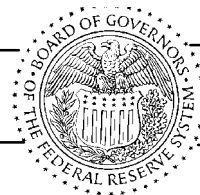


FEDERAL RESERVE statistical release



G.17 (419) 2021 Historical and Annual Revision

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Industrial Production and Capacity Utilization: The 2021 Annual Revision

The Federal Reserve has revised its index of industrial production (IP) and the related measures of capacity and capacity utilization. The most prominent features of the revision are an update of the base year to 2017 for the indexes, a conversion of the industry-group indexes to the 2017 North American Industry Classification System (NAICS), the incorporation of comprehensive annual production data for 2017 through 2019, and the incorporation of new survey utilization rate data for 2019 and 2020.¹

On net, the revisions to total IP for recent years are negative. Notably, the updated rates of change are 1 to 1½ percentage points lower per year from 2017 through 2019.² The cumulative effect of these revisions leaves the level of total IP in April 2021 about 3½ percent below its late-2007 peak before the Great Recession; previously, total IP in April 2021 was slightly above its peak before the Great Recession. The incorporation of detailed data for manufacturing from the U.S. Census Bureau's 2017 Economic Census (EC) and the 2018 and 2019 Annual Surveys of Manufactures (ASMs) accounts for the majority of the differences between the current and the previously published estimates. The revisions to the rates of change for 2020 are small, and the magnitude of the sharp drop (17 percent) in total IP at the onset of the pandemic in early 2020 is very similar to the magnitude reported earlier.

Annual capacity growth is revised down about 1 percentage point, on average, from 2017 to 2019 and is little changed in 2020. After these revisions, capacity for total industry is estimated to have grown about 3 percent less between 2016 and the end of 2020 than previously estimated.

In the fourth quarter of 2020, capacity utilization for total industry stood at 73.4 percent, about ½ percentage point below its previous estimate and about 6¼ percentage points below its long-run (1972–2020) average. The utilization rate for 2019 is also about ½ percentage point lower than the previous estimate, but revisions to utilization rates for 2017 and 2018 are very small.

This revision incorporated newly available annual data on both output and prices. As noted earlier, the updated IP indexes incorporated new data for manufacturing from the U.S. Census Bureau's 2017 EC and the 2018 and 2019 ASMs. For publishing, the IP indexes folded in data for 2017 from the EC and data for 2018 and 2019 from the Census Bureau's Service Annual Survey. The IP index for logging is based on special calculations provided by the U.S. Forest Service that extended previously published data; the IP index incorporated new data for 2018 and 2019 and revised data for 2016 and 2017. In addition, the indexes for metallic and nonmetallic minerals were updated with revised annual data for 2015 through 2017 and with new data for 2018 and 2019 from the U.S. Geological Survey (USGS). Data on prices from the Bureau of Labor Statistics (BLS) were also incorporated into most of the manufacturing indexes.

¹The revision affected rates of change for IP from 1972 forward. When necessary to maintain consistency with any revisions to the data for 1972 and subsequent years, the levels of production for the years before 1972 were multiplied by a constant. However, the rates of change in IP for the years before 1972 were not revised. Utilization rates and capacity growth rates were revised minimally between 1968 and 1971 but were unchanged before then.

²Rates of change are calculated as the percentage change in the seasonally adjusted index from the fourth quarter of the previous year to the fourth quarter of the year specified.

The monthly estimates of production have been updated to include late-arriving or revised quarterly or monthly indicator data, including information from the BLS's benchmark revisions to the Current Employment Statistics. The monthly IP estimates reflect updated seasonal factors.

The revised estimates of capacity and capacity utilization incorporated data from the Census Bureau's Quarterly Survey of Plant Capacity Utilization (QSPC) for the fourth quarters of 2019 and 2020 along with new data on capacity from the USGS, the Energy Information Administration, and other organizations. The revised capacity estimates also included new data on capital spending from the 2017 EC and the 2018 and 2019 ASMs.

RESULTS OF THE REVISION

Industrial Production

Manufacturing output is now estimated to have risen about 1¼ percent in 2017 and about ¾ percent in 2018 before falling back about 2½ percent in 2019 and in 2020. The gains in factory output for 2017 and 2018 are now both estimated to be smaller than reported earlier, the fall in 2019 is now reported to be steeper, and the net decline over the course of 2020 is about the same as previously estimated. The cumulative effect of these revisions leaves manufacturing IP in April 2021 about 10 percent below its peak before the Great Recession, a difference that is about 4 percentage points larger than reported earlier.

The contour for mining output shows sharp gains in 2017 and 2018, little change in 2019, and a precipitous drop in 2020. Relative to earlier estimates, the rates of change in 2017 and 2018 are a bit stronger, whereas the estimates for 2019 and 2020 are lower by about 2 and 3 percentage points, respectively. The rates of change for utilities output are little changed by the revision.

Production by Industry Group

The output of durable goods manufacturers is now reported to have increased solidly in 2017 and 2018 before falling back in 2019 and 2020. Relative to the previous estimates, the gain in the index in 2017 is about the same, and the gain in 2018 is smaller; the drop in 2019 is now steeper, whereas the decline in 2020 is more gradual. The downward revisions for 2018 and 2019 are broadly based across durable goods industries, as is the upward revision for 2020.

The contour of the index for nondurables now shows a notable decline between 2016 and 2020; previously the index showed a net gain over this period. The rates of change are now lower in each year in the 2016–2020 period. In particular, nondurables production is now reported to have edged down in 2017, whereas it was estimated earlier to have posted a sizable gain. Within nondurables, the revisions to the rates of change were mixed, but a few indexes—principally food, beverage, and tobacco products and chemicals—had large downward revisions.

The output index for industries in scope for manufacturing IP that are not part of manufacturing under the NAICS—that is, logging and publishing—has been recording declines for several years, and it continued to fall each year in the 2017–2020 period. However, the declines are now reported to have generally been smaller in each year, particularly in 2018, than previously published.

Production by Market Group

The index for consumer goods now shows a modest net decline between 2016 and 2019, whereas it was previously reported to have increased somewhat; the index now falls a bit more in 2020 than published earlier. The rate of change for business equipment is revised up in 2017 and then revised down notably for 2018 through 2020. There are downward revisions to the rates of change for most recent years in both construction supplies

and business supplies. Relative to earlier reports, the index for materials increased less in 2017 and 2018, and it decreased more in 2019; the decline in 2020 is little changed. On net, there are downward revisions for both the energy and non-energy components.

Capacity

Total industrial capacity rose modestly, on net, between 2017 and 2020, driven by increases in capacity for both mining and utilities; the overall gain in this period is significantly smaller than published earlier. Notably, capacity is now reported to have declined about 1 percent in 2017, whereas it was previously reported to have increased by about the same amount. Capacity grew about 1½ percent in 2019, was unchanged in 2020, and is expected to increase about ½ percent in 2021.

Manufacturing capacity is now reported to have contracted close to ½ percent per year, on average, from 2017 to 2020, with a particularly sizable contraction in 2017. The new contour contrasts with the previous path, which showed a considerable net gain over the 2017–2020 period. Downward revisions to capacity growth are widespread across durable and nondurable manufacturing industries. The one exception is transportation equipment, for which capacity growth revised upward.

Capacity at mines rose from 2017 to 2020, though by somewhat less than what was previously published, as a result of lower capacity increases in oil and gas mining. Relative to earlier reports, the growth in mining capacity was significantly smaller in 2018 and significantly higher in 2019. For 2020, capacity at mines is now reported to have expanded modestly; previously, it was reported to have contracted. The capacity measures for both electric and gas utilities are now reported to have increased more slowly between 2017 and 2020 than stated earlier.

Capacity Utilization

Capacity utilization for total industry rose in 2017 and 2018 but decreased in 2019 and 2020.³ The recent declines resulted from a substantial reduction in the operating rate for mining and from smaller reductions in the rates for both manufacturing and utilities. Compared with earlier estimates, capacity utilization for total industry is now reported to have been about ½ percentage point lower for 2019 and 2020 and little changed in earlier years.

Utilization at manufacturers rose in 2017 and 2018 and then moved down in 2019 and 2020. The current readings for manufacturing utilization are noticeably higher for 2017 through 2020, as capacity revised down by more than output. Manufacturing utilization moved down 1½ percentage points during 2020, leaving the utilization rate for the fourth quarter of 2020 about 4¼ percentage points below its long-run average. Within manufacturing, upward revisions to utilization rates are fairly widespread in both nondurables and durables, though the operating rate in the motor vehicle industry revised down noticeably.

The utilization rate for durable manufacturing was above its long-run average in 2018 but retreated to about 73 percent in the fourth quarter of 2020, 3½ percentage points below its long-run average. Of the 10 major categories of durables, only 3 recorded operating rates in the fourth quarter of 2020 that were above their long-run averages. The utilization rate for nondurable manufacturing was 75.5 percent at the end of 2020, almost 4½ percentage points below its long-run average. As of the fourth quarter of 2020, the operating rate for each major nondurable manufacturing industry group was below its industry-specific long-run average.

