Industrial production decreased 0.2 percent in May after falling 0.5 percent in April. The decline in April was larger than previously reported, but the rates of change for previous months were generally revised higher, leaving the level of the index in April slightly above its initial estimate. Manufacturing output decreased

### Industrial Production and Capacity Utilization: Summary

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Note. The statistics in this release cover output, capacity, and capacity utilization in the U.S. industrial sector, which is defined by the Federal Reserve to comprise manufacturing, mining, and electric and gas utilities. Mining is defined as all industries in sector 21 of the North American Industry Classification System (NAICS); electric and gas utilities are those in NAICS sectors 2211 and 2212. Manufacturing comprises NAICS manufacturing industries (sector 31–33) plus the logging industry and the newspaper, periodical, book, and directory publishing industries. Logging and publishing are classified elsewhere in NAICS (under agriculture and information, respectively), but historically they were considered to be manufacturing and were included in the industrial sector under the Standard Industrial Classification (SIC) system. In December 2002 the Federal Reserve reclassified all its industrial output data from the SIC system to NAICS.
0.2 percent in May and was little changed, on net, from its level in January. In May, the index for mining moved down 0.3 percent after declining more than 1 percent per month, on average, in the previous four months. The slower rate of decrease for mining output last month was due in part to a reduced pace of decline in the index for oil and gas well drilling and servicing. The output of utilities increased 0.2 percent in May. At 105.1 percent of its 2007 average, total industrial production in May was 1.4 percent above its year-earlier level. Capacity utilization for the industrial sector decreased 0.2 percentage point in May to 78.1 percent, a rate that is 2.0 percentage points below its long-run (1972–2014) average.

Market Groups

Among the major market groups, only business equipment and business supplies registered production gains in May, with increases of 0.2 percent and 0.1 percent, respectively. The production of consumer goods decreased 0.3 percent, as declines for both consumer energy products and non-energy nondurables outweighed a gain for durable consumer goods. The small advance for business equipment reflected increases in transit equipment and in information processing equipment. The output of defense and space equipment fell 1.3 percent. The output of construction supplies declined 0.3 percent, which partially reversed a gain in April. The index for materials decreased 0.1 percent in May. The output of nondurable materials fell 0.7 percent and the output of energy materials edged down, but these decreases were partially offset by a small improvement in the output of durable materials.

Industry Groups

Manufacturing output fell 0.2 percent in May, as a decrease of 0.7 percent in the output of nondurables was partially offset by a small increase in the production of durables. The largest gain among durable goods industries was recorded by motor vehicles and parts; its index increased 1.7 percent. Results for other durable goods industries were mixed, with none posting a gain or loss exceeding 0.7 percent. Almost all major nondurable goods industries registered declines, with the largest drop, 1.6 percent, occurring in the petroleum and coal products industry. The output index for other manufacturing industries (publishing and logging) moved up 0.6 percent. The decrease of 0.3 percent in mining resulted primarily from a drop in oil and gas well drilling and servicing, but it also reflected a decrease in nonmetallic mineral mining; an increase in crude oil extraction partially offset those declines.

The capacity utilization rate for manufacturing decreased 0.2 percentage point in May to 77.0 percent, a rate 1.6 percentage points below its long-run average. The operating rate for durable goods manufacturing remained steady at 76.5 percent, just a bit below its long-run average, while utilization for nondurable goods manufacturing decreased 0.6 percentage point to 79.1 percent, a rate 1.5 percentage points below its long-run average. The capacity utilization rate for other manufacturing (publishing and logging) increased to 57.8 percent, a rate more than 20 percentage points below its long-run average. Capacity utilization for mines fell 0.4 percentage point to 83.3 percent, while the operating rate for utilities increased 0.2 percentage point to 80.0 percent.
Revision of Industrial Production and Capacity Utilization

The Federal Reserve Board plans to issue its annual revision to the index of industrial production (IP) and the related measures of capacity utilization on July 21, 2015. The classification system for the industry groups will be advanced to the 2012 version of the North American Industry Classification System, and the comparison base year will be advanced to 2012. New annual benchmark data for 2012 and 2013 for manufacturing will be incorporated, as well as other annual data, including information on the mining of metallic and nonmetallic minerals (except fuels). The weights for market-group splits of the indexes will be updated with information from the 2007 benchmark input-output accounts from the Bureau of Economic Analysis. The updated IP indexes will include revisions to the monthly indicator (either product data or input data) and to seasonal factors for each industry. In addition, the estimation methods for some series may be changed. Any modifications to the methods for estimating the output of an industry will affect the index from 1972 to the present.

