14.8	14.3	13.9	13.7	13.7	13.3	13.2	13.2	13.0
Other goods and services	307.0	312.6	311.5	311.8	313.2	313.5	314.4	314.7	314.9	315.9	318.0	319.4	319.6	319.9	320.8
Tobacco and smoking products	470.5	478.8	474.4	476.9	481.6	482.6	483.9	483.0	482.5	485.7	494.9	496.9	497.4	497.8	498.7
Personal care[1]	177.0	180.4	180.2	180.0	180.3	180.5	180.9	181.4	181.7	181.9	182.1	182.9	183.0	183.2	183.8
Personal care products[1]	154.2	154.4	155.1	154.3	153.9	153.1	154.0	154.3	154.3	153.8	153.3	154.2	153.3	153.6	154.5
Personal care services[1]	193.9	198.2	197.1	197.5	198.1	199.5	199.7	199.9	200.6	201.8	202.4	203.3	203.6	203.6	203.1
Miscellaneous personal services	283.3	294.0	293.1	293.5	294.7	295.4	296.2	296.6	297.5	298.4	299.2	299.8	300.8	301.5	303.2
Commodity and service group:															
Commodities	151.8	155.4	156.7	156.6	155.2	154.9	155.7	158.0	158.1	156.6	156.3	157.4	159.2	161.5	160.9
Food and beverages	179.9	186.2	186.0	186.4	186.8	186.9	186.8	187.9	188.1	188.4	189.0	188.8	189.1	190.1	190.4
Commodities less food and beverages	135.8	138.1	140.0	139.6	137.5	137.1	138.2	141.0	141.0	138.8	138.0	139.8	142.2	145.0	144.0
Nondurables less food and beverages	152.1	160.6	164.7	164.4	160.4	159.5	161.2	166.5	165.9	160.9	158.8	162.5	167.8	173.6	171.5
Apparel	120.0	120.0	122.8	119.6	115.6	115.9	120.6	123.5	122.6	118.6	116.1	118.6	123.0	123.2	121.9
Nondurables less food, beverages, and apparel	175.6	189.6	194.5	196.0	191.8	190.2	190.1	196.9	196.5	190.8	188.8	193.3	199.4	208.9	206.0
Durables	117.4	114.0	113.9	113.5	113.2	113.1	113.7	114.3	114.8	115.1	115.5	115.5	115.3	115.3	115.5
Services	212.6	218.6	217.6	219.0	219.7	220.2	220.3	220.0	220.4	220.5	221.5	222.3	223.2	223.8	224.2
Rent of shelter[3]	199.2	204.3	203.9	204.4	205.1	205.5	205.5	205.9	205.5	205.6	206.5	207.7	208.8	208.9	208.8
Transporatation services	216.2	220.9	220.3	220.7	221.6	221.0	220.5	222.0	223.4	222.7	222.8	223.4	224.0	224.8	225.3
Other services	248.5	254.1	252.7	253.3	253.5	254.4	256.0	255.9	256.3	256.5	257.2	257.8	258.1	258.7	258.9
Special indexes:															
All items less food	179.7	184.1	184.4	185.0	184.5	184.5	185.1	186.2	186.4	185.5	185.7	187.0	188.5	190.1	189.9
All items less shelter	171.9	176.4	176.8	177.5	176.7	176.6	177.3	178.6	179.1	178.0	178.0	179.0	180.4	182.4	182.3
All items less medical care	174.8	179.1	179.4	180.0	179.6	179.6	180.0	181.1	181.3	180.6	180.8	181.7	183.1	184.6	184.4
Commodities less food	137.7	140.0	141.8	141.5	139.4	139.0	140.2	142.2	142.9	140.7	140.0	141.7	144.1	146.8	145.9
Nondurables less food	154.2	162.6	166.4	166.2	162.3	161.5	163.2	168.2	167.6	162.9	160.9	164.4	169.5	175.1	173.0
Nondurables less food and apparel	175.9	189.0	193.5	194.8	191.0	189.6	189.7	195.6	195.4	190.3	188.5	192.7	198.3	206.9	204.2
Nondurables	166.4	173.9	175.9	175.9	174.0	173.6	174.5	177.7	177.5	175.1	174.3	176.1	179.0	182.5	181.5
Services less rent of shelter[3]	201.3	207.4	205.8	208.2	208.9	209.3	209.5	208.6	209.8	209.9	210.8	211.2	211.6	212.7	213.6
Services less medical care services	205.2	210.6	209.7	211.1	211.8	212.2	212.3	212.0	212.3	212.4	213.2	214.0	214.7	215.4	215.7
Energy	135.9	151.3	154.5	159.9	156.2	155.1	154.2	157.8	158.5	153.3	151.4	155.0	160.9	171.4	169.6
All items less energy	186.1	189.5	189.3	189.3	189.3	189.5	190.2	191.0	191.1	191.0	191.5	192.2	192.9	193.3	193.4
All items less food and energy	187.9	190.6	190.4	190.3	190.3	190.5	191.4	192.1	192.2	192.0	192.4	193.4	194.2	194.5	194.5
Commodities less food and energy	141.1	139.4	139.9	139.0	138.0	138.0	139.5	140.5	140.6	139.9	139.9	140.5	141.3	141.4	141.3
Energy commodities	136.8	161.5	170.7	173.3	165.5	162.8	162.3	174.5	173.7	163.4	158.7	166.6	178.1	195.5	189.7
Services less energy	220.2	226.2	225.5	226.0	226.7	227.1	227.4	227.9	228.0	228.1	229.0	230.1	231.1	231.4	231.5

[1] Not seasonally adjusted.

[2] Indexes on a December 1997 = 100 base.

[3] Indexes on a December 1982 = 100 base.

[4] Indexes on a December 1988 = 100 base.

NOTE: Index applied to a month as a whole, not to any specific date.

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38. Consumer Price Index: U.S. city average and available local area data: all items

[1982–84 = 100, unless otherwise indicated]

	Pricing sched-ule[1]	All Urban Consumers						Urban Wage Earners					
		2004	2005					2004	2005				
		Dec.	Jan.	Feb.	Mar.	Apr.	May	Dec.	Jan.	Feb.	Mar.	Apr.	May
U.S. city average	M	190.3	190.7	191.8	193.3	194.6	194.4	186.0	186.3	187.3	188.6	190.2	190.0
Region and area size[2]													
Northeast urban	M	201.9	202.6	203.6	206.0	206.9	206.2	198.7	199.0	200.0	201.8	202.9	202.5
Size A—More than 1,500,000	M	204.1	205.0	206.0	208.6	209.3	208.6	199.6	200.1	201.1	202.8	203.8	203.5
Size B/C—50,000 to 1,500,000[3]	M	119.2	119.4	120.1	121.3	122.0	121.6	119.4	119.6	120.1	121.2	122.1	121.6
Midwest urban[4]	M	183.8	184.1	185.2	186.3	187.7	187.4	178.8	179.1	180.2	181.2	182.8	182.4
Size A—More than 1,500,000	M	185.7	185.9	187.1	188.3	189.6	189.4	180.1	180.4	181.3	182.5	184.1	183.8
Size B/C—50,000 to 1,500,000[3]	M	117.3	117.3	118.1	118.7	119.6	119.3	116.4	116.4	117.2	117.8	118.8	118.5
Size D—Nonmetropolitan (less than 50,000)	M	177.2	178.2	179.2	179.9	181.7	181.6	174.9	175.7	176.5	177.3	179.1	178.8
South urban	M	183.3	183.6	184.7	185.9	187.3	187.3	180.3	180.5	181.5	182.7	184.3	184.2
Size A—More than 1,500,000	M	184.9	185.2	186.6	187.9	189.9	189.2	182.4	182.6	184.0	185.3	186.7	186.8
Size B/C—50,000 to 1,500,000[3]	M	117.1	117.1	117.7	118.4	119.3	119.4	115.6	115.7	116.3	117.0	117.9	117.9
Size D—Nonmetropolitan (less than 50,000)	M	181.9	182.3	183.1	184.5	187.2	186.6	181.5	181.9	182.7	184.1	186.7	186.2
West urban	M	194.2	194.5	195.7	197.1	198.6	198.8	189.4	189.5	190.5	192.0	193.7	193.9
Size A—More than 1,500,000	M	196.5	196.7	198.3	199.8	201.3	201.5	190.2	190.1	191.6	193.2	194.9	195.2
Size B/C—50,000 to 1,500,000[3]	M	119.0	119.5	119.6	120.4	121.4	121.3	118.6	118.9	119.0	119.8	120.8	120.8
Size classes:													
A[5]	M	174.0	174.3	175.5	177.0	178.1	178.0	172.4	172.6	173.7	175.0	176.3	176.3
B/C[3]	M	117.7	117.9	118.5	119.2	120.1	120.0	116.9	117.0	117.5	118.3	119.2	119.1
D	M	182.4	183.0	183.7	184.8	186.9	186.9	180.6	181.0	181.7	182.9	185.1	185.0
Selected local areas[6]													
Chicago–Gary–Kenosha, IL–IN–WI	M	189.6	189.9	190.5	191.3	193.2	193.3	183.1	183.5	184.2	184.8	186.9	186.8
Los Angeles–Riverside–Orange County, CA	M	195.2	195.4	197.4	199.2	201.1	201.5	188.5	188.5	190.3	192.1	194.2	194.6
New York, NY–Northern NJ–Long Island, NY–NJ–CT–PA	M	206.8	208.1	208.9	212.4	212.5	211.4	201.8	202.6	203.3	205.5	206.0	205.6
Boston–Brockton–Nashua, MA–NH–ME–CT	1	–	211.3	–	214.2	–	214.6	–	210.3	–	213.1	–	214.0
Cleveland–Akron, OH	1	–	183.3	–	186.3	–	186.8	–	174.5	–	177.2	–	177.9
Dallas–Ft Worth, TX	1	–	180.0	–	181.3	–	183.5	–	180.3	–	181.6	–	184.1
Washington–Baltimore, DC–MD–VA–WV[7]	1	–	121.3	–	122.7	–	123.6	–	120.7	–	122.3	–	123.2
Atlanta, GA	2	183.2	–	185.3	–	188.0	–	181.5	–	183.4	–	186.0	–
Detroit–Ann Arbor–Flint, MI	2	185.3	–	187.8	–	189.8	–	180.7	–	182.6	–	185.2	–
Houston–Galveston–Brazoria, TX	2	170.0	–	174.6	–	175.0	–	167.7	–	171.8	–	172.8	–
Miami–Ft. Lauderdale, FL	2	188.6	–	190.6	–	193.2	–	186.6	–	188.3	–	191.2	–
Philadelphia–Wilmington–Atlantic City, PA–NJ–DE–MD	2	197.8	–	200.1	–	203.3	–	197.9	–	200.0	–	202.9	–
San Francisco–Oakland–San Jose, CA	2	199.5	–	201.2	–	202.5	–	195.9	–	197.3	–	199.3	–
Seattle–Tacoma–Bremerton, WA	2	195.1	–	197.6	–	201.3	–	190.3	–	192.4	–	196.2	–

[1] Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated:

M—Every month.

1—January, March, May, July, September, and November.

2—February, April, June, August, October, and December.

[2] Regions defined as the four Census regions.

[3] Indexes on a December 1996 = 100 base.

[4] The "North Central" region has been renamed the "Midwest" region by the Census Bureau. It is composed of the same geographic entities.

[5] Indexes on a December 1986 = 100 base.

[6] In addition, the following metropolitan areas are published semiannually and appear in tables 34 and 39 of the January and July issues of the *CPI Detailed Report*: Anchorage, AK; Cincinnati, OH–KY–IN; Kansas City, MO–KS; Milwaukee–Racine, WI; Minneapolis–St. Paul, MN–WI; Pittsburgh, PA; Port-land–Salem, OR–WA; St Louis, MO–IL; San Diego, CA; Tampa–St. Petersburg–Clearwater, FL.

[7] Indexes on a November 1996 = 100 base.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Each local index has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error. As a result, local area indexes show greater volatility than the national index, although their long-term trends are similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in their escalator clauses. Index applies to a month as a whole, not to any specific date. Dash indicates data not available.

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39. Annual data: Consumer Price Index, U.S. city average, all items and major groups

[1982–84 = 100]

Series	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Consumer Price Index for All Urban Consumers:											
All items:											
Index	148.2	152.4	156.9	160.5	163.0	166.6	172.2	177.1	179.9	184.0	188.9
Percent change	2.6	2.8	3.0	2.3	1.6	2.2	3.4	2.8	1.6	2.3	2.7
Food and beverages:											
Index	144.9	148.9	153.7	157.7	161.1	164.6	168.4	173.6	176.8	180.5	186.6
Percent change	2.3	2.8	3.2	2.6	2.2	2.2	2.3	3.1	1.8	2.1	3.3
Housing:											
Index	144.8	148.5	152.8	156.8	160.4	163.9	169.6	176.4	180.3	184.8	189.5
Percent change	2.5	2.6	2.9	2.6	2.3	2.2	3.5	4.0	2.2	2.5	2.5
Apparel:											
Index	133.4	132.0	131.7	132.9	133.0	131.3	129.6	127.3	124.0	120.9	120.4
Percent change	–.2	–1.0	–.2	.9	.1	–1.3	–1.3	–1.8	–2.6	–2.5	–.4
Transportation:											
Index	134.3	139.1	143.0	144.3	141.6	144.4	153.3	154.3	152.9	157.6	163.1
Percent change	3.0	3.6	2.8	0.9	–1.9	2.0	6.2	0.7	–.9	3.1	3.5
Medical care:											
Index	211.0	220.5	228.2	234.6	242.1	250.6	260.8	272.8	285.6	297.1	310.1
Percent change	4.8	4.5	3.5	2.8	3.2	3.5	4.1	4.6	4.7	4.0	4.4
Other goods and services:											
Index	198.5	206.9	215.4	224.8	237.7	258.3	271.1	282.6	293.2	298.7	304.7
Percent change	2.9	4.2	4.1	4.4	5.7	8.7	5.0	4.2	3.8	1.9	2.0
Consumer Price Index for Urban Wage Earners and Clerical Workers:											
All items:											
Index	145.6	149.8	154.1	157.6	159.7	163.2	168.9	173.5	175.9	179.8	188.9
Percent change	2.5	2.9	2.9	2.3	1.3	2.2	3.5	2.7	1.4	2.2	5.1

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40. Producer Price Indexes, by stage of processing

[1982 = 100]