The capacity utilization rate for mining declined sharply in 2019 and 2020 as operating rates moved down throughout the sector. Relative to its previously published rate, utilization at mines for the fourth quarter of

³Unless otherwise noted, rates of capacity utilization are reported for the fourth quarter of the reference year.

2020 is about 9 percentage points lower, reflecting both lower production growth and higher capacity growth. At the end of 2020, the utilization rate for mining was 16.6 percentage points below its long-run average of 86.2 percent. Apart from 2018, the sector has been operating below its long-run average utilization since 2014. The operating rate for utilities has been well below its long-run average of 85.0 percent since 2008 and stood at 73.4 percent in the fourth quarter of 2020.

TECHNICAL ASPECTS OF THE REVISION

The IP indexes represent the level of real output relative to a base year. At the monthly frequency, movements of the indexes are based on indicators that are derived using industry-specific data from a variety of government and private sources.

The monthly production indexes are anchored to annual benchmarks that are less timely but typically based on more comprehensive data. In most cases, the annual benchmark is nominal gross output reported by the Census Bureau deflated by a suitable price index.

Annual revisions to the IP and capacity measures generally involve (1) incorporating new and revised annual benchmark data on output, prices, and value-added proportions; (2) incorporating new monthly or quarterly data that were revised or that arrived too late to be included in the regular six-month reporting window for monthly IP; (3) updating seasonal adjustment factors; (4) updating the methods used to construct the indexes; and (5) introducing changes to the industry- or market-group structure of the indexes based on changes to underlying data sources.

The current annual revision includes more innovations and updates than are typical. In particular, the current revision updates the base year of the index from 2012 to 2017, reclassifies the IP and capacity indexes from the 2012 North American Industry Classification System (NAICS) to the 2017 NAICS, updates the aggregation weights for some IP indexes to incorporate data on product shipments based on the new North American Product Classification System (NAPCS), and updates the allocations of IP industry group indexes to market groups based on the Bureau of Economic Analysis's (BEA) 2012 input-output (I-O) tables (the previous allocations were based on I-O tables through 2007).

Annual Benchmark Data on Output, Prices, and Value-Added Proportions

Output

The annual benchmark output indexes for IP are measures of real gross output at the six-digit NAICS (2017) level. The Census Bureau provides annual figures for value added and the cost of materials for manufacturing industries, which can be summed to obtain nominal gross output. The benchmark indexes for this revision incorporated information for 2017 from the Economic Census and new information for 2018 and 2019 from the Annual Survey of Manufactures (ASM).

New annual data were also incorporated into many other indexes not in the scope of the ASM. The benchmark indexes for metallic and nonmetallic mineral mining were updated with any newly available data from 2017 through 2019 from the USGS, and the benchmark indexes for logging and for publishing were advanced through 2019 based on data from the U.S. Forest Service and from the U.S. Census Bureau, respectively.

Prices

To obtain individual benchmarks of real gross output, the measures of nominal gross output are deflated by annual price deflators. In general, the benchmark industry price deflators consist of price indexes from the

BEA through 2011 that are extended through 2019 with the related producer price indexes (PPIs) from the BLS.⁴ However, for a few selected industries, the annual price deflators are constructed by the Federal Reserve.⁵

Value-Added Proportions (Weights for Aggregation)

The IP system is organized as a hierarchical structure where the individual production indexes are combined using a version of the Fisher-ideal index formula to construct broader measures of production. The weights that are used to combine individual IP measures into more aggregate measures are based on the value added from the industry, calculated as gross output less cost of materials. For IP indexes that are defined at the six-digit (or more aggregate) NAICS level, the value-added weights are derived from either the Economic Census or the ASM. For IP indexes that cover only part of a six-digit NAICS industry, the aggregation weights were constructed by allocating value added (as defined by the Census Bureau) for a six-digit industry across the various components of IP that compose that industry.

The allocation of value added across each component was determined by that component's share of the industry's overall product shipments. This annual revision used data on product shipments based on the new 2017 NAPCS. Previously, data on product shipments had a classification system based on NAICS and were included as part of the Census of Manufactures or Annual Survey of Manufactures. The new classification system is coded independently of NAICS, and a concordance was required to align the recent data with the historical data used to allocate weights across IP indexes for the period before 2017. Missing values for specific NAPCS-based products were imputed where necessary. The incorporation of NAPCS is discussed in more detail below.

The Federal Reserve derives estimates of value added for the electric and gas utility industries from annual revenue and expense data issued by other organizations. For electric utilities, the measures of value added incorporate data from the Energy Information Administration of the U.S. Department of Energy and from the Edison Electric Institute. For gas utilities, the value-added estimates incorporate data from the American Gas Association. The weights for aggregation for mining industries are derived from value-added data from the Economic Census. Figures for value added for mining industries in the years between the quinquennial Economic Censuses are estimated based on both output and price changes for the industry.

The weights for aggregation, expressed as value added per unit output, were estimated with data on producer prices for the period after 2019.

Conversion to the 2017 North American Industry Classification System

Industrial production and capacity utilization are structured to follow a single-industry classification system. With this revision, the industrial production and capacity indexes were classified according to the 2017 NAICS; previously, they were classified according to the 2012 NAICS. To maintain consistent time series, the indexes were converted to 2017 NAICS for the period from 1972 forward.

For the industrial sector, the differences between the 2012 and the 2017 NAICS were relatively minor. A few IP indexes were reclassified to reflect the new NAICS structure, but no individual indexes were dropped or added because of the new structure. The reclassifications within the IP system include the following:

⁴The BEA price deflators were discontinued at the six-digit NAICS level after 2011. Overall, at the industry level, the BEA and PPI measures are quite similar, as the BEA used weighted product-level PPIs to derive its industry-level shipments deflator.

⁵For selected industries, the Federal Reserve constructs price indexes from alternative sources. These industries include communications equipment (NAICS 3342), computer storage devices (NAICS 334112), semiconductors (NAICS 334413), and pharmaceuticals (NAICS 325412). Updated price indexes for data storage devices and for selected components of communications equipment will be available on the Board's website at <https://www.federalreserve.gov/releases/g17/>.

Crude Petroleum and Natural Gas Extraction

The crude petroleum and natural gas extraction and the natural gas liquid extraction industries were reorganized under 2017 NAICS. In the 2012 system, crude petroleum and natural gas extraction were included together in NAICS 211111. Under the 2017 system, crude petroleum extraction is its own six-digit industry (NAICS 211120) and natural gas extraction is combined with natural gas liquid extraction (NAICS 211112 in the 2012 system) into NAICS 211130. This reorganization did not affect the number of individual IP indexes. Under both the 2012 and 2017 NAICS, the IP system included three indexes for different categories of crude oil extraction, one index for natural gas extraction, one index for propane, and one index for liquefied petroleum gas.

Lead, Zinc, Copper, and Nickel Ore Mining

Two 2012 NAICS categories, lead ore and zinc ore mining (NAICS 212231) and copper ore and nickel ore mining (NAICS 212234), were combined into a single 2017 NAICS category: copper, nickel, lead, and zinc mining (NAICS 212230). This consolidation did not affect the number of IP indexes, as the IP system maintained one index for copper ore and nickel ore mining and another index for lead ore and zinc ore mining under both 2012 NAICS and 2017 NAICS.

Household Appliance Manufacturing

A single 2017 NAICS six-digit industry for major household appliance manufacturing (NAICS 335220) was formed from four different six-digit industries under 2012 NAICS: Household cooking appliances manufacturing (NAICS 335221), household refrigerator and home freezer manufacturing (NAICS 335222), household laundry equipment manufacturing (NAICS 335224), and other major household appliance manufacturing (NAICS 335228). This consolidation did not affect the number of individual IP indexes, as the IP system still includes one index for each product type within the affected categories under both 2012 NAICS and 2017 NAICS.

Adoption of the North American Product Classification System

As noted earlier, this annual revision uses data on product shipments classified by NAPCS to construct annual benchmarks and value-added weights for those IP indexes that are defined as subsets of a given six-digit NAICS industry; previously, the benchmarks and aggregation weights for these indexes were based on an industry's NAICS-based product shipments as defined in Census Bureau annual surveys or censuses. The Census Bureau introduced NAPCS with the 2017 Economic Censuses and no longer published data on the earlier basis.

Unlike the previous classification system for product shipments, the NAPCS structure is independent from the NAICS structure. Under the previous system, each industry was associated with a unique set of products, and the codes for those products were extensions of the codes for their related six-digit industries.

For IP indexes that are more disaggregate than the six-digit NAICS level, the calculations for the benchmarks and value-added weights involve summing product shipments for all products associated with the particular IP index. Under the old system, these calculations were straightforward because the products were classified based on the primary producing industry. Under NAPCS, however, the process is considerably more complicated for a few reasons. First, as noted, the NAPCS structure is independent from NAICS, so a NAPCS-NAICS crosswalk was needed. Second, because NAPCS products may be produced across multiple industries and sectors, extra care was required to map the product to the appropriate IP index. Third, the non-nested structure of NAPCS and NAICS combined with numerous instances of nondisclosed data cells introduced an additional hurdle for imputations.