Capacity and capacity utilization will be revised to incorporate data through the fourth quarter of 2014 from the Census Bureau’s Quarterly Survey of Plant Capacity, which covers manufacturing, along with new data on capacity from the U.S. Geological Survey, the U.S. Department of Energy, and other organizations.
1. Industrial production, capacity, and utilization

Note: The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER).
2. Industrial production and capacity utilization

Note: The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER).
3. Industrial production and capacity utilization, high-technology industries

Notes: High-technology industries are defined as semiconductors and related electronic components (NAICS 334412-9), computers (NAICS 3341), and communications equipment (NAICS 3342). The shaded areas are periods of business recession as defined by the NBER.
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<th>Item</th>
<th>2014 proportion</th>
<th>Fourth quarter to fourth quarter rate</th>
<th>Annual rate</th>
<th>2014 Q3</th>
<th>2015 Q4</th>
<th>Q1</th>
<th>May '14 - May '15</th>
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<td>3.3</td>
<td>4.6</td>
<td>4.1</td>
<td>4.7</td>
<td>-3.0</td>
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</table>

**Market Groups**

- Final products and nonindustrial supplies: 51.62
- Consumer goods: 26.15
- Durable: 5.81
- Automotive products: 2.99
- Non-automotive electronics: .18
- Appliances, furniture, and equipment: .79
- Miscellaneous goods: 1.91

**Non-durable**

- 20.35
- Non-energy: 15.21
- Food and tobacco: 8.77
- Clothing: .18
- Chemical products: 4.59
- Paper products: 1.18
- Energy: 5.13

**Business equipment**

- 9.37
- 2.26
- Information processing: 1.88
- Industrial and other: 5.23
- Defense and space equipment: 2.19

**Construction supplies**

- 4.10
- Business supplies: 9.00

**Materials**

- 48.38
- Non-energy: 27.84
- Durable: 17.12
- Consumer parts: 2.47
- Other: 8.49
- Nondurable: 10.72

**Textile**

- .40
- Paper: 1.73
- Chemical: 5.53
- Energy: 20.53

**Industry Groups**

- Manufacturing (NAICS) 31–33: 72.70
- Durable manufacturing: 37.37
- Wood products: 8.77
- Nonmetallic mineral products: 327
- Primary metals: 331
- Fabricated metal products: 332
- Machinery: 333
- Manufacturing, electrical, equipment, and components: 334
- Motor vehicles and parts: 3361-3
- Aerospace and miscellaneous transportation equipment: 3364-9
- Furniture and related products: 337
- Miscellaneous: 339

**Nondurable manufacturing**

- 33.06
- Food, beverage, and tobacco products: 311.2
- Textile and product mills: 313.4
- Apparel and leather: 313.6
- Paper: 322
- Printing and support: 323
- Petroleum and coal products: 324
- Chemicals: 325
- Plastics and rubber products: 326

**Other manufacturing (non-NAICS) 1133,511**

- 2.28

**Mining**

- 21

**Utilities**

- 2211.2

**Electric**

- 2211

**Natural gas**

- 2212

**NOTE:** Under the industry groups, the figures to the right of the series descriptions are 2002 North American Industry Classification System (NAICS) codes. The abbreviation pt denotes part of a NAICS code. Additional industry detail is available on the Board’s website (www.federalreserve.gov/releases/G17). Under market groups, in the products category, miscellaneous consumer nondurables, oil and gas drilling, and manufactured homes are not shown separately; in the nondurable materials category, containers and miscellaneous nondurable materials are not shown separately.