Grouping	Annual average		2004								2005				
	2003	2004	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.[P]	Mar.[P]	Apr.[P]	May[P]
Finished goods	143.3	148.5	148.9	148.7	148.5	148.5	148.7	152.0	151.7	150.6	151.4	152.2	153.5	154.4	154.1
Finished consumer goods	145.3	151.6	152.5	152.0	151.9	151.8	152.1	155.7	155.4	153.8	154.8	155.8	157.5	158.7	158.3
Finished consumer foods	145.9	152.6	155.5	155.0	152.3	152.2	152.7	155.1	154.7	154.9	154.2	155.6	156.2	156.5	156.8
Finshed consumer goods excluding foods	144.7	150.9	150.9	150.5	151.4	151.3	151.5	155.6	155.3	153.0	154.6	155.5	157.7	159.3	158.6
Nondurable goods less food	148.4	156.6	156.7	156.0	158.0	157.9	158.2	162.1	161.8	158.5	160.7	162.2	165.5	167.9	167.1
Durable goods	133.1	135.1	134.8	134.9	133.6	133.6	133.5	137.8	137.4	137.2	137.8	137.3	137.0	137.0	136.7
Capital equipment	139.5	141.5	140.8	141.1	140.7	141.2	141.2	143.4	143.4	143.6	144.1	144.0	144.3	144.5	144.4
Intermediate materials, supplies, and components	133.7	142.5	142.0	142.8	143.5	144.8	145.3	146.5	147.7	146.9	148.0	148.9	150.4	151.7	151.0
Materials and components for manufacturing	129.7	137.9	137.4	137.7	138.1	139.4	140.6	141.5	142.0	142.8	143.9	144.5	145.2	145.3	144.9
Materials for food manufacturing	134.4	145.0	152.2	152.0	147.3	144.9	144.3	144.2	143.9	145.2	145.7	146.0	146.6	146.6	147.6
Materials for nondurable manufacturing	137.2	147.6	144.5	145.9	147.3	149.8	152.6	154.4	155.5	156.8	157.9	158.1	160.7	160.4	160.4
Materials for durable manufacturing	127.9	146.6	146.9	145.8	147.2	150.3	152.1	153.0	153.6	155.2	157.3	159.3	158.7	158.9	156.7
Components for manufacturing	125.9	127.4	127.3	127.6	127.4	127.7	128.0	128.2	128.3	128.5	129.2	129.6	129.5	129.9	129.7
Materials and components for construction	153.6	166.4	166.9	166.9	167.5	169.8	170.9	170.8	170.7	171.3	173.1	174.7	175.2	175.3	174.9
Processed fuels and lubricants	112.6	124.1	122.3	124.9	126.4	128.5	126.9	130.8	134.0	128.9	129.5	130.7	135.8	141.1	139.3
Containers	153.7	159.2	156.7	158.9	159.7	162.0	162.5	164.6	164.9	165.2	165.5	166.8	166.8	167.0	167.1
Supplies	141.5	146.7	147.2	147.3	148.0	147.6	147.9	147.9	147.9	148.5	149.6	150.0	150.6	151.2	151.4
Crude materials for further processing	135.3	159.0	161.8	163.0	162.5	162.2	154.4	160.5	171.5	165.7	163.0	162.2	169.4	174.1	171.7
Foodstuffs and feedstuffs	113.5	126.9	141.1	137.4	130.9	124.8	122.0	120.1	119.5	121.5	123.8	121.3	127.6	125.0	126.2
Crude nonfood materials	148.2	179.2	172.9	178.0	182.2	186.6	174.9	187.3	207.1	195.3	188.7	189.3	197.0	207.3	202.1
Special groupings:															
Finished goods, excluding foods	142.4	147.2	147.0	146.8	147.2	147.3	147.5	150.9	150.7	149.2	150.5	151.0	152.6	153.7	153.2
Finished energy goods	102.0	113.0	113.6	112.5	115.4	115.0	115.1	121.1	120.1	114.5	116.4	118.2	123.4	126.9	125.2
Finished goods less energy	149.0	152.4	152.7	152.7	151.7	151.9	152.1	154.5	154.4	154.6	155.1	155.5	155.7	155.9	156.0
Finished consumer goods less energy	153.1	157.2	158.0	157.9	156.5	156.6	156.9	159.3	159.2	159.4	159.9	160.6	160.7	160.9	161.1
Finished goods less food and energy	150.5	152.7	152.2	152.3	151.9	152.2	152.3	154.7	154.7	154.9	155.8	155.9	156.0	156.1	156.1
Finished consumer goods less food and energy	157.9	160.3	159.9	160.0	159.4	159.6	159.7	162.2	162.3	162.5	163.8	163.9	163.8	164.0	164.1
Consumer nondurable goods less food and energy	177.9	180.7	180.2	180.2	180.3	180.8	181.2	181.7	182.2	182.8	184.8	185.6	185.7	186.1	186.6
Intermediate materials less foods and feeds	134.2	142.9	141.9	142.8	143.7	145.3	145.9	147.3	148.3	147.8	148.9	149.7	151.3	152.6	151.9
Intermediate foods and feeds	125.9	137.0	147.7	144.9	142.3	136.3	134.4	131.2	130.7	131.0	132.0	132.1	133.3	134.2	135.2
Intermediate energy goods	111.9	123.1	121.1	123.7	125.1	127.1	125.8	129.9	132.7	128.4	129.0	129.8	134.7	139.4	138.2
Intermediate goods less energy	137.7	145.8	145.7	146.0	146.4	147.5	148.5	149.0	149.4	149.9	151.1	151.9	152.5	152.9	152.4
Intermediate materials less foods and energy	138.5	146.5	145.7	146.2	146.8	148.3	149.5	150.1	150.6	151.1	152.3	153.2	153.8	154.1	153.6
Crude energy materials	147.2	174.7	172.1	180.0	177.9	181.9	166.6	181.8	208.3	192.7	183.9	186.3	196.5	210.6	206.7
Crude materials less energy	123.4	143.9	150.1	147.0	147.5	144.6	141.6	141.9	142.7	143.3	144.5	141.7	146.8	145.3	144.0
Crude nonfood materials less energy	152.5	192.8	177.9	176.3	195.4	200.8	197.4	203.5	207.9	204.9	203.3	199.4	201.6	203.1	194.7

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41. Producer Price Indexes for the net output of major industry groups

[December 2003 = 100, unless otherwise indicated]

NAICS	Industry	2004						2005				
		July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.[P]	Mar.[P]	Apr.[P]	May[P]
	Total mining industries (December 1984=100)	155.6	159.3	149.6	160.6	179.1	169.2	163.3	165.9	173.4	183.0	179.1
211	Oil and gas extraction(December 1985=100)	196.6	202.7	184.0	203.0	234.8	214.7	202.5	205.3	217.4	234.0	227.0
212	Mining, except oil and gas	110.2	110.4	112.3	112.8	114.0	116.4	120.2	120.2	121.8	122.3	122.8
213	Mining support activities	103.7	105.3	106.4	109.2	111.4	114.9	115.5	123.5	125.2	126.9	126.9
	Total manufacturing industries (December 1984=100)	143.2	143.7	144.2	146.5	146.1	145.0	146.2	147.2	148.9	149.7	149.3
311	Food manufacturing (December 1984=100)	146.5	144.6	143.8	143.5	143.3	144.2	144.7	145.2	146.0	146.6	147.2
312	Beverage and tobacco manufacturing	100.6	101.1	100.6	101.2	101.2	101.5	104.1	104.7	104.7	104.4	104.6
313	Textile mills	101.5	101.2	101.4	101.6	101.7	101.5	102.3	102.5	103.0	103.2	103.7
315	Apparel manufacturing	99.7	99.7	100.2	100.3	100.4	100.5	100.4	100.3	100.3	100.2	99.9
316	Leather and allied product manufacturing (December 1984=100)	143.7	143.6	143.6	143.5	143.8	143.9	143.8	144.3	144.6	144.5	144.5
321	Wood products manufacturing	106.8	109.8	110.7	107.6	105.1	105.9	106.9	108.8	109.5	108.8	107.5
322	Paper manufacturing	103.2	104.4	105.0	105.5	105.7	105.8	106.1	106.4	106.8	107.1	107.1
323	Printing and related support activities	101.3	101.3	101.8	101.8	102.0	102.0	102.5	102.8	102.7	102.5	102.4
324	Petroleum and coal products manufacturing (December 1984=100)	152.3	155.6	158.9	176.7	170.4	150.3	155.9	163.6	182.5	189.3	183.3
325	Chemical manufacturing (December 1984=100)	172.2	173.8	175.5	177.2	179.3	180.5	182.7	184.0	185.2	186.5	186.4
326	Plastics and rubber products manufacturing (December 1984=100)	131.2	131.7	133.1	134.3	135.3	136.1	137.4	138.7	139.0	139.4	139.8
331	Primary metal manufacturing (December 1984=100)	144.7	148.3	150.8	152.9	154.2	155.5	158.6	159.2	158.1	157.9	156.0
332	Fabricated metal product manufacturing (December 1984=100)	142.5	143.4	144.2	144.9	145.4	145.7	146.9	147.7	147.9	148.9	149.0
333	Machinery manufacturing	102.1	102.3	102.5	102.9	103.2	103.4	104.1	104.8	105.1	105.2	105.6
334	Computer and electronic products manufacturing	98.9	98.9	98.7	98.6	98.4	98.5	98.3	98.3	98.1	97.9	97.4
335	Electrical equipment, appliance, and components manufacturing	103.6	103.8	104.2	104.7	104.6	104.9	106.0	106.6	107.0	107.5	107.4
336	Transportation equipment manufacturing	99.7	99.8	99.9	103.2	102.7	102.9	103.2	102.6	102.5	102.6	102.3
337	Furniture and related product manufacturing(December 1984=100)	152.0	152.7	152.8	153.4	154.6	155.1	155.5	156.0	155.9	156.8	157.1
339	Miscellaneous manufacturing	101.2	101.4	101.8	101.3	101.3	101.6	102.2	102.5	102.7	102.7	102.8
	Retail trade											
441	Motor vehicle and parts dealers	103.3	103.8	104.4	104.2	104.2	104.2	106.2	104.3	105.7	107.2	108.3
442	Furniture and home furnishings stores	102.6	102.8	103.4	103.8	103.7	104.6	105.6	106.8	106.9	107.0	108.2
443	Electronics and appliance stores	98.6	98.7	99.2	98.4	97.9	93.6	98.3	96.9	102.3	101.1	102.9
446	Health and personal care stores	101.3	105.6	105.1	104.1	106.8	107.2	106.5	105.1	107.9	106.2	107.6
447	Gasoline stations (June 2001=100)	48.3	48.6	46.3	43.1	53.3	59.8	49.0	46.4	48.3	49.5	51.9
454	Nonstore retailers	103.6	102.0	105.6	104.7	111.5	117.4	117.5	121.9	119.6	121.6	123.2
	Transportation and warehousing											
481	Air transportation (December 1992=100)	163.9	163.4	159.8	160.9	162.2	161.4	164.9	166.5	171.1	169.6	167.0
483	Water transportation	101.5	102.1	103.2	103.8	103.7	103.5	104.0	104.1	104.4	105.0	105.7
491	Postal service (June 1989=100)	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0
	Utilities											
221	Utilities	107.1	107.4	105.2	104.3	108.8	108.9	108.3	107.0	107.9	110.2	111.1
	Health care and social assistance											
6211	Office of physicians (December 1996=100)	114.3	114.3	114.4	114.4	114.4	114.5	115.7	115.3	115.1	115.2	115.6
6215	Medical and diagnostic laboratories	100.0	100.1	100.1	100.1	100.1	100.1	102.4	100.5	104.4	104.3	104.3
6216	Home health care services (December 1996=100)	119.7	119.7	119.8	120.1	120.2	120.3	120.9	120.6	120.6	120.9	120.9
622	Hospitals (December 1992=100)	141.6	141.6	141.7	143.3	143.5	143.8	144.8	145.3	145.3	145.5	145.8
6231	Nursing care facilities	102.9	103.0	103.2	103.7	103.9	103.9	105.3	104.5	104.9	105.1	105.7
62321	Residential mental retardation facilities	102.1	102.1	102.5	102.5	102.5	102.5	103.8	103.4	103.7	103.7	103.8
	Other services industries											
511	Publishing industries, except Internet	101.5	101.5	101.4	101.8	102.1	101.9	103.0	103.4	103.2	103.6	103.7
515	Broadcasting, except Internet	99.6	100.9	100.8	104.3	103.2	100.8	100.2	100.0	100.8	102.4	104.2
517	Telecommunications	99.8	99.9	99.6	99.4	99.2	99.9	99.0	98.1	97.8	98.4	98.4
5182	Data processing and related services	99.0	99.0	98.7	98.7	98.6	98.6	98.7	98.8	98.6	98.7	98.6
523	Security, commodity contracts, and like activity	103.2	104.1	104.5	104.3	105.8	106.0	108.0	111.8	109.8	110.1	111.4
53112	Lessors or nonresidental buildings (except miniwarehouse)	103.5	104.0	103.9	104.6	103.0	104.2	104.2	103.2	103.4	105.2	104.2
5312	Offices of real estate agents and brokers	101.0	101.0	104.0	103.1	103.1	105.9	106.0	106.0	106.0	106.0	105.9
5313	Real estate property managers	101.4	101.0	99.8	101.5	101.2	102.3	103.2	103.1	101.0	102.6	101.6
5321	Automotive equipment rental and leasing (June 2001=100)	110.0	110.8	108.0	107.8	107.7	108.1	105.2	107.9	109.1	104.8	106.0
5411	Legal services (December 1996=100)	131.6	131.5	131.8	132.0	132.0	132.0	136.8	136.7	136.9	137.3	137.7
541211	Offices of certified public accountants	101.3	101.4	101.4	101.6	101.7	101.3	101.8	101.9	102.0	101.9	104.3
5413	Architectural, engineering, and related services (December 1996=100)	127.0	127.0	127.3	127.3	127.3	127.7	128.2	128.7	128.8	129.2	129.2
54181	Advertising agencies	100.0	100.3	100.4	100.3	100.5	100.5	100.8	101.0	101.0	101.1	101.0
5613	Employment services (December 1996=100)	114.6	114.6	114.2	115.2	115.2	114.4	115.1	115.7	115.2	114.9	115.6
56151	Travel agencies	95.1	94.7	94.5	95.8	95.2	96.1	94.5	95.0	96.2	97.1	95.9
56172	Janitorial services	101.0	101.1	100.9	101.4	101.4	101.4	101.7	101.7	101.9	102.0	102.1
5621	Waste collection	101.4	101.4	101.4	101.5	101.5	101.5	101.5	101.5	101.5	103.8	103.1
721	Accommodation (December 1996=100)	126.6	127.0	127.2	127.0	125.1	123.8	125.7	128.2	127.9	127.8	129.1

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42. Annual data: Producer Price Indexes, by stage of processing

[1982 = 100]

Index	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Finished goods											
Total	125.5	127.9	131.3	131.8	130.7	133.0	138.0	140.7	138.9	143.3	148.5
Foods	126.8	129.0	133.6	134.5	134.3	135.1	137.2	141.3	140.1	145.9	152.6
Energy	77.0	78.1	83.2	83.4	75.1	78.8	94.1	96.8	88.8	102.0	113.0
Other	137.1	140.0	142.0	142.4	143.7	146.1	148.0	150.0	150.2	150.5	152.7
Intermediate materials, supplies, and components											
Total	118.5	124.9	125.7	125.6	123.0	123.2	129.2	129.7	127.8	133.7	142.5
Foods	118.5	119.5	125.3	123.2	123.2	120.8	119.2	124.3	123.3	134.4	145.0
Energy	83.0	84.1	89.8	89.0	80.8	84.3	101.7	104.1	95.9	111.9	123.1
Other	127.1	135.2	134.0	134.2	133.5	133.1	136.6	136.4	135.8	138.5	146.5
Crude materials for further processing											
Total	101.8	102.7	113.8	111.1	96.8	98.2	120.6	121.3	108.1	135.3	159.0
Foods	106.5	105.8	121.5	112.2	103.9	98.7	100.2	106.2	99.5	113.5	126.9
Energy	72.1	69.4	85.0	87.3	68.6	78.5	122.1	122.8	102.0	147.5	174.7
Other	97.0	105.8	105.7	103.5	84.5	91.1	118.0	101.8	101.0	116.8	149.0

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43. U.S. export price indexes by Standard International Trade Classification

[2000 = 100]

SITC Rev. 3	Industry	2004								2005				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
0	**Food and live animals**	126.7	123.9	119.8	116.4	117.6	118.3	118.7	118.1	118.2	118.3	120.2	121.4	124.2
01	Meat and meat preparations	127.7	127.3	123.0	126.1	124.8	126.9	125.4	124.6	121.3	125.2	128.6	133.1	139.7
04	Cereals and cereal preparations	146.0	141.2	128.0	120.6	122.0	115.6	113.1	116.4	119.2	116.2	121.4	116.9	116.2
05	Vegetables, fruit, and nuts, prepared fresh or dry	113.3	111.1	110.0	113.2	119.8	130.6	137.2	129.9	127.4	128.1	125.2	130.5	137.4
2	**Crude materials, inedible, except fuels**	132.5	125.7	132.1	118.0	119.4	118.2	119.5	119.4	123.1	122.1	127.5	129.3	128.5
22	Oilseeds and oleaginous fruits	199.0	168.5	184.5	117.4	125.1	109.1	110.3	111.1	115.2	109.7	128.9	124.6	127.7
24	Cork and wood	98.2	98.3	98.9	98.8	99.1	99.1	98.4	98.8	98.7	98.9	99.2	98.7	97.0
25	Pulp and waste paper	100.4	100.8	100.1	99.5	98.7	98.1	98.2	98.8	100.0	100.7	103.0	101.8	102.7
26	Textile fibers and their waste	114.9	108.7	102.9	101.1	102.1	100.2	97.5	96.4	98.4	98.7	104.1	104.8	103.3
28	Metalliferous ores and metal scrap	170.6	167.5	190.2	183.6	178.5	190.4	197.0	195.0	205.8	206.0	206.4	222.8	213.1
3	**Mineral fuels, lubricants, and related products**	135.1	131.8	137.5	139.6	141.2	156.0	151.1	146.5	148.5	154.2	170.9	183.2	175.4
33	Petroleum, petroleum products, and related materials	135.0	129.7	134.5	136.2	138.0	156.4	151.0	144.6	147.3	155.7	177.1	192.1	179.1
5	**Chemicals and related products, n.e.s.**	105.6	105.8	107.0	108.6	109.7	111.6	112.9	114.0	116.1	116.3	116.9	117.8	116.5
54	Medicinal and pharmaceutical products	105.7	105.8	107.9	108.1	108.0	106.7	106.9	107.2	108.3	107.9	107.8	108.2	107.9
55	Essential oils; polishing and cleaning preparations	104.4	104.3	104.1	105.1	105.6	106.6	107.5	109.1	109.8	111.1	110.6	111.9	111.8
57	Plastics in primary forms	102.9	103.2	104.8	107.3	109.9	113.2	117.2	118.9	126.6	127.5	128.2	127.7	123.7
58	Plastics in nonprimary forms	96.7	96.5	97.2	97.1	97.4	98.1	98.7	99.9	101.5	102.1	103.2	103.7	104.0
59	Chemical materials and products, n.e.s.	104.8	104.9	104.6	106.2	105.5	105.2	105.3	105.8	106.5	106.4	105.9	106.5	106.4
6	**Manufactured goods classified chiefly by materials**	106.6	107.0	108.5	109.6	110.5	111.3	111.8	112.2	113.0	113.5	113.6	114.3	114.2
62	Rubber manufactures, n.e.s.	110.8	111.2	111.8	112.0	111.4	111.6	112.4	112.9	113.8	114.2	114.4	115.0	115.3
64	Paper, paperboard, and articles of paper, pulp, and paperboard	99.0	99.2	101.2	101.9	102.7	104.0	103.7	104.2	104.1	104.1	103.8	103.8	103.7
66	Nonmetallic mineral manufactures, n.e.s.	99.5	99.9	99.9	100.2	100.4	101.1	101.3	101.6	101.9	102.0	102.2	102.4	102.3
68	Nonferrous metals	97.6	95.4	95.4	96.5	99.0	99.1	100.6	101.5	103.4	105.6	107.2	109.5	108.6
7	**Machinery and transport equipment**	98.4	98.2	98.2	98.2	98.2	98.4	98.4	98.5	98.7	98.7	98.7	98.7	98.7
71	Power generating machinery and equipment	108.7	108.7	108.9	109.0	109.0	109.4	110.3	110.4	111.4	111.4	111.6	111.6	111.5
72	Machinery specialized for particular industries	105.4	105.4	105.7	105.9	106.1	107.3	107.6	108.0	109.3	109.2	109.4	110.6	110.6
74	General industrial machines and parts, n.e.s., and machine parts	104.8	104.9	105.2	105.3	105.3	106.2	106.4	106.6	107.6	108.2	108.3	109.3	109.5
75	Computer equipment and office machines	88.6	87.2	86.6	86.4	86.0	85.1	84.4	83.8	83.0	82.9	82.1	81.3	81.0
76	Telecommunications and sound recording and reproducing apparatus and equipment	92.0	91.8	91.5	90.7	90.7	90.5	90.5	90.4	90.5	90.5	90.5	89.9	90.0
77	Electrical machinery and equipment	88.6	88.2	88.3	88.2	88.1	87.9	87.7	87.9	87.8	87.6	87.6	87.5	87.4
78	Road vehicles	102.3	102.4	102.5	102.5	102.4	102.8	102.8	103.0	103.0	103.0	103.0	102.9	103.0
87	**Professional, scientific, and controlling instruments and apparatus**	102.1	102.0	101.7	101.9	101.8	102.2	102.3	102.6	103.4	103.4	103.4	103.5	103.1