Updating Market Group Allocations

The IP market groups classify industrial output according to the expected use of the output. The categories of market groups are final products (consumer goods and equipment), intermediate products that are used as inputs outside of the industrial sector (construction and business supplies), and materials that are used as inputs within the industrial sector (materials). Most industries in the IP index have their output allocated to multiple market groups. For example, a large share of ice cream production is purchased by consumers, but a sizable share is also sold to restaurants and other businesses outside the industrial sector, and hence is part of business supplies. The market group shares for the individual IP indexes are derived using relationships in the I-O tables issued by the BEA.

This revision updates the market group assignments and shares based on the 2012 I-O tables. Previously, the market groups and weights had been based on the 1997, 2002, and 2007 versions of the tables. The incorporation of the 2012 I-O tables generally affected the market group shares beginning in 2008. The shares are assumed to evolve linearly between each I-O table year and to be constant beginning with the last available year for the I-O tables.

In general, the output of an industry is not split among all of the possible market groups, just those to which a significant share (roughly 10 percent or more) of its output is destined. The I-O tables reported that a few industries sent their output to markets in amounts that surpassed that threshold for the first time in 2012. For these industries, output was allocated to the newly important market in 2012 and later years, and output was also allocated to the market in previous years, with the shares for the earlier years reflecting the relatively smaller importance in the 1997, 2002, and 2007 I-O tables.

Revised Quarterly and Monthly Data

This revision incorporated source data on production, shipments, and inventories that became available or were revised after the regular six-month reporting window for monthly IP was closed. These data were released with too great of a lag to be included with monthly IP estimates but were available for inclusion in the annual revision.

Revised Seasonal Factors

Industrial production indexes are adjusted to remove from the underlying data the predictable movements related to timing, holiday, workday, and monthly or quarterly seasonal patterns. Individual indexes are adjusted using the Census X-13ARIMA-SEATS seasonal adjustment program. The seasonal factors are based on the full history of data back to 1972, where available.

Seasonal factors for indexes based on production-worker hours were updated with data through January 2021. The updated factors for the physical-product-based indexes used data through December 2020 where available. For IP indexes based on physical product data, the seasonal adjustment procedure treated the pandemic-influenced months from March 2020 through August 2020 as additive outliers. For IP indexes that use production-worker hours as their monthly indicator, the months from April 2020 through August 2020 were specified as additive outliers.

Since the last annual revision, the seasonal adjustment process has been updated for indexes based on production-worker hours. Certain calendar configurations relating to the number of weekend days in a month and the timing of the BLS's Current Employment Statistics survey (the source for the data on production-worker hours) appeared to produce small systematic effects on the estimates of total IP. As a remedy, an adjustment to allow for trading day effects was added to the X-13 models for those indexes based on production-worker hours.

Seasonal factors for unit motor vehicle assemblies have been updated, and projections through June 2022 are available on the Board’s website at <https://www.federalreserve.gov/releases/g17/mvsf.htm>. These factors are based on production data through January 2021 and were revised back to January 2015. The seasonal factors explicitly incorporate the holiday schedule for the vehicle assembly lines specified in the latest collective bargaining agreements with domestic manufacturers. The seasonal factors identify production data from March through May 2020 as outliers due to the pandemic recession.

Methodological Changes to Individual Production and Capacity Indexes

Change in Frequency of Source Data for Mattress Manufacturing and for Glass Container Manufacturing

The index for mattress manufacturing (NAICS 33791) is based on data on shipments from the International Sleep Products Association (ISPA). For many years, the ISPA reported data at a monthly frequency; these reports were converted to a quarterly frequency beginning with data for 2015. With this revision, the IP index for mattresses was formally updated to reflect the quarterly data beginning in 2017.

The index for glass container manufacturing (NAICS 327213) is based on production of glass containers from the Glass Packaging Institute (GPI). The GPI issued data at a monthly frequency before transitioning to a quarterly frequency several years ago. With this revision, the IP index for glass containers was formally updated to reflect the quarterly data beginning in 2012.

Change in Source Data for Electric Lighting Equipment

With this revision, the index for electric lighting equipment (NAICS 3351) is now based on production-worker hours. For the period from 2002 through 2015, the index was based on physical product data from the National Electrical Manufacturers Association that have since been discontinued.

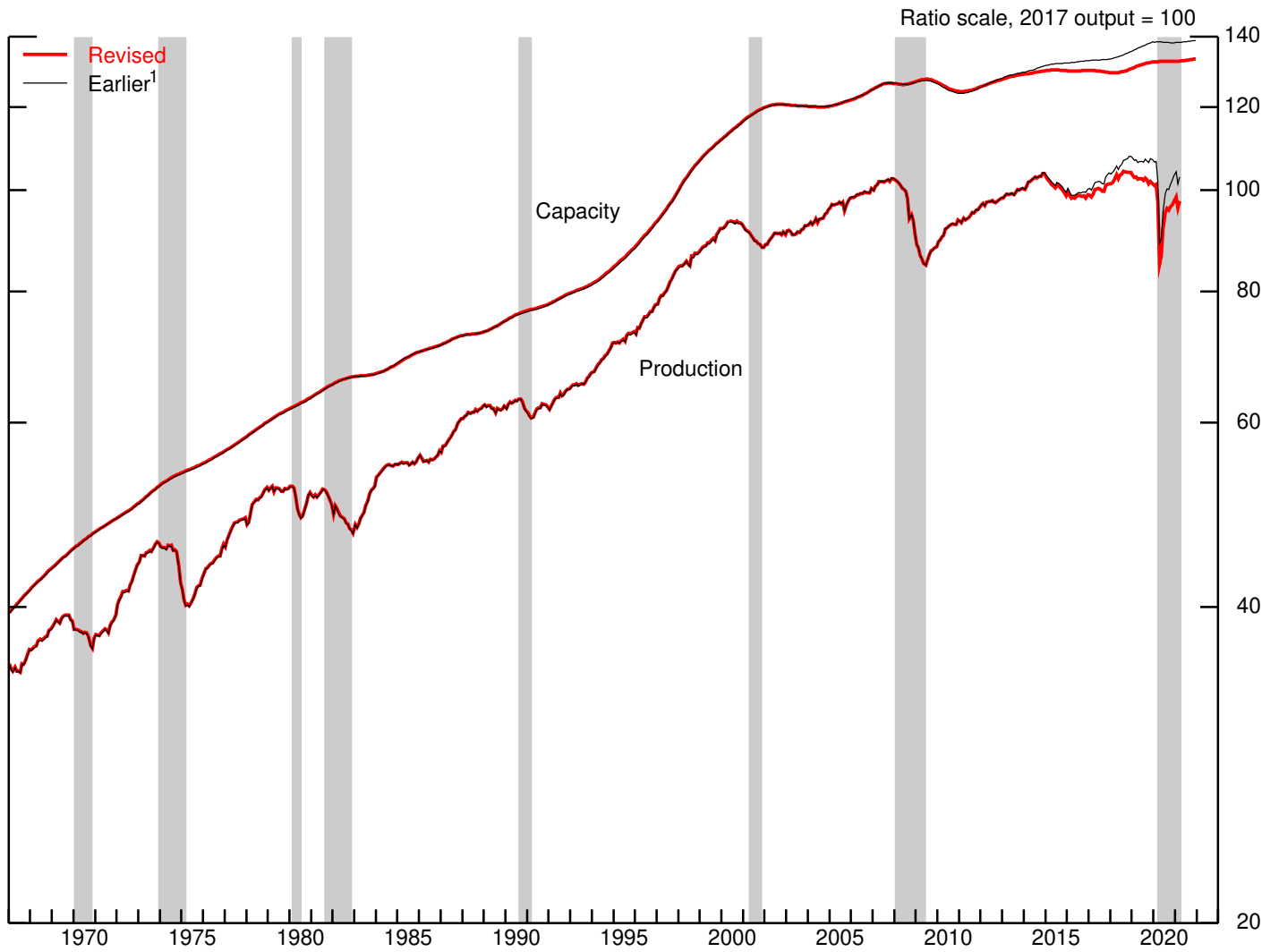
Consolidation of Individual Indexes for Communications Equipment

Communications equipment manufacturing (NAICS 3342) is covered by numerous individual IP indexes; although the individual indexes are included in the published total for communications equipment, they are not published separately. With this revision, three indexes span NAICS 3342: One index covers all of NAICS 33421, telephone apparatus; one index covers the portion of NAICS 33422 that includes wireless system equipment; and one index combines the remaining portion (predominantly radio and television broadcasting equipment and satellites) of NAICS 33422 with all of NAICS 33429, other communications equipment manufacturing. Previously, six individual indexes covered NAICS 3342. The source data for all indexes for communications equipment come from the U.S. Census Bureau’s Quarterly Survey of Plant Capacity Utilization.