1. The proportion data are the relative weights for the rates of change for each series in the computation of the change in total industrial production in the following year.
### Table 2
INDUSTRIAL PRODUCTION: SPECIAL AGGREGATES AND SELECTED DETAIL

Percent change, seasonally adjusted

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### Table 3
MOTOR VEHICLE ASSEMBLIES
Millions of units, seasonally adjusted annual rate

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NOTE: Seasonal factors and underlying data for auto, light truck, and medium and heavy truck production are available on the Board’s website, www.federalreserve.gov/releases/G17/mvsf.htm
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**Market Groups**

- **Final products and nonindustrial supplies**: 51.62
- **Consumer goods**: 26.15
- **Durable**: 5.81
- **Automotive products**: 2.90
- **Home electronics**: 0.12
- **Appliances, furniture, carpeting**: 0.79
- **Miscellaneous goods**: 1.91
- **Nondurable**: 20.35
- **Non-energy**: 15.21
- **Foods and tobacco**: 8.77
- **Clothing**: 0.18
- **Chemical products**: 4.59
- **Paper products**: 1.18
- **Energy**: 5.13
- **Business equipment**: 9.37
- **Transit**: 2.26
- **Information processing**: 1.83
- **Industrial and other**: 5.23
- **Defense and space equipment**: 2.19

**Construction supplies**: 4.10
**Business supplies**: 9.00
**Materials**: 48.38
**Non-energy**: 27.84
**Durable**: 17.12
**Consumer parts**: 2.47
**Equipment parts**: 6.16
**Other**: 8.49
**Nondurable**: 10.72
**Textile**: 4.0
**Paper**: 1.73
**Chemical**: 5.55
**Energy**: 20.53

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**Mining**

| 21 | 17.76 | 133.8 | 132.3 | 131.5 | 135.7 | 133.9 | 131.1 | 130.7 | 129.0 | 128.6 |

**Utilities**

| 2211.2 | 9.54 | 102.2 | 101.6 | 105.3 | 100.0 | 103.3 | 108.3 | 103.6 | 102.4 | 102.6 |

**Electric**

| 2211 | 8.23 | 100.2 | 101.1 | 103.2 | 99.6 | 102.0 | 105.8 | 104.9 | 101.4 | 101.4 |

**Natural gas**

| 2212 | 1.30 | 107.6 | 105.2 | 119.5 | 101.8 | 111.9 | 125.2 | 116.1 | 109.3 | 110.7 |

*Revised. p Preliminary.

NOTE. Refer to notes on table 1.
Table 5
INDUSTRIAL PRODUCTION INDEXES: SPECIAL AGGREGATES
2007 = 100, seasonally adjusted

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Table 6
DIFFUSION INDEXES OF INDUSTRIAL PRODUCTION

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NOTE. The diffusion indexes are calculated as the percentage of series that increased over the indicated span (one, three, or six months) plus one-half the percentage that were unchanged.
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CAPACITY UTILIZATION  
Percent of capacity, seasonally adjusted  

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1. Revised.  p Preliminary.
1. Refer to note on cover page.
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### Table 9  
**GROSS VALUE OF FINAL PRODUCTS AND NONINDUSTRIAL SUPPLIES**

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¹: Revised. ²: Preliminary.

### Table 10  
**GROSS-VALUE-WEIGHTED INDUSTRIAL PRODUCTION: STAGE-OF-PROCESS GROUPS**

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1. Quarterly changes are at annual rates. Annual changes are calculated from annual averages.

### Table 11

**Historical Statistics for Industrial Production, Capacity, and Utilization: Total Industry**

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### Capacity (percent of 2007 output)

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### Utilization (percent)

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### Table 12

**Historical Statistics for Industrial Production, Capacity, and Utilization: Manufacturing**

*Seasonally adjusted*

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1. Refer to note on cover page.
2. Quarterly changes are at annual rates. Annual changes are calculated from annual averages.