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44. U.S. import price indexes by Standard International Trade Classification

[2000 = 100]

SITC Rev. 3	Industry	2004								2005				
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
0	**Food and live animals**	106.1	106.9	107.4	107.4	109.2	111.1	111.0	111.9	110.9	112.6	117.4	116.2	116.5
01	Meat and meat preparations	124.4	128.9	133.7	134.2	134.9	134.2	131.8	133.0	134.5	134.8	135.9	136.3	139.4
03	Fish and crustaceans, mollusks, and other aquatic invertebrates	84.1	84.1	86.1	86.9	86.0	85.6	84.7	85.0	86.0	87.0	88.6	88.1	88.1
05	Vegetables, fruit, and nuts, prepared fresh or dry	106.1	105.9	102.1	100.6	109.2	114.5	116.3	112.2	107.0	107.5	121.6	117.6	116.9
07	Coffee, tea, cocoa, spices, and manufactures thereof	102.4	107.0	102.7	103.4	105.6	104.5	108.9	114.4	118.9	122.8	130.2	128.9	126.2
1	**Beverages and tobacco**	105.4	105.3	105.9	106.1	106.2	106.5	106.7	107.1	107.5	107.7	107.7	107.9	107.9
11	Beverages	105.7	105.6	106.4	106.6	106.7	106.9	107.1	107.6	107.9	108.1	108.2	108.3	108.4
2	**Crude materials, inedible, except fuels**	127.3	125.8	125.7	134.0	135.1	125.1	121.7	125.5	129.6	135.7	135.0	134.8	130.7
24	Cork and wood	139.0	136.1	132.1	148.9	151.1	126.3	117.1	124.7	127.0	132.0	136.9	132.5	121.4
25	Pulp and waste paper	103.4	106.5	108.0	107.7	105.5	99.8	98.0	100.3	103.6	107.2	108.7	109.7	108.0
28	Metalliferous ores and metal scrap	143.5	140.4	145.3	160.8	162.6	166.2	167.0	167.3	170.8	169.6	176.9	185.7	183.0
29	Crude animal and vegetable materials, n.e.s.	102.1	98.0	101.2	97.6	98.7	96.3	96.5	98.3	110.1	137.5	109.9	110.2	116.9
3	**Mineral fuels, lubricants, and related products**	131.6	131.5	133.9	144.2	146.8	161.2	157.2	140.6	142.2	148.3	166.3	176.1	165.3
33	Petroleum, petroleum products, and related materials	131.5	130.0	133.0	144.8	149.5	165.7	155.3	137.0	140.4	148.6	168.7	177.5	166.7
34	Gas, natural and manufactured	129.5	140.0	134.8	136.3	121.9	124.1	166.2	163.5	150.8	143.3	145.8	161.0	150.3
5	**Chemicals and related products, n.e.s.**	103.5	103.8	104.6	105.1	106.7	108.4	108.9	109.6	110.2	111.8	112.0	113.7	112.4
52	Inorganic chemicals	117.5	119.8	122.2	123.8	124.1	125.5	126.8	126.7	127.6	128.5	130.2	133.0	133.1
53	Dying, tanning, and coloring materials	100.8	100.3	98.3	98.4	98.4	98.5	98.7	98.7	97.9	98.6	98.6	99.8	101.0
54	Medicinal and pharmaceutical products	107.3	107.1	107.3	107.3	106.6	106.4	107.4	108.9	110.5	110.1	110.0	110.5	110.1
55	Essential oils; polishing and cleaning preparations	93.4	93.5	93.5	93.4	93.4	93.6	93.7	94.4	94.9	95.2	95.4	95.4	94.2
57	Plastics in primary forms	105.8	104.6	107.8	108.4	109.6	109.9	113.2	116.1	123.0	124.2	126.5	127.6	127.4
58	Plastics in nonprimary forms	102.9	102.3	103.0	103.2	103.8	104.4	105.1	105.7	106.7	106.4	106.3	106.8	106.6
59	Chemical materials and products, n.e.s.	95.1	95.2	94.7	94.1	94.4	95.3	95.8	96.1	96.2	97.7	97.8	99.5	99.1
6	**Manufactured goods classified chiefly by materials**	106.9	106.1	106.1	107.7	108.9	108.9	109.4	110.4	111.4	111.8	112.9	113.5	113.1
62	Rubber manufactures, n.e.s.	100.0	100.5	100.5	100.8	100.8	101.0	101.3	101.9	102.2	102.6	103.6	104.1	103.8
64	Paper, paperboard, and articles of paper, pulp, and paperboard	95.5	95.5	96.4	96.9	97.9	99.2	99.4	99.0	100.0	99.9	100.3	102.1	102.2
66	Nonmetallic mineral manufactures, n.e.s.	99.4	99.4	99.3	100.2	100.4	100.5	100.5	100.7	100.9	100.8	100.9	101.0	101.0
68	Nonferrous metals	106.1	101.6	102.3	105.6	106.3	106.6	108.6	111.0	112.1	114.1	116.2	118.6	119.3
69	Manufactures of metals, n.e.s.	102.4	102.4	102.7	103.3	103.9	104.4	105.3	106.7	108.1	108.4	108.7	109.0	108.8
7	**Machinery and transport equipment**	95.2	95.1	95.0	95.0	95.0	94.9	95.1	95.2	95.3	95.2	95.1	95.0	95.0
72	Machinery specialized for particular industries	106.7	106.6	107.2	107.6	107.4	107.8	108.5	109.5	110.5	110.6	110.8	111.2	111.1
74	General industrial machines and parts, n.e.s., and machine parts	103.6	103.5	104.0	104.1	104.3	104.6	104.9	105.3	106.2	106.6	106.8	107.4	107.4
75	Computer equipment and office machines	76.4	75.5	74.9	74.3	73.9	73.2	73.0	72.8	72.4	71.9	71.1	70.3	70.1
76	Telecommunications and sound recording and reproducing apparatus and equipment	84.9	84.7	84.3	84.0	83.8	83.4	83.4	83.1	83.0	82.8	82.7	82.2	82.5
77	Electrical machinery and equipment	94.8	94.7	94.6	94.7	94.6	94.3	94.4	94.6	94.6	94.4	94.5	94.5	94.5
78	Road vehicles	102.3	102.4	102.6	102.8	103.1	103.4	103.6	103.7	103.6	103.7	103.7	103.8	103.8
85	Footwear	100.6	100.4	100.4	100.1	100.5	100.5	100.5	100.5	100.3	100.3	100.3	100.2	100.4
88	Photographic apparatus, equipment, and supplies, and optical goods, n.e.s.	99.3	99.0	98.2	98.2	98.2	98.2	98.3	98.6	99.1	99.1	99.1	99.3	99.2

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45. U.S. export price indexes by end-use category

[2000 = 100]

Category	2004								2005				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
ALL COMMODITIES	104.1	103.4	103.9	103.4	103.8	104.4	104.7	104.8	105.6	105.7	106.4	107.0	106.9
Foods, feeds, and beverages	135.6	129.1	128.0	116.5	118.7	117.5	118.3	116.9	117.1	116.4	121.0	121.2	123.8
Agricultural foods, feeds, and beverages	138.0	131.1	129.9	117.0	119.3	117.8	118.5	116.6	116.7	116.0	120.8	121.0	124.1
Nonagricultural (fish, beverages) food products	112.7	110.7	110.1	110.9	113.0	114.4	115.5	118.4	119.7	119.7	122.2	121.8	120.8
Industrial supplies and materials	110.2	109.9	112.0	113.1	114.0	116.6	117.4	118.0	120.1	120.7	122.3	124.4	123.1
Agricultural industrial supplies and materials	113.7	110.7	109.0	108.4	109.4	109.2	108.5	109.5	112.9	112.8	115.6	116.7	116.5
Fuels and lubricants	117.5	114.9	118.6	120.4	121.5	132.2	128.3	125.4	128.3	133.0	144.1	153.5	146.7
Nonagricultural supplies and materials, excluding fuel and building materials	109.9	110.0	112.4	113.5	114.4	116.4	117.9	118.9	121.0	121.0	121.3	122.7	121.9
Selected building materials	103.9	103.4	102.8	103.3	104.0	103.9	104.0	104.4	104.6	104.8	105.3	105.2	105.3
Capital goods	98.1	97.8	97.8	97.8	97.8	98.0	98.1	98.2	98.4	98.5	98.4	98.4	98.4
Electric and electrical generating equipment	101.7	102.0	102.2	102.2	102.4	103.3	103.5	103.6	103.8	103.5	104.0	104.0	104.1
Nonelectrical machinery	94.6	94.1	94.0	94.0	93.9	93.9	93.8	93.9	94.0	94.0	93.8	93.8	93.7
Automotive vehicles, parts, and engines	102.3	102.3	102.4	102.6	102.5	102.7	102.8	102.9	103.1	103.1	103.3	103.3	103.4
Consumer goods, excluding automotive	100.5	100.4	100.9	101.1	101.0	100.9	101.0	101.2	101.7	101.6	101.6	102.0	102.0
Nondurables, manufactured	100.1	100.0	100.8	101.0	101.0	100.5	100.6	101.0	101.6	101.5	101.5	101.9	101.9
Durables, manufactured	100.6	100.7	100.8	101.0	100.9	100.8	101.0	101.1	101.4	101.5	101.5	101.7	101.7
Agricultural commodities	133.7	127.4	126.1	115.5	117.6	116.3	116.7	115.4	116.1	115.5	119.9	120.3	122.7
Nonagricultural commodities	101.7	101.5	102.2	102.5	102.8	103.6	103.9	104.1	104.9	105.0	105.4	106.1	105.7

46. U.S. import price indexes by end-use category

[2000 = 100]

Category	2004								2005				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
ALL COMMODITIES	101.9	101.7	102.1	103.6	104.1	105.8	105.5	104.0	104.6	105.5	107.8	109.1	107.7
Foods, feeds, and beverages	106.8	106.9	107.5	107.3	108.7	110.0	110.3	111.5	111.1	112.2	115.8	115.3	115.6
Agricultural foods, feeds, and beverages	114.0	114.3	114.5	114.1	116.4	118.4	119.1	120.7	119.6	120.8	125.6	125.2	125.6
Nonagricultural (fish, beverages) food products	90.6	90.3	91.8	92.3	91.4	91.1	90.7	91.0	92.0	92.8	94.0	93.2	93.2
Industrial supplies and materials	119.7	119.3	120.6	126.6	128.5	134.9	133.2	126.4	127.9	130.7	139.8	145.0	139.2
Fuels and lubricants	131.0	130.9	133.2	143.4	146.2	160.8	157.0	141.0	142.5	148.0	165.4	175.4	164.3
Petroleum and petroleum products	131.2	129.7	132.7	144.4	149.2	165.8	155.9	138.1	141.2	148.4	168.0	177.1	165.6
Paper and paper base stocks	98.2	99.0	100.0	100.4	101.1	101.4	101.1	101.3	102.4	103.0	103.8	105.7	105.4
Materials associated with nondurable supplies and materials	105.4	106.0	106.5	107.7	108.0	108.7	109.3	109.8	111.3	112.0	113.0	114.0	113.9
Selected building materials	123.6	120.5	117.6	124.0	125.6	115.3	111.8	115.6	117.9	119.8	122.7	120.2	115.5
Unfinished metals associated with durable goods	126.2	124.4	126.1	129.8	133.1	134.2	136.4	138.5	139.6	138.8	141.2	143.9	142.8
Nonmetals associated with durable goods	99.1	98.7	98.5	98.5	98.8	98.9	99.2	99.7	100.9	100.9	100.8	101.1	100.9
Capital goods	92.6	92.2	92.2	92.1	92.0	91.8	91.9	92.2	92.5	92.4	92.2	92.3	92.3
Electric and electrical generating equipment	97.1	97.0	97.5	97.7	97.4	97.4	97.5	98.0	98.4	98.7	98.7	99.0	98.8
Nonelectrical machinery	90.5	90.1	90.0	89.9	89.8	89.5	89.6	89.9	90.1	90.0	89.7	89.7	89.8
Automotive vehicles, parts, and engines	102.0	102.2	102.3	102.5	102.7	103.0	103.1	103.2	103.2	103.2	103.2	103.4	103.3
Consumer goods, excluding automotive	98.5	98.5	98.5	98.4	98.4	98.5	98.7	99.0	99.6	100.1	99.8	99.8	99.9
Nondurables, manufactured	101.0	100.9	101.0	100.9	100.8	100.9	101.1	101.4	102.2	102.8	102.8	102.8	102.6
Durables, manufactured	96.0	96.1	95.9	95.9	95.9	96.0	96.2	96.5	96.8	96.7	96.8	96.7	96.8
Nonmanufactured consumer goods	97.3	96.8	97.4	97.9	97.9	97.9	98.0	98.2	100.1	105.0	100.3	100.7	102.2

47. U.S. international price indexes for selected categories of services

[2000 = 100, unless indicated otherwise]

Category	2003				2004				2005
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.
Air freight (inbound)	108.8	109.4	112.5	112.9	116.2	116.6	118.7	125.2	126.3
Air freight (outbound)	97.2	95.4	95.5	94.9	96.1	99.0	100.7	104.7	103.7
Inbound air passenger fares (Dec. 2003 = 100)	–	–	–	100.0	105.1	106.1	110.1	112.5	114.5
Outbound air passenger fares (Dec. 2003 = 100))	–	–	–	100.0	99.3	114.2	114.2	105.4	105.0
Ocean liner freight (inbound)	94.0	116.1	116.2	117.7	119.1	121.1	120.3	122.7	121.2

NOTE: Dash indicates data not available.