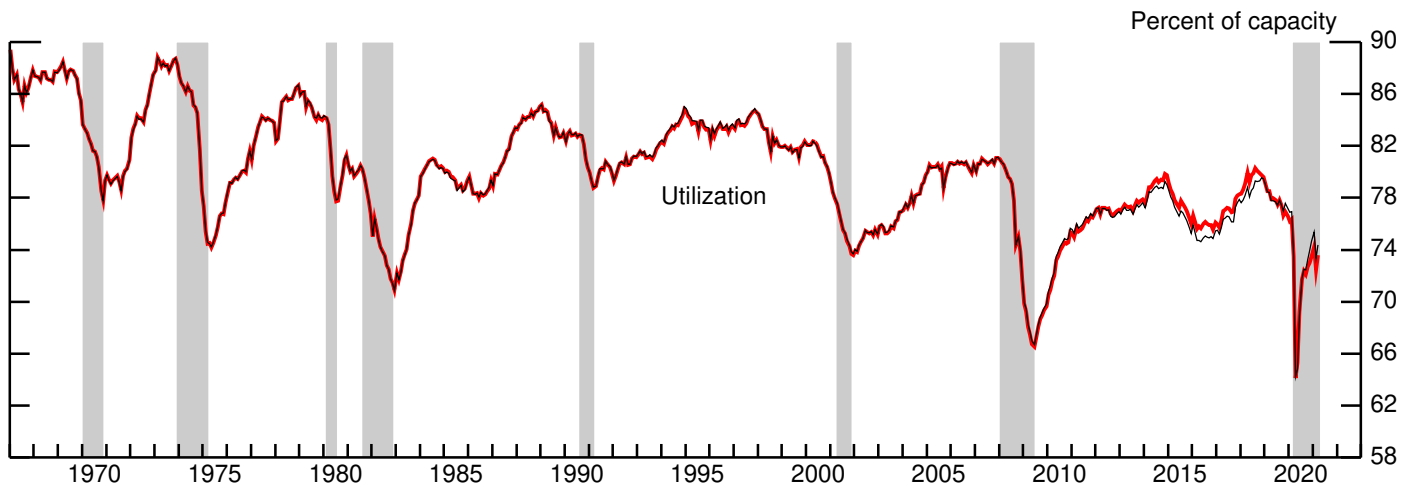
Data Availability and Publication Changes

Files containing the revised data and the text and tables from this release are available on the Board’s website at <https://www.federalreserve.gov/releases/g17>, as are updated data for the annual revision and for all of the regularly issued series on IP, capacity, and capacity utilization. Other changes are listed on the Board’s website at https://www.federalreserve.gov/releases/g17/g17_revision_series.htm.

1. Total industrial production, capacity, and utilization

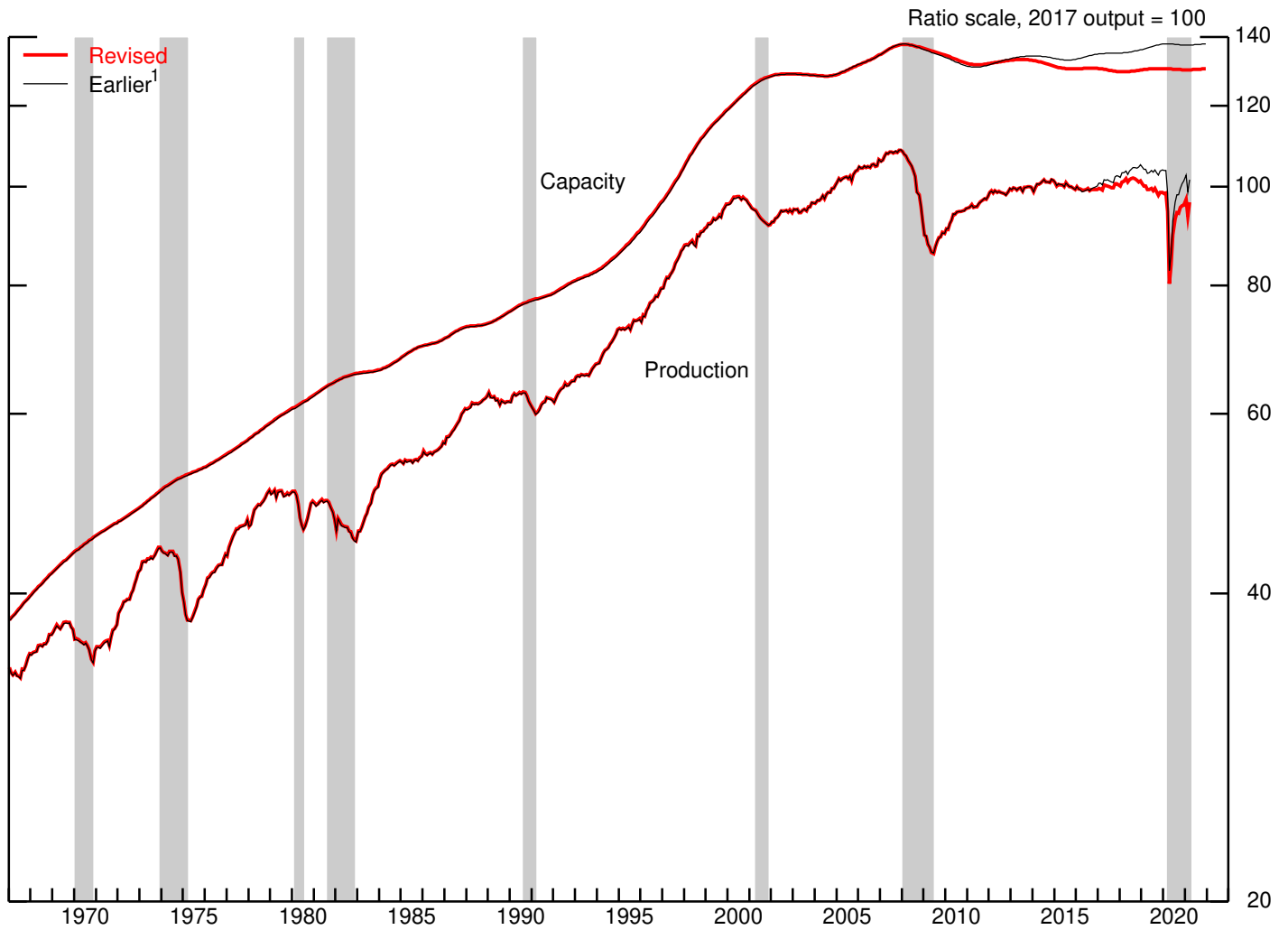


1. For ease of comparison, the earlier indexes are adjusted to equal the revised 2017-based indexes in 2012.

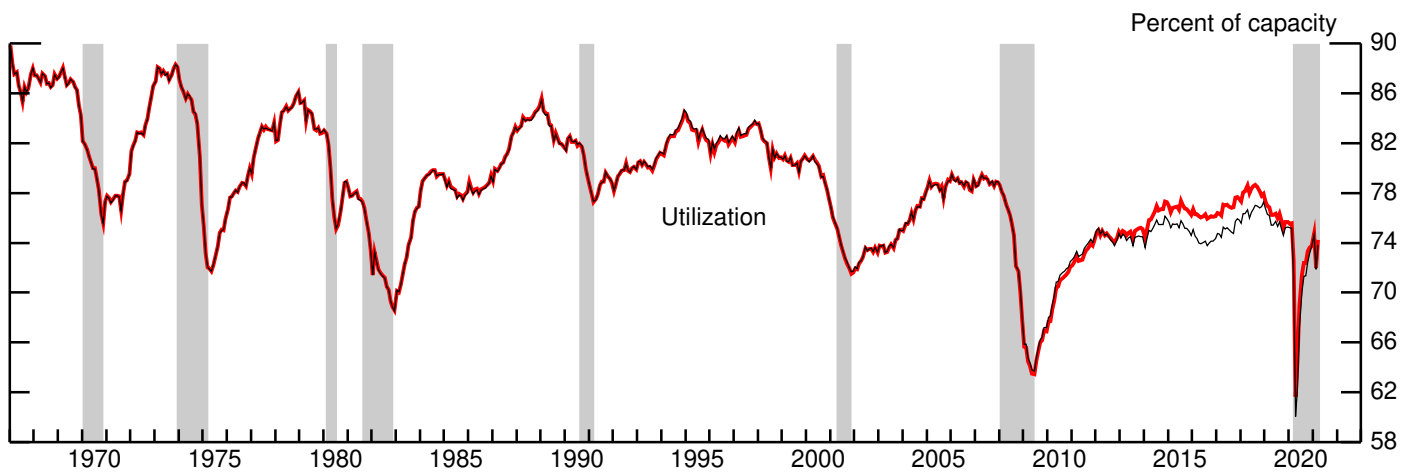


Note: The shaded areas represent periods of business recession as defined by the National Bureau of Economic Research (NBER).