*IP (2007=100)*

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*Capacity (percent of 2007 output)*

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*Utilization (percent)*

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1. Refer to note on cover page.
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*Utilization (%)*

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1. Refer to note on cover page.
2. Quarterly changes are at annual rates. Annual changes are calculated from annual averages.
### Table 13

**HISTORICAL STATISTICS FOR INDUSTRIAL PRODUCTION, CAPACITY, AND UTILIZATION:** Total Industry Excluding Selected High-Technology Industries¹

Seasonally adjusted

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¹ Selected high-technology industries are computers, communications equipment, and semiconductors and related electronic components.

² Quarterly changes are at annual rates. Annual changes are calculated from annual averages.
### Table 14

**Historical Statistics for Industrial Production, Capacity, and Utilization: Manufacturing**

Excluding Selected High-Technology Industries

Seasonally adjusted

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**Notes:**

1. Refer to note on cover page.
2. Selected high-technology industries are computers, communications equipment, and semiconductors and related electronic components.
3. Quarterly changes are at annual rates. Annual changes are calculated from annual averages.
Explanatory Note

The Industrial Production and Capacity Utilization statistical release, which is published around the middle of the month, reports measures of output, capacity, and capacity utilization in manufacturing, mining, and the electric and gas utilities industries. More detailed descriptions of industrial production and capacity utilization are available on the Board's website at www.federalreserve.gov/releases/G17/About.htm. In addition, files containing data shown in the release, more detailed series that were published in the G.17 prior to December 2000, and historical data are available from the Data Download Program on the Board's website. Instructions for searching for and downloading specific series are provided as well.

Industrial Production

Coverage. The industrial production (IP) index measures the real output of all manufacturing, mining, and electric and gas utility establishments located in the United States, regardless of their ownership, but not those located in U.S. territories; the reference period for the index is 2007. Manufacturing consists of those industries included in the North American Industry Classification System (NAICS) definition of manufacturing plus those industries—newspaper, periodical, book, and directory publishing plus logging—that have traditionally been considered to be manufacturing. For the period since 1997, the total IP index has been constructed from 312 individual series based on the 2007 NAICS codes. These individual series are classified in two ways: (1) market groups, and (2) industry groups. Market groups consist of products and materials. Total products are the aggregate of final products, such as consumer goods and equipment, and nonindustrial supplies (which are inputs to nonindustrial sectors). Materials are inputs in the manufacture of products. Major industry groups include three-digit NAICS industries and aggregates of these industries—for example, durable and nondurable manufacturing, mining, and utilities. A complete description of the market and industry structures, including details regarding series classification, relative importance weights, and data sources, is available on the Board’s website (www.federalreserve.gov/releases/G17/About.htm).

Source Data. On a monthly basis, the individual indexes of industrial production are constructed from two main types of source data: (1) output measured in physical units and (2) data on inputs to the production process, from which output is inferred. Data on physical products, such as tons of steel or barrels of oil, are obtained from private trade associations and from government agencies; data of this type are used to estimate monthly IP wherever possible and appropriate. Production indexes for a few industries are derived by dividing estimated nominal output (calculated using unit production and unit values or sales) by a corresponding Fisher price index; the most notable of these fall within the high-technology grouping and include computers, communications equipment, and semiconductors. When suitable direct measures of product are not available, estimates of output are based on production-worker hours by industry. Data on hours worked by production workers are collected in the monthly establishment survey conducted by the Bureau of Labor Statistics. The factors used to convert inputs into estimates of production are based on historical relationships between the inputs and the comprehensive annual data used to benchmark the IP indexes; these factors also may be influenced by technological or cyclical developments. The annual data used in benchmarking the individual IP indexes are constructed from a variety of source data, such as the quinquennial Censuses of Manufactures and Mineral Industries and the Annual Survey of Manufacturing, prepared by the Bureau of the Census; the Minerals Yearbook, prepared by the United States Geological Survey of the Department of the Interior; and publications of the Department of Energy.