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48. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

[1992 = 100]

Item	2002				2003				2004				2005
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
Business													
Output per hour of all persons	122.9	123.5	125.0	125.3	126.3	128.9	131.3	131.9	133.2	134.3	134.8	136.1	136.9
Compensation per hour	143.2	144.6	145.1	145.4	147.4	149.7	151.6	152.9	154.0	156.1	158.3	162.5	164.9
Real compensation per hour	115.1	115.3	115.2	114.8	115.2	116.9	117.7	118.5	118.2	118.5	119.7	121.8	122.9
Unit labor costs	116.5	117.1	116.1	116.1	116.7	116.2	115.5	115.9	115.6	116.2	117.4	119.4	120.4
Unit nonlabor payments	113.7	113.9	116.0	117.1	117.7	119.2	121.0	120.9	123.1	124.7	123.6	122.0	122.5
Implicit price deflator	115.5	115.9	116.1	116.5	117.1	117.3	117.5	117.8	118.4	119.4	119.7	120.4	121.2
Nonfarm business													
Output per hour of all persons	122.6	122.9	124.3	124.7	125.8	128.0	130.7	131.5	132.8	134.1	134.4	135.2	136.1
Compensation per hour	142.5	143.8	144.2	144.6	146.6	148.7	150.8	152.3	153.0	155.3	157.4	161.2	163.7
Real compensation per hour	114.6	114.7	114.4	114.2	114.6	116.1	117.1	118.0	117.4	117.9	119.0	120.8	122.0
Unit labor costs	116.2	116.9	116.0	115.9	116.6	116.2	115.4	115.9	115.3	115.8	117.1	119.3	120.3
Unit nonlabor payments	115.5	115.7	118.0	119.2	119.6	120.7	122.5	122.1	124.5	126.0	125.2	123.5	124.0
Implicit price deflator	116.0	116.5	116.8	117.2	117.7	117.8	118.0	118.1	118.7	119.6	120.1	120.8	121.7
Nonfinancial corporations													
Output per hour of all employees	126.7	128.2	129.0	129.6	130.3	132.7	135.3	136.6	136.8	138.0	139.6	142.7	143.6
Compensation per hour	139.9	141.4	142.1	142.8	144.2	146.4	148.5	149.8	150.7	152.8	154.9	158.7	161.3
Real compensation per hour	112.5	112.8	112.8	112.8	112.7	114.3	115.3	116.1	115.7	116.0	117.1	118.9	120.2
Total unit costs	111.3	111.0	110.9	110.9	111.6	110.9	110.5	110.4	110.4	110.9	111.0	110.7	111.6
Unit labor costs	110.4	110.3	110.1	110.2	110.7	110.3	109.8	109.7	110.2	110.7	110.9	111.2	112.3
Unit nonlabor costs	113.6	112.7	112.8	112.8	114.0	112.6	112.6	112.2	111.1	111.4	111.3	109.3	109.8
Unit profits	88.8	94.5	95.8	102.3	100.0	112.2	120.3	125.1	129.9	136.3	136.0	146.2	144.0
Unit nonlabor payments	107.0	107.9	108.3	110.0	110.3	112.5	114.7	115.7	116.1	118.1	117.9	119.2	118.9
Implicit price deflator	109.3	109.5	109.5	110.1	110.5	111.0	111.4	111.7	112.2	113.2	113.2	113.9	114.5
Manufacturing													
Output per hour of all persons	144.4	146.5	148.7	149.5	151.6	152.9	156.9	158.1	159.3	162.2	164.0	166.5	168.3
Compensation per hour	143.8	146.7	148.3	149.4	155.5	158.4	161.6	163.6	162.4	165.1	168.7	173.0	175.6
Real compensation per hour	115.6	117.0	117.7	117.9	121.5	123.6	125.5	126.8	124.6	125.3	127.6	129.4	130.8
Unit labor costs	99.6	100.2	99.7	99.9	102.6	103.6	103.0	103.5	101.9	101.8	102.9	103.9	104.3

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49. Annual indexes of multifactor productivity and related measures, selected years

[2000 = 100, unless otherwise indicated]

Item	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Private business													
Productivity:													
Output per hour of all persons	81.4	82.7	86.2	86.5	87.5	87.7	90.3	91.9	94.4	97.2	100.0	102.7	107.2
Output per unit of capital services	102.6	99.7	101.7	102.6	104.5	103.6	103.9	104.1	102.6	101.8	100.0	96.3	95.5
Multifactor productivity	90.9	90.3	92.7	93.1	94.1	93.8	95.5	96.3	97.4	98.7	100.0	100.1	102.0
Output	68.6	68.1	70.9	73.2	76.9	79.1	82.8	87.2	91.5	96.2	100.0	100.4	102.3
Inputs:													
Labor input	80.1	79.1	80.0	82.4	86.1	88.5	90.4	94.0	96.2	99.0	100.0	98.6	97.4
Capital services	66.9	68.4	69.7	71.3	73.5	76.4	79.7	83.8	89.2	94.5	100.0	104.2	107.1
Combined units of labor and capital input	75.5	75.4	76.5	78.6	81.7	84.3	86.7	90.5	93.9	97.5	100.0	100.4	100.3
Capital per hour of all persons	79.3	83.0	84.8	84.4	83.7	84.6	86.9	88.3	92.0	95.4	100.0	106.6	112.2
Private nonfarm business													
Productivity:													
Output per hour of all persons	81.7	83.1	86.5	86.9	87.9	88.4	90.8	92.2	94.7	97.3	100.0	102.6	107.2
Output per unit of capital services	104.2	101.1	102.8	103.8	105.4	104.7	104.7	104.6	103.0	102.1	100.0	96.3	95.4
Multifactor productivity	91.5	91.0	93.2	93.6	94.5	94.6	96.0	96.6	97.7	98.8	100.0	100.0	102.0
Output	68.6	68.1	70.8	73.2	76.7	79.3	82.9	87.2	91.5	96.3	100.0	100.5	102.4
Inputs:													
Labor input	79.8	78.7	79.6	82.2	85.6	88.0	90.0	93.7	96.0	99.0	100.0	98.8	97.3
Capital services	65.8	67.4	68.8	70.6	72.8	75.7	79.2	83.3	88.8	94.3	100.0	104.4	107.3
Combined units of labor and capital input	75.0	74.8	75.9	78.2	81.2	83.8	86.3	90.2	93.7	97.5	100.0	100.5	100.3
Capital per hour of all persons	78.4	82.3	84.1	83.7	83.3	84.4	86.7	88.2	91.9	95.3	100.0	106.6	112.4
Manufacturing [1996 = 100]													
Productivity:													
Output per hour of all persons	82.2	84.1	88.6	90.2	93.0	96.5	100.0	103.8	108.9	114.0	118.3	119.7	–
Output per unit of capital services	97.5	93.6	95.9	96.9	99.7	100.6	100.0	101.4	101.7	101.7	101.0	95.1	–
Multifactor productivity	93.3	92.4	94.0	95.1	97.3	99.2	100.0	103.1	105.7	108.7	111.3	110.3	–
Output	83.2	81.5	85.5	88.3	92.9	96.9	100.0	105.6	110.5	114.7	117.4	112.1	–
Inputs:													
Hours of all persons	101.1	96.9	96.5	97.8	99.9	100.4	100.0	101.7	101.5	100.7	99.2	93.6	–
Capital services	85.3	87.1	89.1	91.1	93.2	96.4	100.0	104.1	108.7	112.8	116.2	117.9	–
Energy	93.1	93.2	93.1	96.6	99.9	102.3	100.0	97.5	100.6	102.9	104.3	98.9	–
Nonenergy materials	77.5	78.5	83.5	86.5	90.3	93.1	100.0	101.9	107.5	107.9	106.9	105.5	–
Purchased business services	84.7	84.6	92.0	92.9	96.0	100.4	100.0	103.9	103.1	105.4	106.5	97.7	–
Combined units of all factor inputs	89.1	88.3	90.9	92.8	95.5	97.7	100.0	102.4	104.6	105.5	105.5	101.6	–

NOTE: Dash indicates data not available.

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50. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

[1992 = 100]

Item	1960	1970	1980	1990	1996	1997	1998	1999	2000	2001	2002	2003	2004
Business													
Output per hour of all persons	48.9	66.3	79.1	94.5	104.7	106.7	109.7	112.9	116.1	119.0	124.2	129.6	134.7
Compensation per hour	13.9	23.6	54.1	90.6	109.6	113.1	120.0	125.8	134.5	140.2	144.6	150.4	157.8
Real compensation per hour	60.8	78.8	89.1	96.3	99.6	100.6	105.3	108.1	111.9	113.4	115.1	117.1	119.6
Unit labor costs	28.4	35.6	68.4	96.0	104.7	106.1	109.4	111.4	115.9	117.8	116.4	116.1	117.2
Unit nonlabor payments	24.8	31.5	61.3	93.8	112.0	113.9	110.1	109.5	107.4	110.2	115.2	119.8	123.3
Implicit price deflator	27.1	34.1	65.8	95.1	107.4	109.0	109.7	110.7	112.7	114.9	116.0	117.4	119.5
Nonfarm business													
Output per hour of all persons	51.9	68.0	80.6	94.5	104.9	106.6	109.5	112.6	115.6	118.5	123.6	129.0	134.2
Compensation per hour	14.5	23.7	54.4	90.4	109.5	112.9	119.6	125.2	134.0	139.3	143.8	149.6	156.8
Real compensation per hour	63.3	79.2	89.5	96.0	99.5	100.4	105.0	107.5	111.4	112.6	114.5	116.4	118.9
Unit labor costs	27.9	34.9	67.5	95.7	104.5	105.9	109.3	111.2	115.9	117.5	116.3	116.0	116.9
Unit nonlabor payments	24.3	31.2	60.4	93.5	112.2	114.6	111.1	111.1	108.9	111.8	117.1	121.3	124.8
Implicit price deflator	26.6	33.5	64.9	94.9	107.3	109.1	109.9	111.1	113.3	115.4	116.6	117.9	119.8
Nonfinancial corporations													
Output per hour of all employees	56.2	69.8	80.8	95.4	107.1	109.9	113.5	117.3	121.5	123.6	128.4	133.7	139.3
Compensation per hour	16.2	25.7	57.2	91.1	108.5	111.7	118.1	123.5	132.0	137.4	141.6	147.2	154.3
Real compensation per hour	70.8	85.9	94.1	96.8	98.5	99.4	103.6	106.2	109.7	111.1	112.7	114.6	116.9
Total unit costs	27.3	35.6	69.2	96.0	100.9	101.1	102.9	104.0	107.4	111.6	111.0	110.8	110.8
Unit labor costs	28.8	36.9	70.8	95.5	101.3	101.7	104.1	105.3	108.6	111.2	110.3	110.1	110.8
Unit nonlabor costs	23.3	32.2	64.9	97.3	100.0	99.7	99.5	100.4	104.2	112.6	113.0	112.9	111.0
Unit profits	50.2	44.4	66.9	96.9	150.0	154.3	137.0	129.1	108.7	82.2	95.4	114.6	137.5
Unit nonlabor payments	30.5	35.4	65.5	97.2	113.3	114.3	109.5	108.0	105.4	104.5	108.3	113.3	117.8
Implicit price deflator	29.4	36.4	69.0	96.1	105.3	105.9	105.9	106.2	107.5	108.9	109.6	111.2	113.1
Manufacturing													
Output per hour of all persons	41.8	54.2	70.1	92.9	113.9	118.0	123.6	128.1	134.1	136.9	147.3	154.8	163.0
Compensation per hour	14.9	23.7	55.6	90.5	109.3	112.2	118.7	123.4	134.7	137.8	147.0	159.7	167.3
Real compensation per hour	65.0	79.2	91.4	96.1	99.3	99.8	104.2	106.0	112.0	111.5	117.0	124.3	126.8
Unit labor costs	35.6	43.8	79.3	97.3	96.0	95.1	96.0	96.4	100.5	100.7	99.8	103.2	102.6
Unit nonlabor payments	26.8	29.3	80.2	100.8	110.7	110.4	104.2	105.1	107.1	105.9	–	–	–
Implicit price deflator	30.2	35.0	79.9	99.5	105.2	104.6	101.1		104.6	103.9	–	–	–

Dash indicates data not available.

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51. Annual indexes of output per hour for selected NAICS industries, 1990-2002

[1997=100]

NAICS	Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	Mining													
21	Mining	86.0	86.8	95.2	96.2	99.6	101.8	101.7	100.0	103.4	111.1	109.5	107.7	112.3
211	Oil and gas extraction	78.4	78.8	81.9	85.1	90.3	95.5	98.9	100.0	101.6	107.9	115.2	117.4	119.3
212	Mining, except oil and gas	79.3	80.0	86.8	89.9	93.0	94.0	96.0	100.0	104.6	105.9	106.8	109.0	111.7
2121	Coal mining	68.1	69.3	75.3	79.9	83.9	88.2	94.9	100.0	106.5	110.3	115.8	114.4	112.2
2122	Metal ore mining	79.9	82.7	91.7	102.2	104.1	98.5	95.3	100.0	109.5	112.7	124.4	131.8	143.9
2123	Nonmetallic mineral mining and quarrying	92.3	89.5	96.1	93.6	96.9	97.3	97.1	100.0	101.3	101.2	96.2	99.3	103.8
	Utilities													
2211	Power generation and supply	71.2	73.8	74.2	78.7	83.0	88.6	95.5	100.0	103.8	104.1	107.0	106.4	102.4
2212	Natural gas distribution	71.4	72.7	75.8	79.8	82.1	89.0	96.1	100.0	99.1	103.1	113.1	110.0	114.9
	Manufacturing													
3111	Animal food	90.1	89.3	90.2	90.2	87.3	94.0	87.5	100.0	109.4	109.5	109.7	127.2	–
3112	Grain and oilseed milling	89.0	91.2	91.1	93.8	94.7	99.1	91.3	100.0	107.5	114.2	112.5	117.3	–
3113	Sugar and confectionery products	91.0	93.8	90.5	92.5	94.0	94.3	98.2	100.0	104.0	107.1	111.9	109.9	–
3114	Fruit and vegetable preserving and specialty	86.4	89.7	90.7	93.8	94.9	97.1	98.2	100.0	106.8	108.4	109.8	117.0	–
3115	Dairy products	90.8	92.1	95.4	93.9	95.4	98.7	98.0	100.0	99.1	94.5	96.0	96.2	–
3116	Animal slaughtering and processing	94.5	96.8	101.5	100.9	97.4	98.5	94.3	100.0	99.9	100.3	101.9	102.7	–
3117	Seafood product preparation and packaging	117.5	112.0	115.3	113.9	114.1	108.4	116.2	100.0	117.0	130.2	137.6	147.3	–
3118	Bakeries and tortilla manufacturing	92.6	92.3	95.6	96.0	96.7	99.7	97.7	100.0	103.8	105.4	105.3	106.3	–
3119	Other food products	91.9	93.5	95.9	102.8	100.3	101.3	103.0	100.0	106.9	108.8	110.2	103.2	–
3121	Beverages	86.5	90.1	93.8	93.2	97.7	99.6	101.1	100.0	98.5	92.4	90.6	91.7	–
3122	Tobacco and tobacco products	81.4	77.3	79.6	73.7	89.8	97.5	99.4	100.0	98.1	92.1	98.0	100.0	–
3131	Fiber, yarn, and thread mills	73.9	74.7	80.1	84.6	87.2	92.0	98.7	100.0	102.2	104.6	102.6	110.5	–
3132	Fabric mills	75.0	77.7	81.5	85.0	91.9	95.8	98.0	100.0	103.9	109.8	110.2	109.1	–
3133	Textile and fabric finishing mills	81.7	80.4	83.7	86.0	87.8	84.5	85.0	100.0	100.6	101.7	104.0	109.7	–
3141	Textile furnishings mills	88.2	88.6	93.0	93.7	90.1	92.5	93.3	100.0	99.9	101.2	106.8	106.9	–
3149	Other textile product millsv	91.1	90.0	92.0	90.3	94.5	95.9	96.3	100.0	97.0	110.4	110.4	105.0	–
3151	Apparel knitting mills	85.6	88.7	93.2	102.5	104.3	109.5	121.9	100.0	96.6	102.0	110.2	108.4	–
3152	Cut and sew apparel	70.1	72.0	73.1	76.6	80.5	85.5	90.5	100.0	104.0	118.8	127.7	131.7	–
3159	Accessories and other apparel	100.9	97.3	98.7	99.0	104.6	112.4	112.6	100.0	110.8	103.3	104.9	114.8	–
3161	Leather and hide tanning and finishing	60.8	56.6	76.7	83.1	75.9	78.6	91.5	100.0	98.0	101.6	110.0	109.7	–
3162	Footwear	77.1	74.7	83.1	81.7	90.4	95.6	103.4	100.0	100.9	116.8	124.1	142.7	–
3169	Other leather products	102.5	100.2	97.0	94.3	80.0	73.2	79.7	100.0	109.2	100.4	107.6	114.1	–
3211	Sawmills and wood preservation	79.2	81.6	86.1	82.6	85.1	91.0	96.2	100.0	100.8	105.4	106.5	109.0	–
3212	Plywood and engineered wood products	102.3	107.4	114.7	108.9	105.8	101.8	101.2	100.0	105.6	99.9	100.5	105.0	–
3219	Other wood products	105.4	104.7	104.0	103.0	99.3	100.4	100.8	100.0	101.5	105.4	104.0	104.6	–
3221	Pulp, paper, and paperboard mills	88.5	88.1	92.3	92.9	97.6	102.0	97.6	100.0	103.1	111.4	115.7	117.5	–
3222	Converted paper products	90.5	93.5	93.7	96.3	97.6	97.2	98.3	100.0	102.7	101.5	101.9	101.0	–
3231	Printing and related support activities	96.6	95.4	101.3	100.1	98.3	98.8	99.6	100.0	100.5	103.5	104.9	105.6	–
3241	Petroleum and coal products	76.7	75.8	78.9	84.5	85.6	90.1	94.8	100.0	102.1	107.8	113.2	112.2	–
3251	Basic chemicals	91.4	90.1	89.4	89.9	95.1	92.3	90.0	100.0	102.5	114.7	118.4	111.0	–
3252	Resin, rubber, and artificial fibers	75.8	74.7	80.6	83.8	93.5	95.9	93.3	100.0	105.5	108.8	108.1	103.8	–
3253	Agricultural chemicals	84.6	81.0	81.3	85.6	87.4	90.7	92.1	100.0	98.8	87.6	91.4	91.1	–
3254	Pharmaceuticals and medicines	91.4	92.6	88.2	88.1	92.4	96.3	99.9	100.0	92.9	94.6	93.4	97.4	–
3255	Paints, coatings, and adhesives	85.1	85.9	87.6	90.9	94.1	92.7	98.3	100.0	99.1	98.8	98.5	102.1	–
3256	Soap, cleaning compounds, and toiletries	83.2	84.2	83.4	86.9	88.6	93.9	95.6	100.0	96.6	91.1	99.2	102.7	–
3259	Other chemical products and preparations	76.6	78.0	84.7	90.6	92.6	94.4	94.2	100.0	99.4	109.2	120.0	111.3	–
3261	Plastics products	84.7	86.3	90.3	91.9	94.4	94.5	97.0	100.0	103.5	109.3	111.2	113.3	–
3262	Rubber products	83.0	83.8	84.9	90.4	90.3	92.8	94.4	100.0	100.5	101.4	103.9	104.2	–
3271	Clay products and refractories	89.2	87.5	91.5	91.9	96.6	97.4	102.6	100.0	101.3	103.5	103.6	97.6	–
3272	Glass and glass products	80.0	79.1	84.3	86.1	87.5	88.8	96.5	100.0	102.7	108.6	109.7	105.2	–
3273	Cement and concrete products	94.8	93.7	94.8	96.5	95.0	98.2	100.6	100.0	103.5	104.1	100.4	97.1	–
3274	Lime and gypsum products	84.1	82.7	88.5	90.1	87.8	88.8	92.4	100.0	113.1	102.7	97.0	100.1	–
3279	Other nonmetallic mineral products	79.8	81.4	90.2	89.3	90.5	91.7	96.5	100.0	98.8	95.5	95.6	96.8	–
3311	Iron and steel mills and ferroalloy production	69.6	67.2	74.1	81.7	87.2	89.7	94.1	100.0	101.7	106.5	108.5	106.7	–
3312	Steel products from purchased steel	83.8	86.4	89.9	95.9	100.0	100.5	100.5	100.0	100.3	94.2	96.4	97.1	–
3313	Alumina and aluminum production	91.9	93.3	96.8	96.0	100.3	96.8	95.9	100.0	101.1	104.3	97.8	96.9	–
3314	Other nonferrous metal production	95.6	95.8	98.8	101.8	105.1	102.9	105.7	100.0	111.2	108.9	103.1	100.5	–
3315	Foundries	85.3	84.5	85.8	89.8	91.4	93.1	96.2	100.0	101.6	104.9	104.0	109.3	–
3321	Forging and stamping	88.6	86.5	91.7	94.6	93.7	94.2	97.6	100.0	103.7	110.9	121.3	121.8	–
3322	Cutlery and hand tools	85.1	85.4	87.2	91.7	94.4	97.8	104.4	100.0	100.0	107.8	105.8	110.2	–
3323	Architectural and structural metals	87.8	89.1	92.5	93.4	95.1	93.9	94.2	100.0	101.1	101.8	101.0	100.7	–
3324	Boilers, tanks, and shipping containers	90.4	92.6	95.3	94.8	100.5	97.8	100.7	100.0	101.3	98.9	97.7	98.2	–
3325	Hardware	84.4	83.8	86.9	89.6	95.7	97.3	102.6	100.0	101.0	106.5	115.8	114.6	–
3326	Spring and wire products	85.2	88.4	90.9	95.3	91.5	99.5	102.8	100.0	111.6	112.9	114.6	110.6	–
3327	Machine shops and threaded products	78.8	79.8	87.2	86.9	91.6	98.7	100.0	100.0	99.3	103.9	107.2	107.2	–