2. Manufacturing industrial production, capacity, and utilization

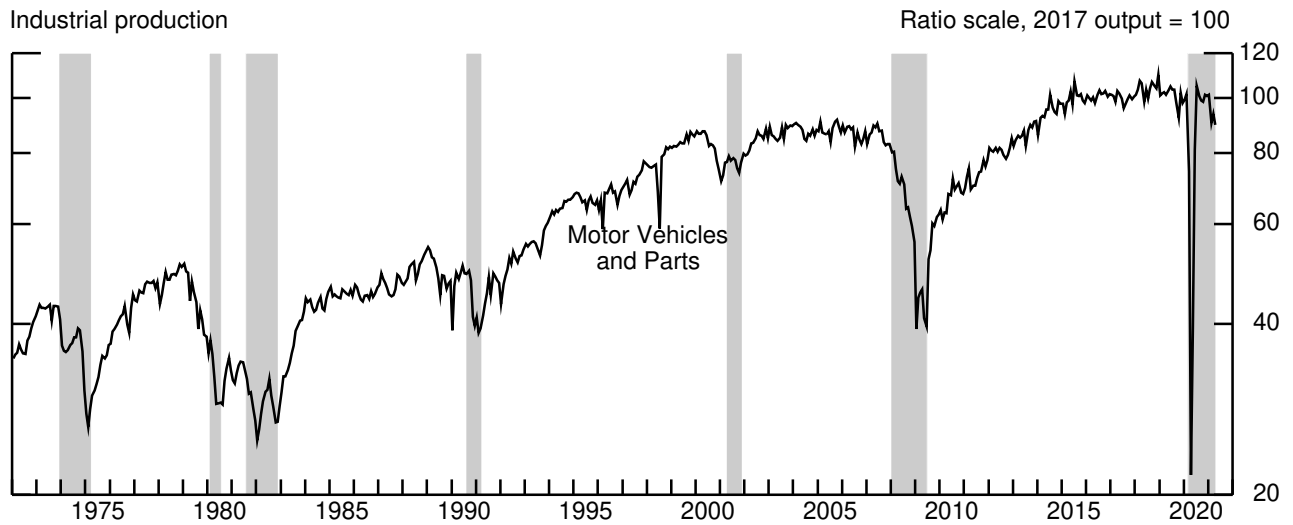
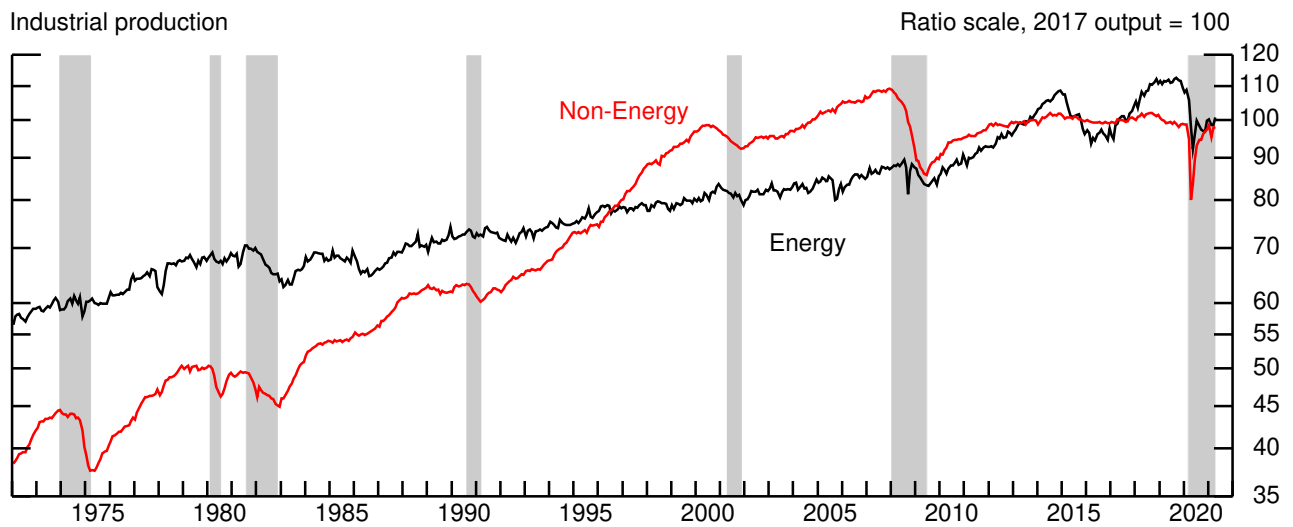
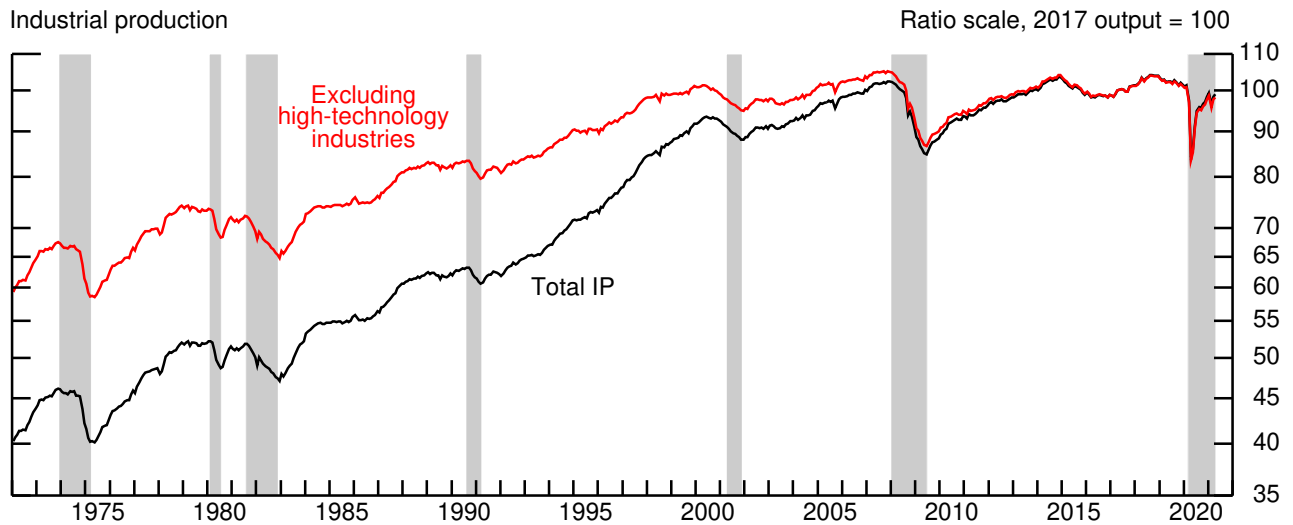


1. For ease of comparison, the earlier indexes are adjusted to equal the revised 2017-based indexes in 2012.



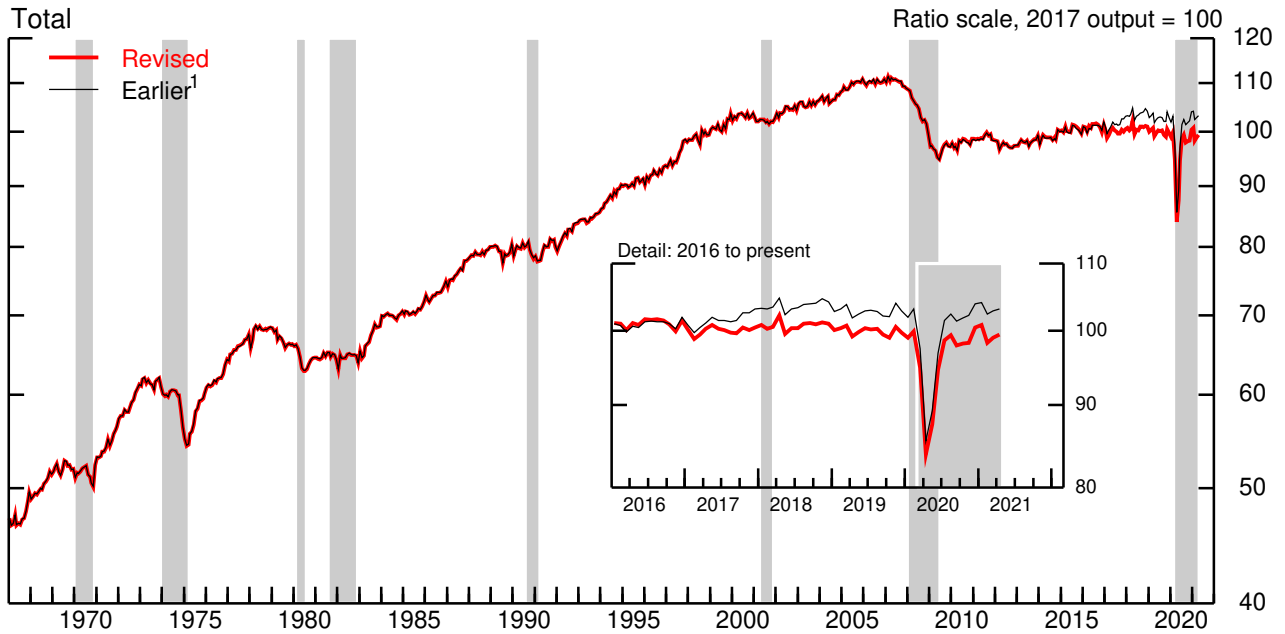
Notes: Manufacturing consists of those industries in the North American Industry Classification System, or NAICS, definition of manufacturing plus those industries--logging and newspaper, periodical, book, and directory publishing--that have traditionally been considered to be manufacturing and included in the industrial sector. The shaded areas represent periods of business recession as defined by the NBER.