Aggregation Methodology and Weights. The aggregation method for the IP index is a version of the Fisher-ideal index formula. For a detailed discussion of the aggregation method, see the Federal Reserve Bulletins of February 1997 and March 2001.) In the IP index, series that measure the output of an individual industry are combined using weights derived from their proportion in the total value-added output of all industries. The IP index, which extends back to 1919, is built as a chain-type index since 1972. The current formula for the growth in monthly IP (or any of the sub-aggregates) since 1972 is shown below. An output index for month $m$ is denoted by $I_m^A$ for aggregate A and $I_m$ for each of its components. The monthly price measure in the formula $(p_{m-1})$ is interpolated from an annual series of value added divided by the average annual IP index.

$$\frac{I_m^A}{I_{m-1}^A} = \sqrt{\frac{\sum I_{m-1} p_{m-1}}{\sum I_{m-1} p_{m-1}}} \times \sqrt{\frac{\sum I_{m} p_{m}}{\sum I_{m-1} p_{m}}}$$

The IP proportions (typically shown in the first column of the relevant tables in the G.17 release) are estimates of the industries’ relative contributions to overall growth in the following year. For example, the relative importance weight of the motor vehicles and parts industry is about 6 percent. If output in this industry increased 10 percent in a month, then this gain would boost growth in total IP by 6/10 percent point (0.06 x 10% x 0.6%). To assist users with calculations, the Federal Reserve’s website provides supplemental monthly statistics that represent the exact proportionate contribution of a monthly change in a component index to the monthly change in the total index (www.federalreserve.gov/releases/G17/Anpisk/ipweights.txt).

Timing. The first estimate of output for a month is published around the 15th of the following month. The estimate is preliminary (denoted by the superscript “p” in tables) and subject to revision in each of the subsequent five months as new source data become available. (Revised estimates are denoted by the superscript “r” in tables.) For the first estimate of output for a given month, about 72 percent of the source data (in value-added terms) are available; the fraction of available source data increases to 84 percent for estimates in the second month that the estimate is published, 94 percent in the third month, 95 percent in the fourth month, 97 percent in the fifth month, and 97 percent in the sixth month. Data availability by data type in early 2014 is summarized in the table below:

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Month of estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
</tr>
<tr>
<td>Physical product</td>
<td>32</td>
</tr>
<tr>
<td>Production-worker hours</td>
<td>40</td>
</tr>
<tr>
<td>IP data received</td>
<td>72</td>
</tr>
<tr>
<td>IP data estimated</td>
<td>28</td>
</tr>
</tbody>
</table>

The physical product group includes series based on either monthly or quarterly data. As can be seen in the first row of the table, in the first month, a physical product indicator is available for about half of the series (in terms of value added) that ultimately are based on physical product data (32 percent out of a total of 58 percent). Of the 32 percent, about two-thirds (19 percent of total IP) include series that are derived from weekly physical product data and for which actual monthly data may lag up to several months. On average, quarterly product data are received for the fourth estimate of industrial production. Specifically, quarterly data are available for the third estimate of the last month of a quarter, the fourth estimate of the second month of a quarter, and the fifth estimate of the first month of a quarter.

Seasonal Adjustment. Individual series are seasonally adjusted using Census X-12 ARIMA. For series based on production-worker hours, the current seasonal factors were estimated with data through January 2013; for other series, the factors were estimated with data through at least December 2012. Series are pre-adjusted for the effects of holidays or business cycles when appropriate. For the data since 1972, all seasonally adjusted aggregate indexes are calculated by aggregating the seasonally adjusted indexes of the individual series.

Reliability. The average revision to the level of the total IP index, without regard to sign, between the first and the fourth estimates was
0.27 percent during the 1987–2013 period. The average revision to the percent change in total IP, without regard to sign, from the first to the fourth estimates was 0.21 percentage point during the 1987–2013 period. In most cases (about 85 percent), the direction of the change in output indicated by the first estimate for a given month is the same as that shown by the fourth estimate.

**Rounding.** The published percent changes are calculated from unrounded indexes, and may not be the same as percent changes calculated from the rounded indexes shown in the release.

**Capacity Utilization**

**Overview.** The Federal Reserve Board constructs estimates of capacity and capacity utilization for industries in manufacturing, mining, and electric and gas utilities. For a given industry, the capacity utilization rate is equal to an output index (seasonally adjusted) divided by a capacity index. The Federal Reserve Board’s capacity indexes attempt to capture the concept of sustainable maximum output—the greatest level of output a plant can maintain within the framework of a realistic work schedule, after factoring in normal downtime and assuming sufficient availability of inputs to operate the capital in place.