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51. Continued—Annual indexes of output per hour for selected NAICS industries, 1990-2002

[1997=100]

NAICS	Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
3328	Coating, engraving, and heat treating metals	81.6	78.1	86.9	91.9	96.5	102.8	102.9	100.0	101.7	101.5	105.9	105.1	–
3329	Other fabricated metal products	86.7	85.9	90.6	92.1	95.0	97.1	98.9	100.0	102.3	100.2	100.8	98.2	–
3331	Agriculture, construction, and mining machinery	82.8	77.2	79.6	84.1	91.0	95.6	95.9	100.0	104.2	95.0	101.0	99.5	–
3332	Industrial machinery	80.6	81.1	79.5	84.9	90.0	97.9	98.8	100.0	94.4	105.2	129.7	104.6	–
3333	Commercial and service industry machinery	91.4	89.6	96.5	101.7	101.2	103.0	106.3	100.0	107.5	111.2	101.4	94.4	–
3334	HVAC and commercial refrigeration equipment	88.8	88.2	90.8	93.8	97.3	96.6	97.8	100.0	106.6	110.4	108.3	110.8	–
3335	Metalworking machinery	85.3	82.3	89.3	89.3	94.0	99.1	98.1	100.0	99.1	100.5	106.4	102.0	–
3336	Turbine and power transmission equipment	85.1	84.6	81.2	84.8	93.3	92.1	97.9	100.0	106.4	113.3	117.1	130.2	–
3339	Other general purpose machinery	85.9	85.2	85.1	89.8	91.5	94.6	95.1	100.0	103.2	105.6	113.0	109.4	–
3341	Computer and peripheral equipment	14.3	15.8	20.6	27.9	35.9	51.3	72.6	100.0	138.6	190.3	225.4	237.0	–
3342	Communications equipment	47.3	49.3	59.3	62.1	70.1	74.6	84.3	100.0	102.7	134.0	165.5	155.2	–
3343	Audio and video equipment	75.5	82.8	92.1	98.8	108.5	140.0	104.7	100.0	103.1	116.2	123.3	126.3	–
3344	Semiconductors and electronic components	21.4	24.5	29.6	34.1	43.1	63.4	81.8	100.0	125.2	174.5	233.3	231.6	–
3345	Electronic instruments	76.0	80.5	83.1	85.8	88.8	96.8	97.7	100.0	101.3	105.1	114.3	116.1	–
3346	Magnetic media manufacturing and reproduction	86.6	91.2	93.0	96.8	106.1	106.7	103.8	100.0	105.4	106.8	104.0	98.6	–
3351	Electric lighting equipment	87.3	88.5	93.6	90.8	94.5	92.2	95.6	100.0	103.8	102.5	101.9	105.4	–
3352	Household appliances	76.4	76.4	82.4	88.9	95.0	92.7	93.1	100.0	105.1	104.3	117.5	122.6	–
3353	Electrical equipment	73.6	72.7	78.9	85.8	89.0	98.1	100.2	100.0	99.8	98.9	100.6	101.0	–
3359	Other electrical equipment and components	75.3	74.2	81.6	86.8	89.4	92.0	96.0	100.0	105.5	114.8	120.5	113.5	–
3361	Motor vehicles	86.0	82.4	91.2	89.8	90.3	88.6	91.0	100.0	113.3	123.3	110.4	108.7	–
3362	Motor vehicle bodies and trailers	75.8	71.8	88.3	96.3	97.7	97.3	98.4	100.0	102.7	103.1	98.4	99.4	–
3363	Motor vehicle parts	75.7	74.5	82.4	88.5	91.8	92.3	93.1	100.0	104.8	110.4	112.7	114.8	–
3364	Aerospace products and parts	87.7	92.1	94.1	98.2	93.8	93.7	98.1	100.0	118.5	118.0	101.0	114.7	–
3365	Railroad rolling stock	77.2	80.0	81.1	82.3	83.1	82.0	80.9	100.0	102.9	116.0	117.7	124.7	–
3366	Ship and boat building	99.6	92.6	98.5	101.3	99.0	93.1	94.1	100.0	100.3	112.2	120.1	119.8	–
3369	Other transportation equipment	62.6	62.0	88.4	99.8	93.4	93.1	99.8	100.0	110.8	113.3	130.9	146.9	–
3371	Household and institutional furniture	87.6	88.2	92.9	93.8	94.1	97.1	99.5	100.0	102.7	103.7	102.5	106.1	–
3372	Office furniture and fixtures	80.8	78.8	86.2	87.9	83.4	84.3	85.6	100.0	100.1	98.5	100.2	97.1	–
3379	Other furniture-related products	88.1	88.6	88.4	90.5	93.6	94.5	96.7	100.0	107.2	102.5	100.1	105.3	–
3391	Medical equipment and supplies	81.2	83.1	88.1	91.1	90.8	95.0	100.0	100.0	108.9	109.6	114.2	119.0	–
3399	Other miscellaneous manufacturing	90.1	90.6	90.0	92.3	93.0	96.0	99.6	100.0	101.9	105.2	112.9	110.9	–
	Wholesale trade													
42	Wholesale trade	77.8	79.1	86.2	89.5	91.3	93.3	96.2	100.0	104.4	110.9	114.1	117.1	123.6
423	Durable goods	65.7	66.1	75.0	80.5	84.5	88.9	94.0	100.0	105.6	115.3	119.6	120.3	127.7
4231	Motor vehicles and parts	76.6	73.3	82.2	88.0	94.1	93.6	94.9	100.0	104.7	119.8	114.0	114.1	121.7
4232	Furniture and furnishings	82.4	87.2	92.0	95.8	93.3	96.8	97.0	100.0	97.5	100.8	105.5	105.4	101.8
4233	Lumber and construction supplies	115.0	113.2	119.6	113.9	111.9	103.6	103.0	100.0	102.9	104.8	101.7	108.6	119.2
4234	Commercial equipment	33.8	37.3	48.2	56.2	60.5	74.7	88.4	100.0	118.2	141.1	148.9	164.9	189.4
4235	Metals and minerals	101.6	102.6	109.1	111.7	110.1	101.2	102.7	100.0	102.4	96.0	99.2	102.2	102.2
4236	Electric goods	46.8	47.6	51.4	59.1	68.2	79.3	87.8	100.0	105.9	126.2	151.7	148.1	161.2
4237	Hardware and plumbing	88.8	86.5	95.6	94.3	101.3	98.0	99.1	100.0	103.5	107.8	111.1	102.6	107.9
4238	Machinery and supplies	78.9	74.2	79.7	84.3	85.4	89.7	93.9	100.0	104.2	101.4	104.1	102.7	100.2
4239	Miscellaneous durable goods	89.5	96.6	112.1	113.2	106.1	99.2	101.0	100.0	101.8	112.6	116.7	116.1	125.5
424	Nondurable goods	98.4	99.8	103.2	103.0	101.8	99.7	99.2	100.0	102.8	104.1	103.5	106.9	112.6
4241	Paper and paper products	81.0	85.5	96.5	97.2	101.5	99.0	96.5	100.0	100.4	105.5	105.5	109.0	120.2
4242	Druggists' goods	81.8	86.6	91.8	89.3	92.8	95.4	98.3	100.0	99.6	101.7	96.8	101.2	116.0
4243	Apparel and piece goods	103.9	103.3	100.1	97.7	103.8	92.2	99.0	100.0	104.1	103.5	102.7	102.4	111.5
4244	Grocery and related products	96.4	98.2	103.6	105.1	103.3	103.0	99.8	100.0	101.9	103.6	105.2	109.4	111.8
4245	Farm product raw materials	80.6	85.9	85.9	84.0	80.4	87.7	90.6	100.0	100.4	114.2	119.0	120.0	135.4
4246	Chemicals	107.3	106.6	112.5	110.0	110.5	102.1	100.0	100.0	99.3	98.0	95.8	93.6	96.9
4247	Petroleum	97.3	107.0	118.3	119.1	115.8	108.7	105.9	100.0	115.0	112.0	112.5	116.5	126.0
4248	Alcoholic beverages	109.4	111.2	107.4	105.6	105.9	102.5	104.5	100.0	109.7	110.1	111.0	111.6	117.3
4249	Miscellaneous nondurable goods	107.3	98.2	93.9	97.5	94.8	96.2	98.7	100.0	101.7	99.6	106.2	104.2	97.0
425	Electronic markets and agents and brokers	70.7	73.6	81.5	85.9	88.0	91.1	95.7	100.0	104.6	114.4	124.1	131.3	132.6
42511	Business to business electronic markets	70.4	72.6	80.3	84.8	88.3	90.5	95.3	100.0	103.5	121.7	141.3	169.4	205.0
42512	Wholesale trade agents and brokers	70.8	74.0	82.3	86.8	88.4	91.8	96.1	100.0	104.8	110.5	115.7	114.2	109.3
	Retail trade													
44-45	Retail trade	83.2	83.3	86.8	89.4	92.8	94.7	97.7	100.0	104.3	110.3	114.2	117.4	122.7
441	Motor vehicle and parts dealers	89.7	88.3	92.6	94.0	96.9	97.0	98.8	100.0	102.7	106.4	107.2	110.0	109.7
4411	Automobile dealers	92.1	90.8	94.8	96.0	98.0	97.2	98.9	100.0	102.7	106.4	106.6	109.1	106.0
4412	Other motor vehicle dealers	69.0	71.7	78.3	84.1	90.2	91.0	97.7	100.0	105.9	113.0	108.6	112.6	116.4
4413	Auto parts, accessories, and tire stores	85.0	84.0	89.1	90.6	95.4	97.9	98.3	100.0	105.7	110.0	112.0	109.3	115.8
442	Furniture and home furnishings stores	80.7	81.1	88.1	88.3	90.4	94.1	99.4	100.0	101.7	109.6	115.7	118.5	125.1
4421	Furniture stores	82.1	83.5	89.0	89.0	88.9	92.5	97.8	100.0	102.1	108.2	114.8	121.1	128.6
4422	Home furnishings stores	78.5	77.6	86.8	87.2	92.1	95.9	101.3	100.0	101.3	111.4	116.8	115.6	121.4
443	Electronics and appliance stores	46.0	49.2	56.9	65.5	77.6	89.2	95.0	100.0	122.9	152.2	177.7	199.1	240.0
444	Building material and garden supply stores	81.8	80.2	84.0	88.0	93.7	93.7	97.5	100.0	106.7	112.3	113.1	115.8	119.9

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51. Continued—Annual indexes of output per hour for selected NAICS industries, 1990-2002

[1997=100]