3. Industrial production of selected industries

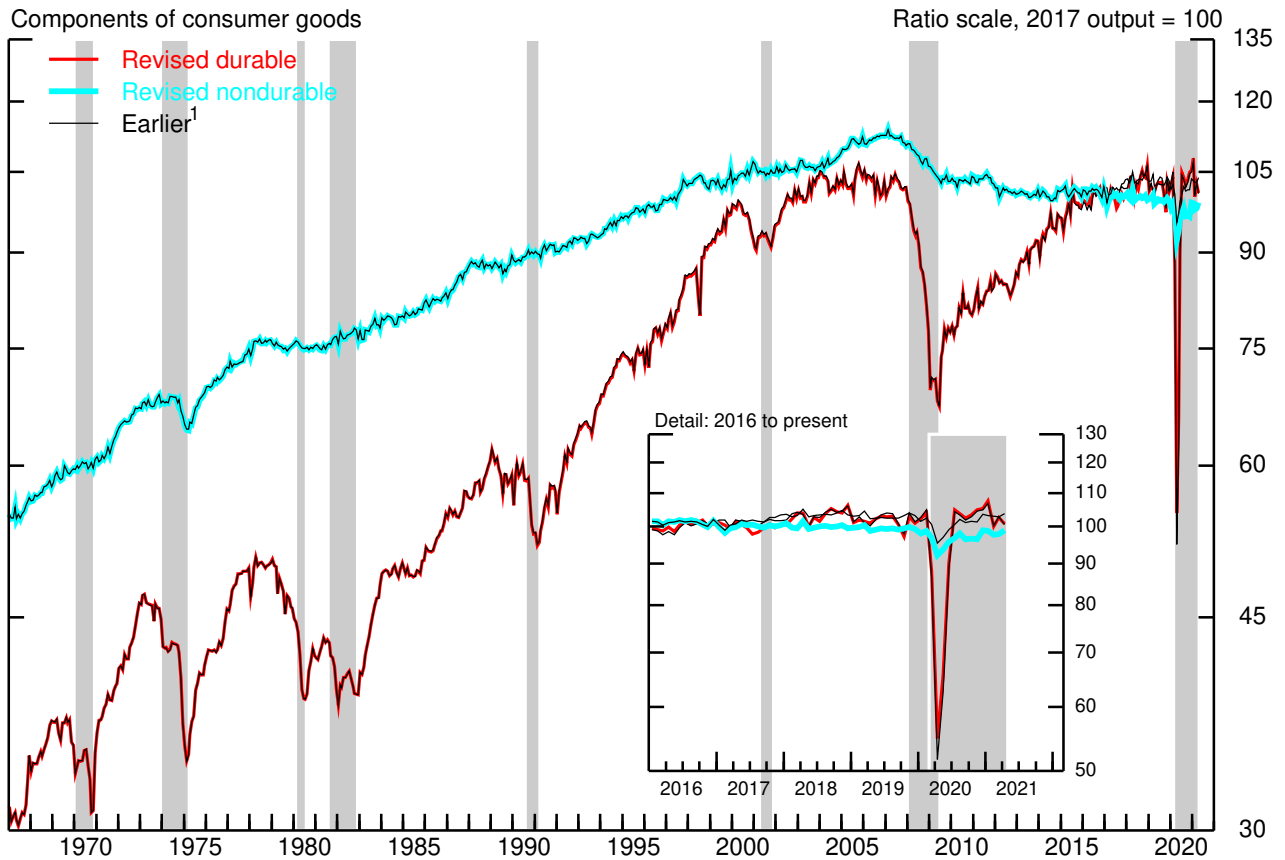


Notes: High-technology industries are defined as semiconductors and related electronic components (NAICS 3344), computers (NAICS 3341), and communications equipment (NAICS 3342).
The shaded areas represent periods of business recession as defined by the NBER.

4. Consumer goods



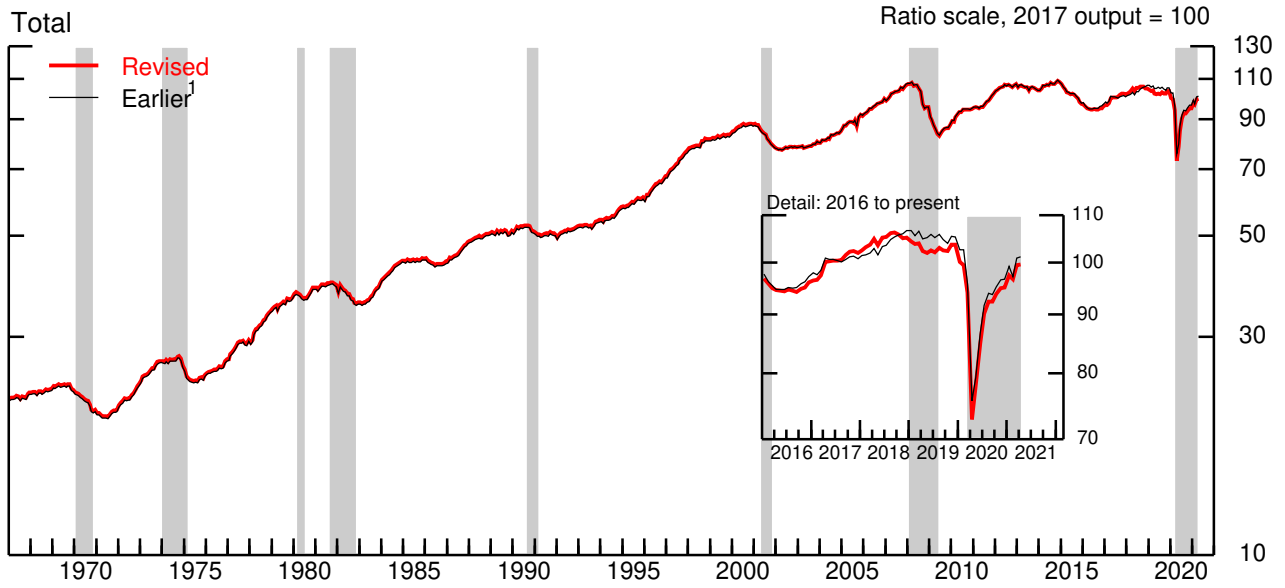
1. For ease of comparison, the earlier indexes are adjusted to equal the revised 2017-based indexes in 2012.



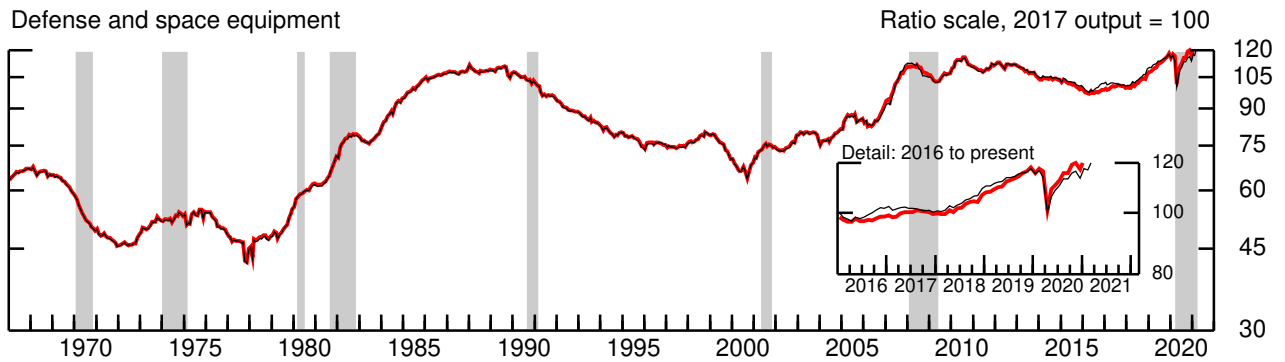
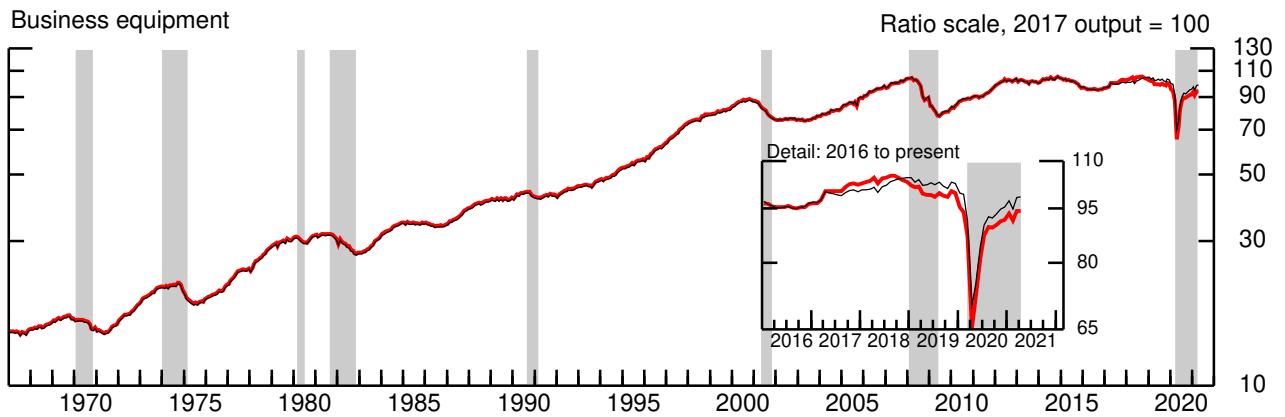
1. For ease of comparison, the earlier indexes are adjusted to equal the revised 2017-based indexes in 2012.