**Coverage.** The capacity indexes cover all facilities located in the United States, regardless of their ownership, but not those located in U.S. territories. Capacity indexes are constructed for 89 detailed industries (71 in manufacturing, 16 in mining, and 2 in utilities), which mostly correspond to industries at the three- and four-digit North American Industry Classification System (NAICS) level. Estimates of capacity and utilization are available for a variety of groups, including durable and nondurable manufacturing, total manufacturing, mining, utilities, and total industry. Manufacturing consists of those industries included in the NAICS definition of manufacturing plus those industries—newspaper, periodical, book, and directory publishing plus logging—that have traditionally been considered to be manufacturing. Also, special aggregates are available, such as high-technology industries and manufacturing excluding high-technology industries.

**Source Data.** The monthly rates of capacity utilization are designed to be consistent with both the monthly data on production and the periodically available data on capacity and utilization. Because there is no direct monthly information on overall industrial capacity or utilization rates, the Federal Reserve first estimates annual capacity indexes from the source data. Capacity data reported in physical units from government sources (primarily from the U.S. Geological Survey and the Department of Energy’s Energy Information Administration) and trade sources are available for portions of several industries in manufacturing (e.g., paper, industrial chemicals, petroleum refining, motor vehicles), as well as for electric utilities and mining; these industries represent about 25 percent of total industrial capacity. When physical product data are unavailable for manufacturing industries, capacity indexes are based on responses to the Bureau of the Census’s Quarterly Survey of Plant Capacity (QSPC); these industries account for a bit less than 70 percent of total industry capacity. In the absence of utilization data for a few mining and petroleum series, capacity is based on trends through peaks in production (roughly 5 percent of total industry capacity). A detailed description of the methodology used to construct the capacity indexes is available on the Board’s website (www.federalreserve.gov/releases/G17/Meth/MethCap.htm).

**Aggregation Methodology.** Monthly capacity aggregates are calculated in three steps: (1) utilization aggregates are calculated on an annual basis through the most recent full year as capacity-weighted aggregates of individual utilization rates; (2) the annual aggregate capacity is derived from the corresponding production and utilization aggregates; (3) the monthly capacity aggregate is obtained by interpolating the annual capacity aggregate with a Fisher index of its constituent monthly capacity series. Utilization rates for the individual series and aggregates are calculated by dividing the pertinent monthly production index by the related capacity index.

**Consistency.** A major aim is that the Federal Reserve utilization rates be consistent over time so that, for example, a rate of 85 percent means about the same degree of tightness that it meant in the past. A major task for the Federal Reserve in developing reasonable and consistent time series of capacity and utilization is dealing with inconsistencies between the movements of the industrial production index and the survey-based utilization rates. The McGraw-Hill/DRI Survey of Plant Capacity, which was discontinued, was the primary source of manufacturing utilization rates for many years. This was a survey of large companies that reported, on average, higher utilization rates than those reported by establishments covered by the Census Bureau’s annual Survey of Plant Capacity (the predecessor to the QSPC) for the fourteen years they overlapped. Adjustments have been made to keep the industry utilization rates currently reported by the Federal Reserve roughly in line with rates formerly reported by McGraw-Hill. As a consequence, the rates reported by the Federal Reserve tend to be higher than the rates reported in the QSPC.

**Perspective.** Over the 1972–2013 period, the average total industry utilization rate is 80.1 percent; for manufacturing, the average factory operating rate has been 78.7 percent. Industrial plants usually operate at capacity utilization rates that are well below 100 percent: none of the broad aggregates has ever reached 100 percent. For total industry and total manufacturing, utilization rates have exceeded 90 percent only in wartime. The highs and lows in capacity utilization are specific to each series and do not all occur in the same month.

**References and Release Dates**


**Release Schedule**

At 9:15 a.m. on

**2015:** January 16, February 18, March 16, April 15, May 15, June 15, July 15, August 14, September 15, October 16, November 17, and December 16.