NAICS	Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
4441	Building material and supplies dealers	83.2	80.7	84.7	89.1	94.8	94.8	97.6	100.0	107.6	113.7	113.8	115.3	119.8
4442	Lawn and garden equipment and supplies stores	74.5	77.5	80.2	81.5	86.9	87.0	97.1	100.0	101.2	103.5	108.2	119.4	121.2
445	Food and beverage stores	107.1	106.6	106.9	105.4	104.3	102.5	100.3	100.0	99.9	103.7	105.1	107.6	110.3
4451	Grocery stores	106.5	106.6	106.7	105.9	104.9	103.0	100.8	100.0	100.3	104.3	104.9	107.5	110.3
4452	Specialty food stores	122.9	115.0	111.4	107.6	104.5	101.1	95.5	100.0	95.0	99.6	105.6	110.8	114.2
4453	Beer, wine and liquor stores	100.1	100.2	101.0	94.4	92.9	96.2	103.1	100.0	105.8	99.8	111.1	110.4	111.8
446	Health and personal care stores	92.0	91.6	90.7	91.9	91.8	93.0	95.7	100.0	104.1	106.9	111.4	112.7	118.8
447	Gasoline stations	84.8	85.7	88.5	92.8	96.8	99.7	99.4	100.0	105.6	110.6	106.5	109.8	117.5
448	Clothing and clothing accessories stores	69.5	70.5	75.3	78.9	83.3	91.2	97.9	100.0	105.4	112.8	120.3	123.5	129.0
4481	Clothing stores	68.9	71.4	77.1	79.2	81.9	90.1	97.1	100.0	106.7	113.3	120.9	125.2	132.7
4482	Shoe stores	73.7	73.1	78.2	79.2	88.3	93.7	102.4	100.0	97.8	104.9	109.6	115.8	120.0
4483	Jewelry, luggage, and leather goods stores	68.6	64.5	65.0	77.1	85.0	94.1	97.3	100.0	107.0	118.3	128.0	122.5	121.5
451	Sporting goods, hobby, book, and music stores	80.8	85.6	83.8	84.0	87.2	93.0	94.7	100.0	108.7	114.9	121.1	125.4	132.9
4511	Sporting goods and musical instrument stores	77.1	82.8	79.8	80.6	83.9	92.3	92.5	100.0	112.9	120.4	128.3	130.4	137.9
4512	Book, periodical, and music stores	89.0	91.8	92.5	91.6	94.5	94.5	99.3	100.0	101.0	104.7	108.0	116.0	123.8
452	General merchandise stores	75.3	79.0	83.0	88.5	90.6	92.2	96.9	100.0	105.0	113.1	119.9	124.2	130.5
4521	Department stores	84.0	88.3	91.6	95.0	95.1	94.7	98.4	100.0	100.6	104.5	106.3	104.0	104.7
4529	Other general merchandise stores	61.4	64.8	69.7	77.8	82.6	87.6	94.3	100.0	113.4	129.8	145.9	162.1	177.5
453	Miscellaneous store retailers	70.6	68.0	74.2	79.1	87.0	89.5	95.0	100.0	108.3	109.8	111.3	108.4	115.6
4531	Florists	75.1	75.9	85.1	91.4	85.4	83.5	96.1	100.0	101.2	117.3	116.0	108.6	120.7
4532	Office supplies, stationery and gift stores	64.6	66.3	71.5	75.8	87.5	90.9	91.8	100.0	113.0	118.0	124.1	125.1	140.3
4533	Used merchandise stores	84.9	83.1	89.7	88.9	87.3	90.2	97.4	100.0	113.5	109.8	115.7	115.0	121.4
4539	Other miscellaneous store retailers	79.6	69.2	74.7	80.5	89.7	90.5	98.0	100.0	105.0	101.6	99.6	93.2	92.8
454	Nonstore retailers	54.4	55.0	63.4	66.7	73.8	80.9	91.6	100.0	111.3	125.4	142.8	146.9	169.6
4541	Electronic shopping and mail-order houses	43.5	46.7	50.6	58.3	62.9	71.9	84.4	100.0	118.2	141.5	159.8	177.5	209.8
4542	Vending machine operators	97.1	95.4	95.1	92.8	94.1	89.3	96.9	100.0	114.1	118.1	127.1	110.4	113.3
4543	Direct selling establishments	70.0	67.6	82.1	79.7	89.2	94.7	102.2	100.0	96.2	96.3	104.3	98.7	110.2
	Transportation and warehousing													
481	Air transportation	77.5	78.2	81.4	84.7	90.8	95.3	98.8	100.0	97.6	98.2	98.2	91.9	103.2
482111	Line-haul railroads	69.8	75.3	82.3	85.7	88.6	92.0	98.4	100.0	102.1	105.5	114.3	121.9	131.9
48412	General freight trucking, long-distance	88.5	92.4	97.5	95.6	98.1	95.4	95.7	100.0	99.1	102.0	105.5	104.2	109.4
491	U.S. Postal service	96.1	95.8	96.5	99.0	98.5	98.3	96.7	100.0	101.4	102.4	104.9	106.1	107.0
	Information													
5111	Newspaper, book, and directory publishers	97.4	96.1	95.8	95.3	93.0	93.5	92.7	100.0	104.5	108.5	110.1	106.4	108.1
5112	Software publishers	28.6	30.6	42.7	51.7	64.6	73.0	88.0	100.0	115.9	113.0	103.9	101.9	106.7
51213	Motion picture and video exhibition	109.4	108.9	104.1	104.6	103.4	99.9	100.0	100.0	99.9	102.0	106.5	104.7	104.4
5151	Radio and television broadcasting	96.1	97.8	102.8	101.4	106.0	106.1	104.1	100.0	99.1	99.4	98.4	94.3	100.4
5152	Cable and other subscription programming	98.8	94.3	96.0	93.6	92.0	94.4	93.7	100.0	129.3	133.2	135.7	125.3	131.4
5171	Wired telecommunications carriers	64.8	68.4	74.5	79.7	85.1	90.6	97.5	100.0	105.5	112.7	119.9	121.0	130.6
5172	Wireless telecommunications carriers	76.3	73.8	85.6	94.8	97.1	98.3	103.0	100.0	114.2	134.3	139.0	172.7	192.0
5175	Cable and other program distribution	99.1	94.3	95.9	93.5	91.9	94.2	93.5	100.0	95.7	94.5	90.4	87.6	93.5
	Finance and insurance													
52211	Commercial banking	80.5	83.2	83.3	90.3	92.9	96.0	99.3	100.0	98.0	101.5	104.2	101.6	103.8
	Real estate and rental and leasing													
532111	Passenger car rental	89.8	97.8	104.4	106.1	107.9	101.1	108.9	100.0	101.2	113.1	112.0	112.1	113.3
53212	Truck, trailer and RV rental and leasing	70.7	71.7	69.5	75.8	82.0	90.3	96.7	100.0	93.7	97.8	95.9	93.6	91.4
	Professional, scientific, and technical services													
541213	Tax preparation services	92.4	84.7	99.5	119.1	119.9	96.2	92.1	100.0	105.1	99.2	91.8	78.2	92.1
54181	Advertising agencies	105.0	99.7	111.9	111.3	106.8	101.4	102.1	100.0	95.8	110.1	116.6	116.7	123.9
	Accomodation and food services													
7211	Traveler accommodations	82.9	85.4	92.9	93.0	97.0	99.2	100.1	100.0	100.0	103.6	107.7	102.0	104.1
722	Food services and drinking places	102.9	102.3	101.7	102.3	100.8	100.6	99.2	100.0	101.2	101.1	103.5	103.7	104.9
7221	Full-service restaurants	99.1	98.3	97.5	97.7	97.8	96.6	96.3	100.0	100.0	99.2	100.8	100.8	102.0
7222	Limited-service eating places	103.3	103.3	102.7	105.6	103.6	104.7	102.2	100.0	102.4	102.5	105.1	106.6	107.1
7223	Special food services	107.2	106.9	106.4	103.8	101.1	99.3	97.6	100.0	102.1	106.0	111.7	108.4	108.1
7224	Drinking places, alcoholic beverages	125.7	121.2	121.5	112.7	102.6	104.4	102.4	100.0	100.0	99.4	100.4	98.2	107.2
	Other services (except public administration)													
8111	Automotive repair and maintenance	92.8	86.5	90.0	91.2	96.7	102.9	98.9	100.0	105.0	106.9	108.6	109.3	103.7
81211	Hair, nail and skin care services	81.6	79.8	85.6	84.3	88.7	92.4	97.1	100.0	102.7	103.6	103.0	109.5	104.2
81221	Funeral homes and funeral services	96.1	94.3	104.7	100.4	103.6	100.4	97.9	100.0	103.8	100.4	94.5	93.9	90.9
8123	Drycleaning and laundry services	95.6	93.2	94.9	93.8	95.9	98.8	101.6	100.0	105.0	109.5	113.7	121.1	120.2
81292	Photofinishing	117.3	115.6	116.2	123.6	124.9	114.7	103.2	100.0	99.4	106.9	107.6	115.0	133.6

NOTE: Dash indicates data are not available.

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52. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted

Country	Annual average		2003				2004				2005
	2003	2004	I	II	III	IV	I	II	III	IV	I
United States	6.0	5.5	5.8	6.1	6.1	5.9	5.6	5.6	5.5	5.4	5.3
Canada	6.9	6.4	6.7	6.9	7.1	6.8	6.6	6.5	6.4	6.3	6.2
Australia	6.1	5.5	6.2	6.2	6.0	5.8	5.7	5.6	5.6	5.2	5.1
Japan	5.3	4.8	5.4	5.5	5.2	5.1	4.9	4.7	4.8	4.6	4.6
France	9.6	9.8	9.3	9.5	9.7	9.8	9.7	9.8	9.8	9.8	9.9
Germany	9.7	9.8	9.6	9.8	9.8	9.7	9.7	9.8	10.0	10.1	11.0
Italy	8.5	8.1	8.7	8.4	8.6	8.4	8.3	8.1	8.1	8.1	–
Sweden	5.8	6.6	5.3	5.5	5.8	6.3	6.7	6.8	6.6	6.4	6.3
United Kingdom	5.0	4.8	5.1	5.0	5.0	4.9	4.8	4.8	4.7	4.7	–

NOTE: Dash indicates data not available. Quarterly figures for Japan, France, Germany, Italy, and Sweden are calculated by applying annual adjustment factors to current published data, and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures. See "Notes on the data" for information on breaks in series.

for further qualifications and historical data, see *Comparative Civilian Labor Force Statistics, Ten Countries, 1960-2004* (Bureau of Labor Statistics, May 13, 2005), on the Internet at **http://www.bls.gov/fls/home.htm**.

Monthly and quarterly unemployment rates, updated monthly, are also on this site.

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53. Annual data: employment status of the working-age population, approximating U.S. concepts, 10 countries

[Numbers in thousands]

Employment status and country	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Civilian labor force												
United States	129,200	131,056	132,304	133,943	136,297	137,673	139,368	142,583	143,734	144,863	146,510	147,401
Canada	14,233	14,336	14,439	14,604	14,863	15,115	15,389	15,632	15,892	16,367	16,729	16,956
Australia	8,613	8,770	8,995	9,115	9,204	9,339	9,414	9,590	9,752	9,907	10,092	10,244
Japan	65,470	65,780	65,990	66,450	67,200	67,240	67,090	66,990	66,860	66,240	66,010	65,760
France	24,490	24,676	24,743	24,985	25,109	25,434	25,764	26,078	26,354	26,686	26,870	–
Germany	39,102	39,074	38,980	39,142	39,415	39,754	39,375	39,301	39,456	39,499	39,591	39,698
Italy	22,771	22,592	22,574	22,674	22,749	23,000	23,172	23,357	23,520	23,728	24,021	24,065
Netherlands	7,014	7,152	7,208	7,301	7,536	7,617	7,848	8,149	8,338	8,285	8,353	8,457
Sweden	4,444	4,418	4,460	4,459	4,418	4,402	4,430	4,489	4,530	4,544	4,567	4,576
United Kingdom	28,094	28,124	28,135	28,243	28,406	28,478	28,782	28,957	29,090	29,340	29,562	29,748
Participation rate[1]												
United States	66.3	66.6	66.6	66.8	67.1	67.1	67.1	67.1	66.8	66.6	66.2	66.0
Canada	65.5	65.1	64.8	64.6	64.9	65.3	65.7	65.8	65.9	66.7	67.3	67.3
Australia	63.5	63.9	64.5	64.6	64.3	64.3	64.0	64.4	64.4	64.4	64.6	64.7
Japan	63.3	63.1	62.9	63.0	63.2	62.8	62.4	62.0	61.6	60.8	60.3	60.0
France	55.4	55.6	55.4	55.7	55.6	55.9	56.3	56.6	56.9	57.2	57.4	–
Germany	57.8	57.4	57.1	57.1	57.3	57.7	56.9	56.7	56.7	56.5	56.4	–
Italy	48.3	47.6	47.3	47.3	47.3	47.6	47.9	48.1	48.2	48.5	49.1	49.1
Netherlands	57.9	58.6	58.8	59.2	60.8	61.1	62.6	64.5	65.6	64.7	64.9	65.5
Sweden	64.5	63.7	64.1	64.0	63.3	62.8	62.8	63.8	63.7	64.0	64.0	63.7
United Kingdom	62.6	62.4	62.4	62.4	62.5	62.5	62.8	62.9	62.7	62.9	63.0	63.0
Employed												
United States	120,259	123,060	124,900	126,708	129,558	131,463	133,488	136,891	136,933	136,485	137,736	139,252
Canada	12,694	12,960	13,185	13,309	13,607	13,946	14,314	14,676	14,866	15,221	15,579	15,864
Australia	7,699	7,942	8,256	8,364	8,444	8,618	8,762	8,989	9,091	9,271	9,481	9,677
Japan	63,820	63,860	63,900	64,200	64,900	64,450	63,920	63,790	63,460	62,650	62,510	62,630
France	21,714	21,750	21,956	22,039	22,169	22,597	23,053	23,693	24,128	24,293	24,293	–
Germany	35,989	35,756	35,780	35,637	35,508	36,061	36,042	36,236	36,346	36,061	35,754	35,796
Italy	20,543	20,171	20,030	20,120	20,165	20,366	20,613	20,969	21,356	21,665	21,973	22,105
Netherlands	6,572	6,664	6,730	6,858	7,163	7,321	7,595	7,912	8,130	8,059	8,035	8,061
Sweden	4,028	3,992	4,056	4,019	3,973	4,034	4,117	4,229	4,303	4,310	4,303	4,276
United Kingdom	25,165	25,691	25,696	25,945	26,418	26,691	27,056	27,373	27,604	27,817	28,079	28,334
Employment-population ratio[2]												
United States	61.7	62.5	62.9	63.2	63.8	64.1	64.3	64.4	63.7	62.7	62.3	62.3
Canada	58.4	58.9	59.2	59.0	59.5	60.3	61.2	61.9	61.9	62.4	63.0	63.4
Australia	56.8	57.8	59.2	59.3	59.0	59.3	59.6	60.3	60.1	60.3	60.7	61.2
Japan	61.7	61.3	60.9	60.9	61.0	60.2	59.4	59.0	58.4	57.5	57.1	57.1
France	49.2	49.0	49.2	49.1	49.1	49.7	50.4	51.5	52.1	52.1	51.9	–
Germany	53.2	52.6	52.4	52.0	51.6	52.3	52.1	52.2	52.2	51.6	51.0	–
Italy	43.6	42.5	42.0	42.0	41.9	42.2	42.6	43.2	43.8	44.3	44.9	45.1
Netherlands	54.3	54.6	54.9	55.6	57.8	58.7	60.6	62.7	63.9	62.9	62.4	62.4
Sweden	58.5	57.6	58.3	57.7	56.9	57.6	58.4	60.1	60.5	60.7	60.3	59.5
United Kingdom	56.0	57.0	57.0	57.3	58.2	58.5	59.1	59.4	59.5	59.6	59.8	60.0
Unemployed												
United States	8,940	7,996	7,404	7,236	6,739	6,210	5,880	5,692	6,801	8,378	8,774	8,149
Canada	1,538	1,376	1,254	1,295	1,256	1,169	1,075	956	1,026	1,146	1,150	1,092
Australia	914	829	739	751	759	721	652	602	661	636	611	567
Japan	1,660	1,920	2,100	2,250	2,300	2,790	3,170	3,200	3,400	3,590	3,500	3,130
France	2,776	2,926	2,787	2,946	2,940	2,837	2,711	2,385	2,226	2,393	2,577	2,630
Germany	3,113	3,318	3,200	3,505	3,907	3,693	3,333	3,065	3,109	3,438	3,838	3,899
Italy	2,227	2,421	2,544	2,555	2,584	2,634	2,559	2,388	2,164	2,062	2,048	1,960
Netherlands	442	489	478	443	374	296	253	237	208	227	318	396
Sweden	416	426	404	440	445	368	313	260	227	234	264	300
United Kingdom	2,930	2,433	2,439	2,298	1,987	1,788	1,726	1,584	1,486	1,524	1,484	1,414
Unemployment rate												
United States	6.9	6.1	5.6	5.4	4.9	4.5	4.2	4.0	4.7	5.8	6.0	5.5
Canada	10.8	9.6	8.7	8.9	8.4	7.7	7.0	6.1	6.5	7.0	6.9	6.4
Australia	10.6	9.4	8.2	8.2	8.3	7.7	6.9	6.3	6.8	6.4	6.1	5.5
Japan	2.5	2.9	3.2	3.4	3.4	4.1	4.7	4.8	5.1	5.4	5.3	4.8
France	11.3	11.9	11.3	11.8	11.7	11.2	10.5	9.1	8.4	9.0	9.6	9.8
Germany	8.0	8.5	8.2	9.0	9.9	9.3	8.5	7.8	7.9	8.7	9.7	9.8
Italy	9.8	10.7	11.3	11.3	11.4	11.5	11.0	10.2	9.2	8.7	8.5	8.1
Netherlands	6.3	6.8	6.6	6.1	5.0	3.9	3.2	2.9	2.5	2.7	3.8	4.7
Sweden	9.4	9.6	9.1	9.9	10.1	8.4	7.1	5.8	5.0	5.1	5.8	6.6
United Kingdom	10.4	8.7	8.7	8.1	7.0	6.3	6.0	5.5	5.1	5.2	5.0	4.8

[1] Labor force as a percent of the working-age population.

[2] Employment as a percent of the working-age population.

NOTE: Dash indicates data not available. See "Notes on the data" for for information on breaks in series.