Note: The shaded areas represent periods of business recession as defined by the NBER.

5. Equipment

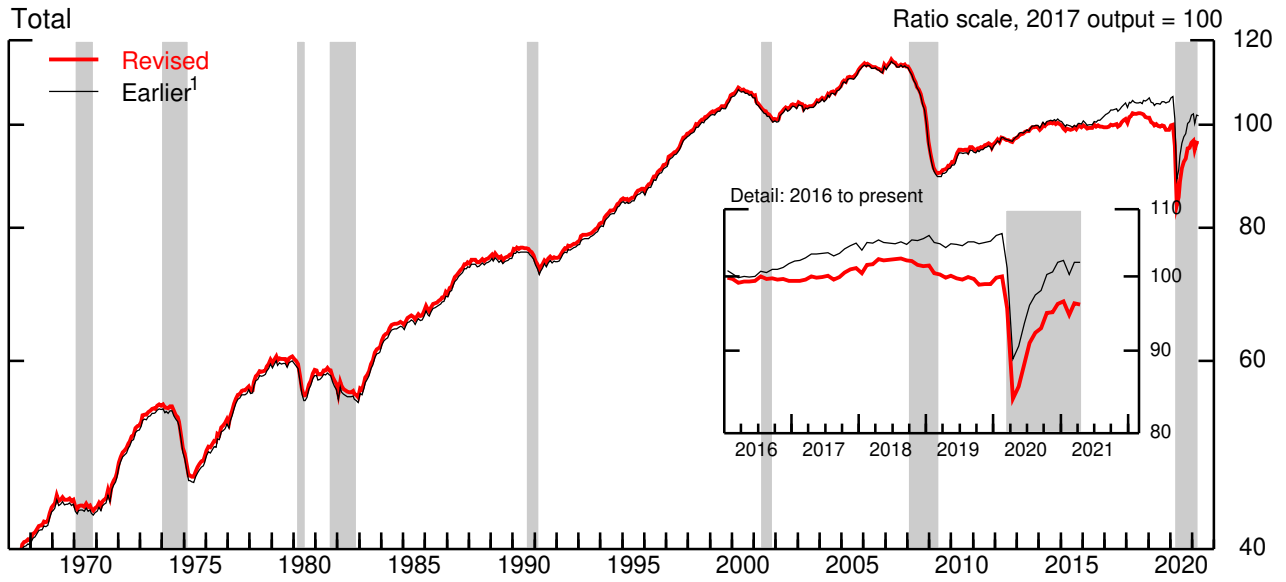


1. For ease of comparison, the earlier indexes are adjusted to equal the revised 2017-based indexes in 2012.
 Note: Includes business equipment, defense and space equipment, oil and gas well drilling, and manufactured homes.

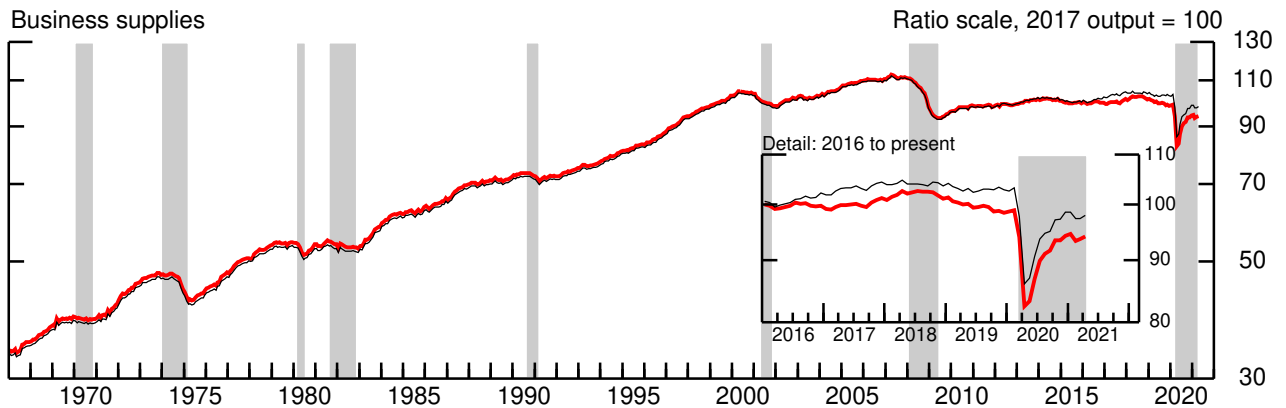
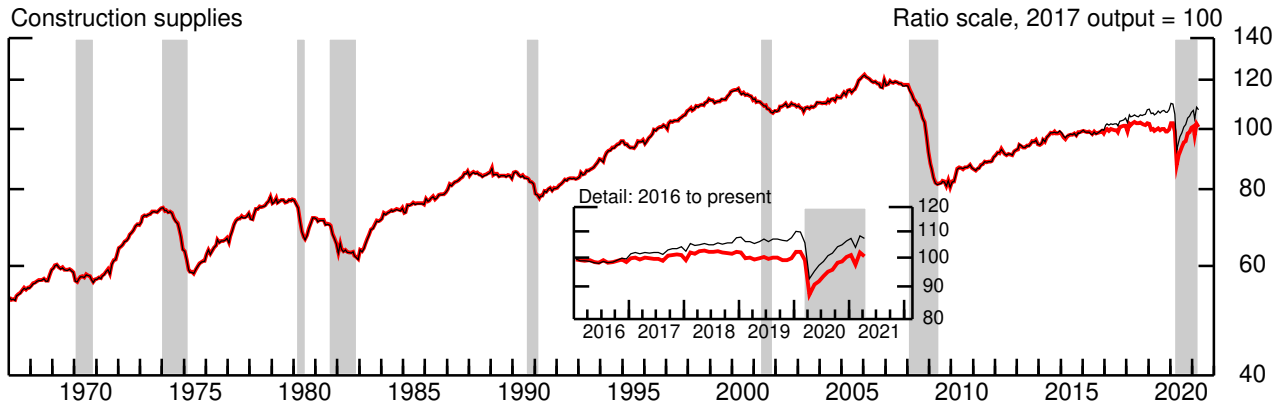


Note: The shaded areas represent periods of business recession as defined by the NBER.