For further qualifications and historical data, see *Comparative Civilian Labor Force Statistics, Ten Countries, 1960–2004* (Bureau of Labor Statistics, May 13, 2005), on the Internet at **http://www.bls.gov/fls/home.htm.**

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54. Annual indexes of manufacturing productivity and related measures, 15 economies

[1992 = 100]

Measure and economy	1960	1970	1980	1990	1991	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Output per hour																
United States	–	0.0	70.5	96.9	97.9	102.1	107.3	113.8	117.0	121.3	126.5	132.8	143.5	145.2	160.0	171.0
Canada	37.8	54.9	72.9	93.4	95.3	105.8	110.8	112.4	109.7	113.5	115.5	122.1	129.3	127.0	130.5	132.1
Australia	–	–	69.5	91.6	96.4	106.1	104.9	105.8	113.6	115.2	118.5	119.9	128.0	132.4	136.2	140.7
Japan	13.9	37.7	63.6	94.4	99.0	101.7	103.3	111.0	116.1	121.0	121.2	126.7	135.9	135.9	139.9	146.2
Korea	–	–	–	81.5	91.6	108.5	118.2	129.3	142.3	160.4	178.8	198.9	215.8	214.3	235.2	256.4
Taiwan	–	–	47.6	88.8	96.5	102.8	106.7	115.1	123.1	129.3	135.9	143.4	151.0	160.8	170.9	177.2
Belgium	18.0	32.9	65.4	96.8	99.1	102.5	108.4	113.2	116.3	125.5	126.9	125.5	130.8	132.6	141.7	146.2
Denmark	25.2	46.3	83.2	98.4	100.3	100.2	112.6	112.5	109.8	118.0	117.4	123.1	126.6	127.2	131.3	136.9
France	19.9	39.0	61.6	93.9	97.0	101.0	108.9	114.4	114.7	121.7	127.9	133.0	142.5	148.0	155.1	158.0
Germany	29.2	52.0	77.2	99.0	98.3	101.8	109.6	112.3	114.7	120.4	122.0	121.4	127.0	127.8	131.0	134.4
Italy	24.6	46.2	78.6	96.6	96.1	101.2	104.8	107.9	108.3	110.3	110.8	110.6	113.5	114.0	112.1	110.9
Netherlands	18.8	38.5	69.1	98.7	99.0	102.0	113.1	117.3	119.3	121.4	124.1	127.0	132.7	132.5	135.4	–
Norway	37.6	59.1	77.9	98.1	98.2	99.6	99.6	100.7	102.5	102.0	99.9	103.6	106.6	109.8	111.7	113.5
Sweden	27.3	52.2	73.1	94.6	95.5	107.3	117.8	124.5	129.5	141.0	149.5	162.7	175.5	170.3	185.6	196.5
United Kingdom	30.0	43.2	54.3	89.2	93.9	103.8	108.0	106.2	105.4	106.9	108.4	113.6	121.0	125.1	127.7	134.8
Output																
United States	–	–	75.8	101.6	98.3	103.5	111.1	118.4	121.3	127.9	133.1	138.9	147.6	139.6	142.9	145.4
Canada	33.4	58.9	83.6	106.0	99.0	105.9	114.1	119.6	119.6	127.7	133.9	144.9	159.2	153.6	158.0	157.3
Australia	–	–	89.8	104.1	100.7	103.8	109.1	108.7	112.6	115.1	118.6	118.3	123.8	123.8	128.7	130.2
Japan	10.8	39.4	60.8	97.1	102.0	96.3	94.9	98.9	103.0	106.5	100.2	101.9	109.2	105.5	103.4	106.7
Korea	–	7.0	29.9	86.7	95.0	105.4	116.8	129.9	138.3	145.0	133.5	162.6	190.2	194.3	209.1	219.1
Taiwan	–	12.7	44.0	90.0	96.1	102.4	108.5	114.9	120.3	128.3	132.6	141.5	151.8	143.1	152.1	160.9
Belgium	30.7	57.6	78.2	101.0	100.7	97.0	101.4	104.2	105.9	112.7	114.4	114.4	119.9	120.4	121.6	120.9
Denmark	42.0	72.7	94.3	101.7	100.7	97.0	107.3	112.6	107.7	115.9	116.7	117.9	121.9	121.6	120.8	121.4
France	27.9	57.7	81.6	99.1	99.8	95.7	100.3	104.9	104.6	109.7	115.0	118.7	124.3	128.0	129.1	128.5
Germany	41.5	70.9	85.3	99.1	102.3	92.4	95.1	95.2	92.5	95.7	97.7	95.8	100.1	99.9	99.6	99.8
Italy	23.0	48.1	84.4	99.4	99.3	96.5	102.4	107.2	105.4	108.8	110.7	110.3	113.6	113.0	111.7	110.2
Netherlands	31.9	59.8	76.9	99.0	99.8	97.7	104.5	108.2	108.9	111.6	114.9	117.6	122.8	121.9	121.0	117.6
Norway	57.7	91.0	104.9	101.4	99.0	101.7	104.6	107.3	110.3	114.2	113.7	113.6	112.8	112.3	111.5	107.3
Sweden	45.9	80.7	90.7	110.1	104.1	101.9	117.0	131.9	136.4	146.5	158.3	172.5	188.3	183.1	190.6	194.4
United Kingdom	67.5	90.2	87.2	105.3	100.1	101.5	106.2	107.8	108.6	110.7	111.3	112.1	115.0	113.4	109.9	110.3
Total hours																
United States	92.1	104.4	107.5	104.8	100.4	101.4	103.6	104.0	103.6	105.4	105.2	104.6	102.9	96.2	89.3	85.0
Canada	88.3	107.1	114.6	113.5	103.9	100.1	103.0	106.4	109.0	112.4	115.9	118.7	123.1	120.9	121.1	119.1
Australia	–	–	129.2	113.6	104.4	97.8	103.9	102.8	99.1	100.0	100.1	98.7	96.7	93.5	94.5	92.5
Japan	77.8	104.3	95.5	102.9	103.1	94.7	91.9	89.1	88.7	88.0	82.7	80.4	80.3	77.7	74.0	73.0
Korea	–	–	–	106.5	103.7	97.1	98.8	100.4	97.2	90.4	74.7	81.8	88.1	90.7	88.9	85.4
Taiwan	–	–	92.4	101.4	99.6	99.6	101.7	99.8	97.7	99.2	97.6	98.7	100.5	89.0	89.0	90.8
Belgium	170.7	174.7	119.7	104.3	101.5	94.7	93.6	92.0	91.0	89.8	90.2	91.2	91.7	90.8	85.8	82.7
Denmark	166.7	157.1	113.4	103.3	100.5	96.7	95.2	100.1	98.1	98.2	99.4	95.8	96.3	95.6	92.0	88.7
France	140.3	147.8	132.5	105.6	102.9	94.7	92.1	91.7	91.2	90.2	89.9	89.2	87.2	86.5	83.2	81.3
Germany	142.3	136.3	110.5	100.1	104.1	90.8	86.8	84.8	80.6	79.5	80.1	78.9	78.8	78.2	76.1	74.3
Italy	93.5	104.0	107.4	102.9	103.3	95.4	97.7	99.4	97.3	98.6	99.9	99.8	100.1	99.1	99.7	99.3
Netherlands	169.8	155.5	111.2	100.3	100.8	95.8	92.4	92.3	91.2	91.9	92.6	92.6	92.5	92.0	89.4	–
Norway	153.6	153.9	134.7	103.4	100.8	102.1	105.0	106.6	107.6	112.0	113.7	109.6	105.9	102.3	99.8	94.5
Sweden	168.3	154.7	124.0	116.4	109.0	94.9	99.4	105.9	105.3	103.9	105.9	106.0	107.3	107.5	102.7	98.9
United Kingdom	224.6	208.8	160.5	118.1	106.6	97.7	98.4	101.5	103.1	103.5	102.7	98.7	95.0	90.7	86.0	81.9
Hourly compensation (national currency basis)																
United States	14.9	23.7	55.6	90.8	95.6	102.7	105.6	107.9	109.4	111.5	117.4	122.0	133.2	136.3	145.4	157.8
Canada	10.0	17.1	47.5	88.3	95.0	102.0	103.7	106.0	107.0	109.3	111.7	115.8	119.6	123.7	126.8	131.4
Australia	–	–	–	86.3	94.0	105.9	104.3	113.2	122.8	124.6	128.2	133.0	140.0	149.5	154.7	–
Japan	4.3	16.4	58.6	90.6	96.5	102.7	104.7	108.3	109.1	112.6	115.4	114.8	113.7	114.6	122.8	123.8
Korea	–	–	–	68.6	86.2	114.3	129.8	158.3	184.3	200.3	218.2	219.4	234.2	241.7	266.1	290.9
Taiwan	–	–	29.6	85.2	93.5	105.9	111.1	120.2	128.2	132.4	140.3	144.3	146.6	150.0	145.8	146.7
Belgium	5.4	13.7	52.5	90.1	97.3	104.8	106.1	109.2	111.1	115.2	117.0	118.5	120.6	127.2	136.5	–
Denmark	3.9	11.1	45.1	93.5	97.9	102.4	106.0	108.1	112.8	116.6	119.6	127.3	130.2	136.5	143.2	150.0
France	4.3	10.5	41.2	90.9	96.4	103.1	106.5	110.4	112.2	111.8	112.7	116.6	122.8	128.3	135.2	139.1
Germany	8.1	20.7	53.6	89.4	91.5	106.4	111.8	117.6	123.3	125.7	127.6	130.6	137.4	142.0	145.5	148.9
Italy	1.8	5.3	30.4	87.6	94.2	105.7	106.8	111.3	119.0	123.0	122.2	124.2	127.8	132.5	135.7	140.0
Netherlands	6.2	19.4	60.5	89.8	94.8	104.5	109.0	112.1	114.4	117.2	122.0	126.0	132.0	138.2	147.3	–
Norway	4.7	11.8	39.0	92.3	97.5	101.5	104.4	109.2	113.6	118.7	125.7	133.0	140.5	148.9	157.9	164.6
Sweden	4.1	10.7	37.3	87.8	95.5	97.4	99.8	106.8	115.2	121.0	125.6	130.3	136.8	143.8	148.8	154.3
United Kingdom	2.9	6.1	32.0	82.9	93.8	104.5	107.3	108.8	111.4	115.7	123.0	129.9	137.6	144.3	152.2	160.3

See notes at end of table.

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54. Continued— Annual indexes of manufacturing productivity and related measures, 15 economies

Measure and economy	1960	1970	1980	1990	1991	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Unit labor costs																
(national currency basis)																
United States	–	–	78.8	93.7	97.6	100.6	98.5	94.8	93.5	91.9	92.8	91.9	92.8	93.9	90.9	92.3
Canada	26.4	31.1	65.2	94.6	99.6	96.4	93.6	94.3	97.5	96.2	96.7	94.9	92.5	97.4	97.2	99.4
Australia	–	–	–	94.2	97.5	99.8	99.4	107.0	108.1	108.2	108.2	110.9	109.4	112.9	113.5	–
Japan	31.1	43.6	92.1	95.9	97.5	101.0	101.4	97.5	94.0	93.0	95.2	90.6	83.6	84.4	87.8	84.7
Korea	–	–	–	84.2	94.1	105.4	109.8	122.4	129.6	124.9	122.0	110.3	108.5	112.8	113.1	113.5
Taiwan	–	23.8	62.2	95.9	96.8	103.0	104.1	104.5	104.1	102.3	103.2	100.7	97.1	93.3	85.3	82.7
Belgium	30.1	41.7	80.3	93.0	98.1	102.3	97.9	96.4	95.5	91.8	92.2	94.4	92.2	95.9	96.4	–
Denmark	15.3	23.9	54.2	95.0	97.6	102.2	94.2	96.1	102.8	98.8	101.9	103.4	102.8	107.3	109.0	109.6
France	21.7	26.8	67.0	96.8	99.3	102.0	97.8	96.5	97.8	91.9	88.1	87.6	86.2	86.6	87.2	88.0
Germany	27.8	39.8	69.4	90.3	93.1	104.5	102.0	104.7	107.5	104.5	104.6	107.6	108.1	111.2	111.1	110.8
Italy	7.2	11.4	38.7	90.7	98.0	104.5	101.9	103.2	109.8	111.4	110.3	112.3	112.6	116.2	121.1	126.2
Netherlands	32.9	50.4	87.6	91.1	95.7	102.4	96.4	95.6	95.9	96.5	98.3	99.1	99.5	104.3	108.8	112.6
Norway	12.6	20.0	50.0	94.2	99.2	101.9	104.8	108.4	110.8	116.4	125.7	128.4	131.9	135.6	141.3	144.9
Sweden	15.0	20.6	51.0	92.9	100.0	90.8	84.7	85.8	89.0	85.8	84.0	80.1	77.9	84.4	80.2	78.6
United Kingdom	9.8	14.1	59.0	93.0	100.0	100.7	99.4	102.5	105.7	108.2	113.5	114.3	113.7	115.4	119.2	118.9
Unit labor costs																
(U.S. dollar basis)																
United States	–	–	78.8	93.7	97.6	100.6	98.5	94.8	93.5	91.9	92.8	91.9	92.8	93.9	90.9	92.3
Canada	32.9	36.0	67.4	98.0	105.1	90.3	82.8	83.0	86.4	84.0	78.8	77.2	75.2	76.0	74.8	85.8
Australia	–	–	–	100.1	103.3	92.3	98.9	107.8	115.1	109.4	92.6	97.3	86.5	79.4	84.0	–
Japan	11.0	15.4	51.5	83.9	91.8	115.3	125.8	131.6	109.5	97.4	92.2	101.0	98.4	88.0	88.9	92.6
Korea	–	–	–	93.0	100.3	102.6	106.8	124.3	126.3	103.4	68.4	72.7	75.3	68.5	71.0	74.7
Taiwan	–	14.9	43.4	89.7	91.1	98.1	99.0	99.2	95.4	89.5	77.4	78.3	78.1	69.4	62.1	60.5
Belgium	19.4	27.0	88.3	89.5	92.3	95.1	94.2	105.2	99.1	82.4	81.6	80.2	67.8	68.4	72.6	–
Denmark	13.4	19.3	58.1	92.7	92.0	95.1	89.4	103.6	107.0	90.2	91.7	89.3	76.7	77.8	83.5	100.6
France	23.4	25.7	83.9	94.1	93.1	95.3	93.4	102.5	101.2	83.3	79.1	75.3	64.2	62.6	66.5	80.4
Germany	10.4	17.1	59.6	87.3	87.5	98.7	98.2	114.2	111.6	94.0	92.9	91.5	79.7	79.5	83.9	100.1
Italy	14.3	22.3	55.7	93.3	97.3	81.8	77.9	78.0	87.7	80.6	78.2	76.2	66.2	66.2	72.9	90.9
Netherlands	15.3	24.5	77.5	87.9	90.0	96.9	93.2	104.8	100.0	87.0	87.2	84.3	73.3	74.5	82.1	101.7
Norway	11.0	17.4	62.9	93.6	95.0	89.2	92.3	106.4	106.6	102.1	103.5	102.2	93.0	93.7	110.0	127.2
Sweden	16.9	23.1	70.2	91.3	96.3	67.8	64.0	70.0	77.3	65.4	61.5	56.4	49.5	47.6	48.1	56.6
United Kingdom	15.6	19.1	77.6	93.9	100.0	85.6	86.2	91.6	93.4	100.4	106.5	104.7	97.6	94.0	101.4	110.0

NOTE: Data for Germany for years before 1991 are for the former West Germany. Data for 1991 onward are for unified Germany. Dash indicates data not available

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55. Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]												
	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]	1997[4]	1998[4]	1999[4]	2000[4]	2001[4]
PRIVATE SECTOR[5]													
Total cases	8.6	8.8	8.4	8.9	8.5	8.4	8.1	7.4	7.1	6.7	6.3	6.1	5.7
Lost workday cases	4.0	4.1	3.9	3.9	3.8	3.8	3.6	3.4	3.3	3.1	3.0	3.0	2.8
Lost workdays	78.7	84.0	86.5	93.8	–	–	–	–	–	–	–	–	–
Agriculture, forestry, and fishing[5]													
Total cases	10.9	11.6	10.8	11.6	11.2	10.0	9.7	8.7	8.4	7.9	7.3	7.1	7.3
Lost workday cases	5.7	5.9	5.4	5.4	5.0	4.7	4.3	3.9	4.1	3.9	3.4	3.6	3.6
Lost workdays	100.9	112.2	108.3	126.9	–	–	–	–	–	–	–	–	–
Mining													
Total cases	8.5	8.3	7.4	7.3	6.8	6.3	6.2	5.4	5.9	4.9	4.4	4.7	4.0
Lost workday cases	4.8	5.0	4.5	4.1	3.9	3.9	3.9	3.2	3.7	2.9	2.7	3.0	2.4
Lost workdays	137.2	119.5	129.6	204.7	–	–	–	–	–	–	–	–	–
Construction													
Total cases	14.3	14.2	13.0	13.1	12.2	11.8	10.6	9.9	9.5	8.8	8.6	8.3	7.9
Lost workday cases	6.8	6.7	6.1	5.8	5.5	5.5	4.9	4.5	4.4	4.0	4.2	4.1	4.0
Lost workdays	143.3	147.9	148.1	161.9	–	–	–	–	–	–	–	–	–
General building contractors:													
Total cases	13.9	13.4	12.0	12.2	11.5	10.9	9.8	9.0	8.5	8.4	8.0	7.8	6.9
Lost workday cases	6.5	6.4	5.5	5.4	5.1	5.1	4.4	4.0	3.7	3.9	3.7	3.9	3.5
Lost workdays	137.3	137.6	132.0	142.7	–	–	–	–	–	–	–	–	–
Heavy construction, except building:													
Total cases	13.8	13.8	12.8	12.1	11.1	10.2	9.9	9.0	8.7	8.2	7.8	7.6	7.8
Lost workday cases	6.5	6.3	6.0	5.4	5.1	5.0	4.8	4.3	4.3	4.1	3.8	3.7	4.0
Lost workdays	147.1	144.6	160.1	165.8	–	–	–	–	–	–	–	–	–
Special trades contractors:													
Total cases	14.6	14.7	13.5	13.8	12.8	12.5	11.1	10.4	10.0	9.1	8.9	8.6	8.2
Lost workday cases	6.9	6.9	6.3	6.1	5.8	5.8	5.0	4.8	4.7	4.1	4.4	4.3	4.1
Lost workdays	144.9	153.1	151.3	168.3	–	–	–	–	–	–	–	–	–
Manufacturing													
Total cases	13.1	13.2	12.7	12.5	12.1	12.2	11.6	10.6	10.3	9.7	9.2	9.0	8.1
Lost workday cases	5.8	5.8	5.6	5.4	5.3	5.5	5.3	4.9	4.8	4.7	4.6	4.5	4.1
Lost workdays	113.0	120.7	121.5	124.6	–	–	–	–	–	–	–	–	–
Durable goods:													
Total cases	14.1	14.2	13.6	13.4	13.1	13.5	12.8	11.6	11.3	10.7	10.1	–	8.8
Lost workday cases	6.0	6.0	5.7	5.5	5.4	5.7	5.6	5.1	5.1	5.0	4.8	–	4.3
Lost workdays	116.5	123.3	122.9	126.7	–	–	–	–	–	–	–	–	–
Lumber and wood products:													
Total cases	18.4	18.1	16.8	16.3	15.9	15.7	14.9	14.2	13.5	13.2	13.0	12.1	10.6
Lost workday cases	9.4	8.8	8.3	7.6	7.6	7.7	7.0	6.8	6.5	6.8	6.7	6.1	5.5
Lost workdays	177.5	172.5	172.0	165.8	–	–	–	–	–	–	–	–	–
Furniture and fixtures:													
Total cases	16.1	16.9	15.9	14.8	14.6	15.0	13.9	12.2	12.0	11.4	11.5	11.2	11.0
Lost workday cases	7.2	7.8	7.2	6.6	6.5	7.0	6.4	5.4	5.8	5.7	5.9	5.9	5.7
Lost workdays	–	–	–	128.4	–	–	–	–	–	–	–	–	–
Stone, clay, and glass products:													
Total cases	15.5	15.4	14.8	13.6	13.8	13.2	12.3	12.4	11.8	11.8	10.7	10.4	10.1
Lost workday cases	7.4	7.3	6.8	6.1	6.3	6.5	5.7	6.0	5.7	6.0	5.4	5.5	5.1
Lost workdays	149.8	160.5	156.0	152.2	–	–	–	–	–	–	–	–	–
Primary metal industries:													
Total cases	18.7	19.0	17.7	17.5	17.0	16.8	16.5	15.0	15.0	14.0	12.9	12.6	10.7
Lost workday cases	8.1	8.1	7.4	7.1	7.3	7.2	7.2	6.8	7.2	7.0	6.3	6.3	5.3
Lost workdays	168.3	180.2	169.1	175.5	–	–	–	–	–	–	–	–	11.1
Fabricated metal products:													
Total cases	18.5	18.7	17.4	16.8	16.2	16.4	15.8	14.4	14.2	13.9	12.6	11.9	11.1
Lost workday cases	7.9	7.9	7.1	6.6	6.7	6.7	6.9	6.2	6.4	6.5	6.0	5.5	5.3
Lost workdays	147.6	155.7	146.6	144.0	–	–	–	–	–	–	–	–	–
Industrial machinery and equipment:													
Total cases	12.1	12.0	11.2	11.1	11.1	11.6	11.2	9.9	10.0	9.5	8.5	8.2	11.0
Lost workday cases	4.8	4.7	4.4	4.2	4.2	4.4	4.4	4.0	4.1	4.0	3.7	3.6	6.0
Lost workdays	86.8	88.9	86.6	87.7	–	–	–	–	–	–	–	–	–
Electronic and other electrical equipment:													
Total cases	9.1	9.1	8.6	8.4	8.3	8.3	7.6	6.8	6.6	5.9	5.7	5.7	5.0
Lost workday cases	3.9	3.8	3.7	3.6	3.5	3.6	3.3	3.1	3.1	2.8	2.8	2.9	2.5
Lost workdays	77.5	79.4	83.0	81.2	–	–	–	–	–	–	–	–	–
Transportation equipment:													
Total cases	17.7	17.8	18.3	18.7	18.5	19.6	18.6	16.3	15.4	14.6	13.7	13.7	12.6
Lost workday cases	6.8	6.9	7.0	7.1	7.1	7.8	7.9	7.0	6.6	6.6	6.4	6.3	6.0
Lost workdays	138.6	153.7	166.1	186.6	–	–	–	–	–	–	–	–	–
Instruments and related products:													
Total cases	5.6	5.9	6.0	5.9	5.6	5.9	5.3	5.1	4.8	4.0	4.0	4.5	4.0
Lost workday cases	2.5	2.7	2.7	2.7	2.5	2.7	2.4	2.3	2.3	1.9	1.8	2.2	2.0
Lost workdays	55.4	57.8	64.4	65.3	–	–	–	–	–	–	–	–	–
Miscellaneous manufacturing industries:													
Total cases	11.1	11.3	11.3	10.7	10.0	9.9	9.1	9.5	8.9	8.1	8.4	7.2	6.4
Lost workday cases	5.1	5.1	5.1	5.0	4.6	4.5	4.3	4.4	4.2	3.9	4.0	3.6	3.2
Lost workdays	97.6	113.1	104.0	108.2	–	–	–	–	–	–	–	–	–

See footnotes at end of table.

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55. Continued—Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 workers[3]												
	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]	1997[4]	1998[4]	1999[4]	2000[4]	2001[4]
Nondurable goods:													
Total cases	11.6	11.7	11.5	11.3	10.7	10.5	9.9	9.2	8.8	8.2	7.8	7.8	6.8
Lost workday cases	5.5	5.6	5.5	5.3	5.0	5.1	4.9	4.6	4.4	4.3	4.2	4.2	3.8
Lost workdays	107.8	116.9	119.7	121.8	–	–	–	–	–	–	–	–	–
Food and kindred products:													
Total cases	18.5	20.0	19.5	18.8	17.6	17.1	16.3	15.0	14.5	13.6	12.7	12.4	10.9
Lost workday cases	9.3	9.9	9.9	9.5	8.9	9.2	8.7	8.0	8.0	7.5	7.3	7.3	6.3
Lost workdays	174.7	202.6	207.2	211.9	–	–	–	–	–	–	–	–	–
Tobacco products:													
Total cases	8.7	7.7	6.4	6.0	5.8	5.3	5.6	6.7	5.9	6.4	5.5	6.2	6.7
Lost workday cases	3.4	3.2	2.8	2.4	2.3	2.4	2.6	2.8	2.7	3.4	2.2	3.1	4.2
Lost workdays	64.2	62.3	52.0	42.9	–	–	–	–	–	–	–	–	–
Textile mill products:													
Total cases	10.3	9.6	10.1	9.9	9.7	8.7	8.2	7.8	6.7	7.4	6.4	6.0	5.2
Lost workday cases	4.2	4.0	4.4	4.2	4.1	4.0	4.1	3.6	3.1	3.4	3.2	3.2	2.7
Lost workdays	81.4	85.1	88.3	87.1	–	–	–	–	–	–	–	–	–
Apparel and other textile products:													
Total cases	8.6	8.8	9.2	9.5	9.0	8.9	8.2	7.4	7.0	6.2	5.8	6.1	5.0
Lost workday cases	3.8	3.9	4.2	4.0	3.8	3.9	3.6	3.3	3.1	2.6	2.8	3.0	2.4
Lost workdays	80.5	92.1	99.9	104.6	–	–	–	–	–	–	–	–	–
Paper and allied products:													
Total cases	12.7	12.1	11.2	11.0	9.9	9.6	8.5	7.9	7.3	7.1	7.0	6.5	6.0
Lost workday cases	5.8	5.5	5.0	5.0	4.6	4.5	4.2	3.8	3.7	3.7	3.7	3.4	3.2
Lost workdays	132.9	124.8	122.7	125.9	–	–	–	–	–	–	–	–	–
Printing and publishing:													
Total cases	6.9	6.9	6.7	7.3	6.9	6.7	6.4	6.0	5.7	5.4	5.0	5.1	4.6
Lost workday cases	3.3	3.3	3.2	3.2	3.1	3.0	3.0	2.8	2.7	2.8	2.6	2.6	2.4
Lost workdays	63.8	69.8	74.5	74.8	–	–	–	–	–	–	–	–	–
Chemicals and allied products:													
Total cases	7.0	6.5	6.4	6.0	5.9	5.7	5.5	4.8	4.8	4.2	4.4	4.2	4.0
Lost workday cases	3.2	3.1	3.1	2.8	2.7	2.8	2.7	2.4	2.3	2.1	2.3	2.2	2.1
Lost workdays	63.4	61.6	62.4	64.2	–	–	–	–	–	–	–	–	–
Petroleum and coal products:													
Total cases	6.6	6.6	6.2	5.9	5.2	4.7	4.8	4.6	4.3	3.9	4.1	3.7	2.9
Lost workday cases	3.3	3.1	2.9	2.8	2.5	2.3	2.4	2.5	2.2	1.8	1.8	1.9	1.4
Lost workdays	68.1	77.3	68.2	71.2	–	–	–	–	–	–	–	–	–
Rubber and miscellaneous plastics products:													
Total cases	16.2	16.2	15.1	14.5	13.9	14.0	12.9	12.3	11.9	11.2	10.1	10.7	8.7
Lost workday cases	8.0	7.8	7.2	6.8	6.5	6.7	6.5	6.3	5.8	5.8	5.5	5.8	4.8
Lost workdays	147.2	151.3	150.9	153.3	–	–	–	–	–	–	–	–	–
Leather and leather products:													
Total cases	13.6	12.1	12.5	12.1	12.1	12.0	11.4	10.7	10.6	9.8	10.3	9.0	8.7
Lost workday cases	6.5	5.9	5.9	5.4	5.5	5.3	4.8	4.5	4.3	4.5	5.0	4.3	4.4
Lost workdays	130.4	152.3	140.8	128.5	–	–	–	–	–	–	–	–	–
Transportation and public utilities													
Total cases	9.2	9.6	9.3	9.1	9.5	9.3	9.1	8.7	8.2	7.3	7.3	6.9	6.9
Lost workday cases	5.3	5.5	5.4	5.1	5.4	5.5	5.2	5.1	4.8	4.3	4.4	4.3	4.3
Lost workdays	121.5	134.1	140.0	144.0	–	–	–	–	–	–	–	–	–
Wholesale and retail trade													
Total cases	8.0	7.9	7.6	8.4	8.1	7.9	7.5	6.8	6.7	6.5	6.1	5.9	6.6
Lost workday cases	3.6	3.5	3.4	3.5	3.4	3.4	3.2	2.9	3.0	2.8	2.7	2.7	2.5
Lost workdays	63.5	65.6	72.0	80.1	–	–	–	–	–	–	–	–	–
Wholesale trade:													
Total cases	7.7	7.4	7.2	7.6	7.8	7.7	7.5	6.6	6.5	6.5	6.3	5.8	5.3
Lost workday cases	4.0	3.7	3.7	3.6	3.7	3.8	3.6	3.4	3.2	3.3	3.3	3.1	2.8
Lost workdays	71.9	71.5	79.2	82.4	–	–	–	–	–	–	–	–	–
Retail trade:													
Total cases	8.1	8.1	7.7	8.7	8.2	7.9	7.5	6.9	6.8	6.5	6.1	5.9	5.7
Lost workday cases	3.4	3.4	3.3	3.4	3.3	3.3	3.0	2.8	2.9	2.7	2.5	2.5	2.4
Lost workdays	60.0	63.2	69.1	79.2	–	–	–	–	–	–	–	–	–
Finance, insurance, and real estate													
Total cases	2.0	2.4	2.4	2.9	2.9	2.7	2.6	2.4	2.2	.7	1.8	1.9	1.8
Lost workday cases	.9	1.1	1.1	1.2	1.2	1.1	1.0	.9	.9	.5	.8	.8	.7
Lost workdays	17.6	27.3	24.1	32.9	–	–	–	–	–	–	–	–	–
Services													
Total cases	5.5	6.0	6.2	7.1	6.7	6.5	6.4	6.0	5.6	5.2	4.9	4.9	4.6
Lost workday cases	2.7	2.8	2.8	3.0	2.8	2.8	2.8	2.6	2.5	2.4	2.2	2.2	2.2
Lost workdays	51.2	56.4	60.0	68.6	–	–	–	–	–	–	–	–	–

[1] Data for 1989 and subsequent years are based on the *Standard Industrial Classification Manual*, 1987 Edition. For this reason, they are not strictly comparable with data for the years 1985–88, which were based on the *Standard Industrial Classification Manual*, 1972 Edition, 1977 Supplement.

[2] Beginning with the 1992 survey, the annual survey measures only nonfatal injuries and illnesses, while past surveys covered both fatal and nonfatal incidents. To better address fatalities, a basic element of workplace safety, BLS implemented the Census of Fatal Occupational Injuries.

[3] The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as (N/EH) X 200,000, where:
N = number of injuries and illnesses or lost workdays;
EH = total hours worked by all employees during the calendar year; and
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

[4] Beginning with the 1993 survey, lost workday estimates will not be generated. As of 1992, BLS began generating percent distributions and the median number of days away from work by industry and for groups of workers sustaining similar work disabilities.

[5] Excludes farms with fewer than 11 employees since 1976.

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56. Fatal occupational injuries by event or exposure, 1998-2003

Event or exposure[1]	Fatalities			
	1998-2002 average[2]	2002[3]	2003	
		Number	Number	Percent
Total	6,896	5,534	5,559	100
Transportation incidents	2,549	2,385	2,367	42
Highway incident	1,417	1,373	1,350	24
Collision between vehicles, mobile equipment	696	636	648	12
Moving in same direction	136	155	135	2
Moving in opposite directions, oncoming	249	202	269	5
Moving in intersection	148	146	123	2
Vehicle struck stationary object or equipment in roadway	27	33	17	(4)
Vehicle struck stationary object, or equipment on side of road	281	293	324	6
Noncollision incident	367	373	321	6
Jackknifed or overturned—no collision	303	312	252	5
Nonhighway (farm, industrial premises) incident	358	323	347	6
Overturned	192	164	186	3
Worker struck by a vehicle	380	356	336	6
Rail vehicle	63	64	43	1
Water vehicle	92	71	68	1
Aircraft	235	194	208	4
Assaults and violent acts	910	840	901	16
Homicides	659	609	631	11
Shooting	519	469	487	9
Stabbing	61	58	58	1
Self-inflicted injuries	218	199	218	4
Contact with objects and equipment	963	872	911	16
Struck by object	547	505	530	10
Struck by falling object	336	302	322	6
Struck by flying object	55	38	58	1
Caught in or compressed by equipment or objects	272	231	237	4
Caught in running equipment or machinery	141	110	121	2
Caught in or crushed in collapsing materials	126	116	126	2
Falls	738	719	691	12
Fall to lower level	651	638	601	11
Fall from ladder	113	126	113	2
Fall from roof	152	143	127	2
Fall from scaffold, staging	91	88	85	2
Fall on same level	65	64	69	1
Exposure to harmful substances or environments	526	539	485	9
Contact with electric current	289	289	246	4
Contact with overhead power lines	130	122	107	2
Contact with temperature extremes	45	60	42	1
Exposure to caustic, noxious, or allergenic substances	102	99	121	2
Inhalation of substances	50	49	65	1
Oxygen deficiency	89	90	73	1
Drowning, submersion	69	60	52	1
Fires and explosions	190	165	198	4

[1] Based on the 1992 BLS *Occupational Injury and Illness Classification Manual*. Includes other events and exposures, such as bodily reaction, in addition to those shown separately.

[2] Excludes fatalities from the Sept. 11, 2001, terrorist attacts.

[3] The BLS news release of September 17, 2003, reported a total of 5,524 fatal work injuries for calendar year 2003. Since then, an additional 10 job-related fatalities were identified, bringing the total job-related fatality count for 2002 to 5,534.

[4] Equal to or greater than 0.5 percent.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

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Longitudinal data	http://www.bls.gov/nls/	nls_info@bls.gov
Job openings and labor turnover	http://www.bls.gov/jlt/	Joltsinfo@bls.gov
Prices and living conditions		
Consumer price indexes	http://www.bls.gov/cpi/	cpi_info@bls.gov
Producer price indexes)	http://www.bls.gov/ppi/	ppi-info@bls.gov
Import and export price indexes	http://www.bls.gov/mxp/	mxpinfo@bls.gov
Consumer expenditures	http://www.bls.gov/cex/	cexinfo@bls.gov
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National Compensation Survey:	http://www.bls.gov/ncs/	ocltinfo@bls.gov
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Employment cost trends	http://www.bls.gov/ect/	ocltinfo@bls.gov
Occupational compensation	http://www.bls.gov/ncs/	ocltinfo@bls.gov
Occupational illnesses, injuries	http://www.bls.gov/iif/	oshstaff@bls.gov
Fatal occupational injuries	http://stats.bls.gov/iif/	cfoistaff@bls.gov
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Occupation	http://www.bls.gov/oco/	oohinfo@bls.gov
International	http://www.bls.gov/fls/	flshelp@bls.gov
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Employment Cost Indexes	July 29	2nd quarter					1–3; 30–33
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* = revised.