6. Nonindustrial supplies

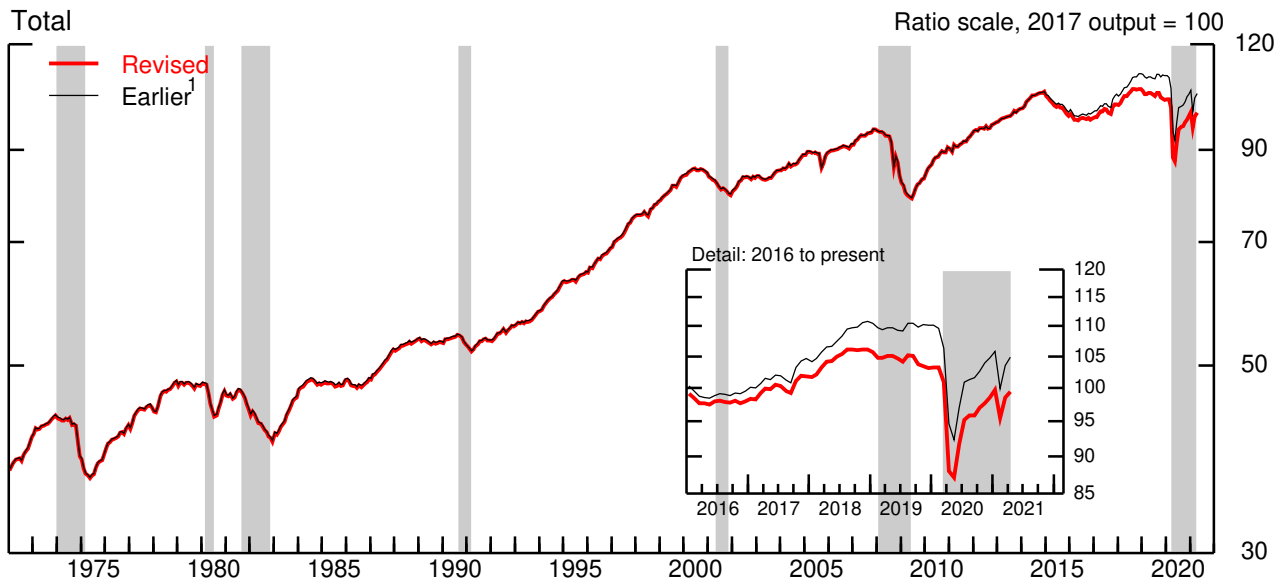


1. For ease of comparison, the earlier indexes are adjusted to equal the revised 2017-based indexes in 2012.

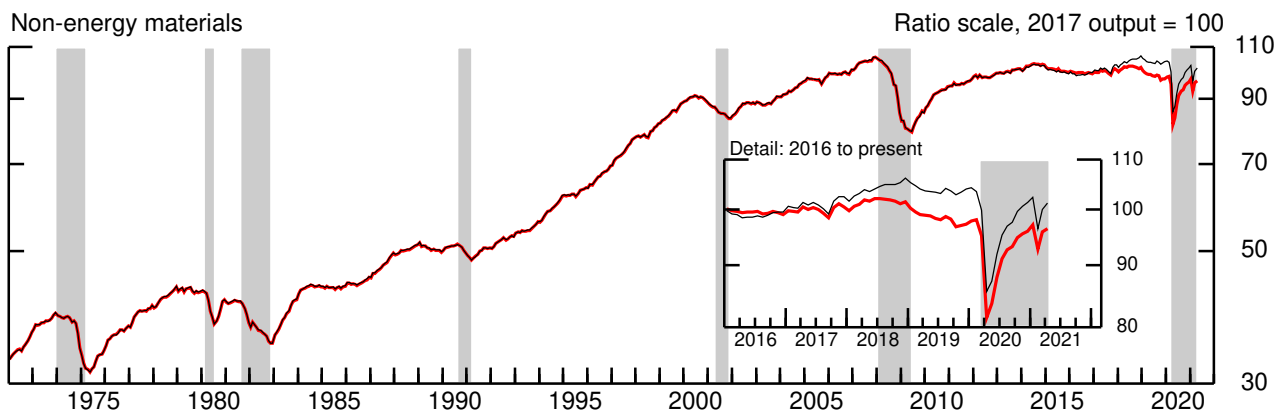
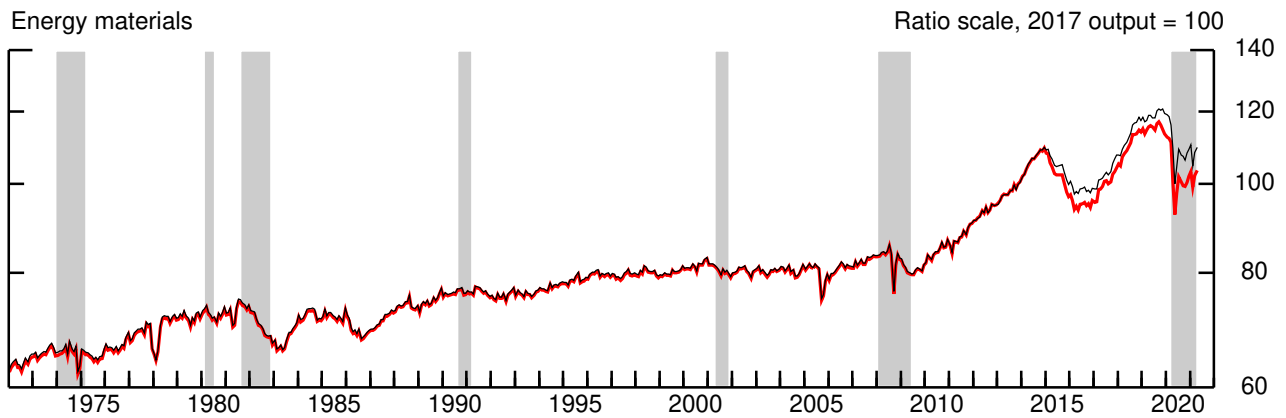


Note: The shaded areas represent periods of business recession as defined by the NBER.

7. Industrial materials

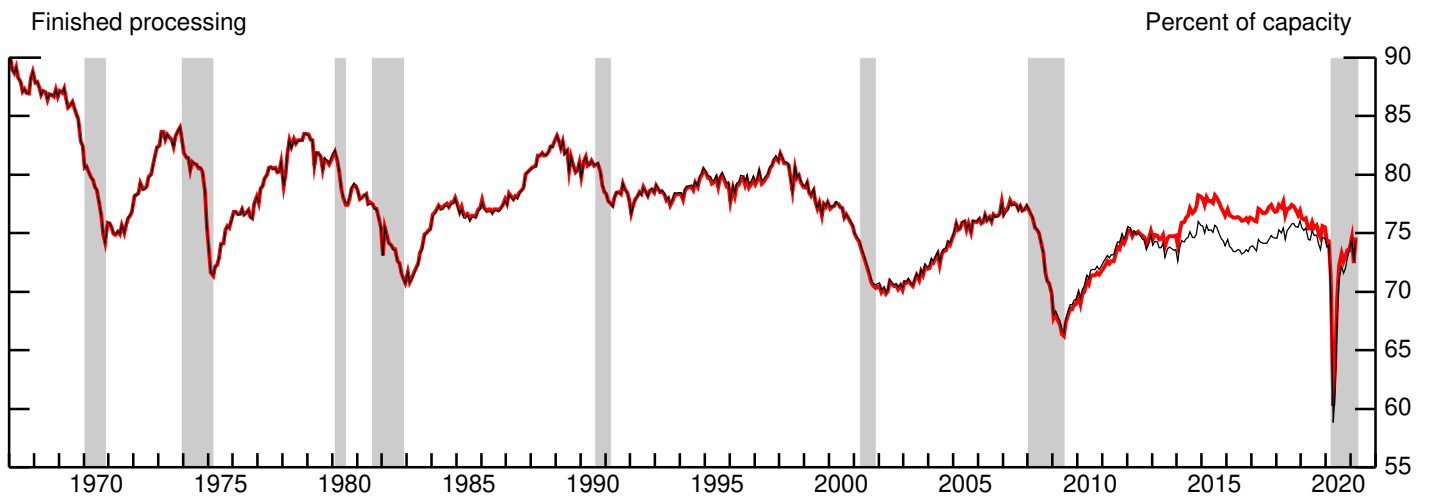
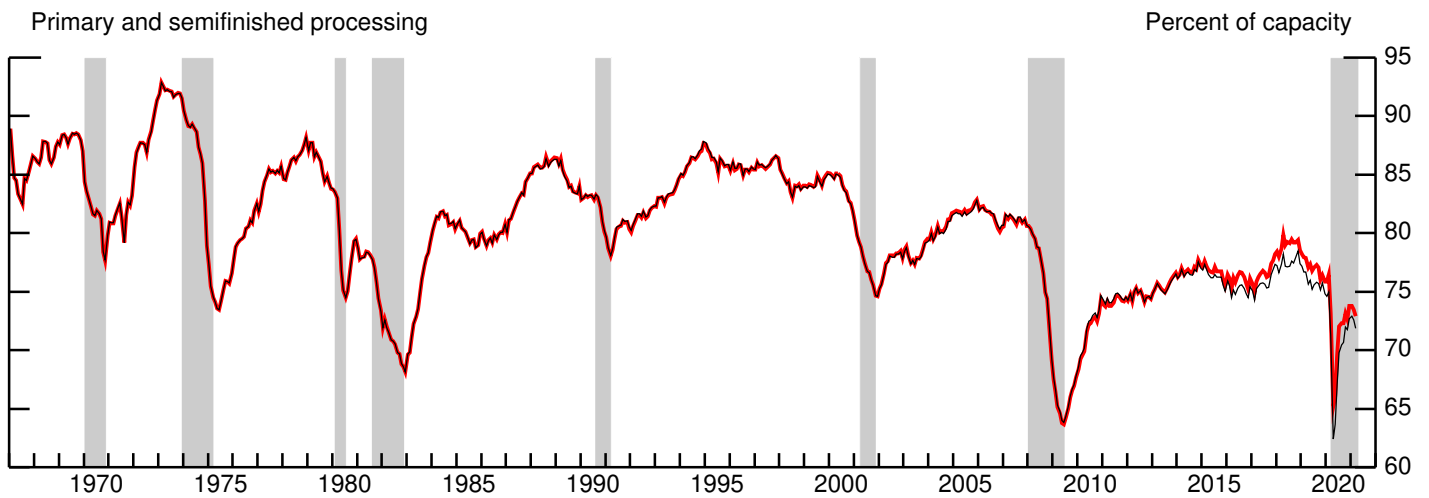
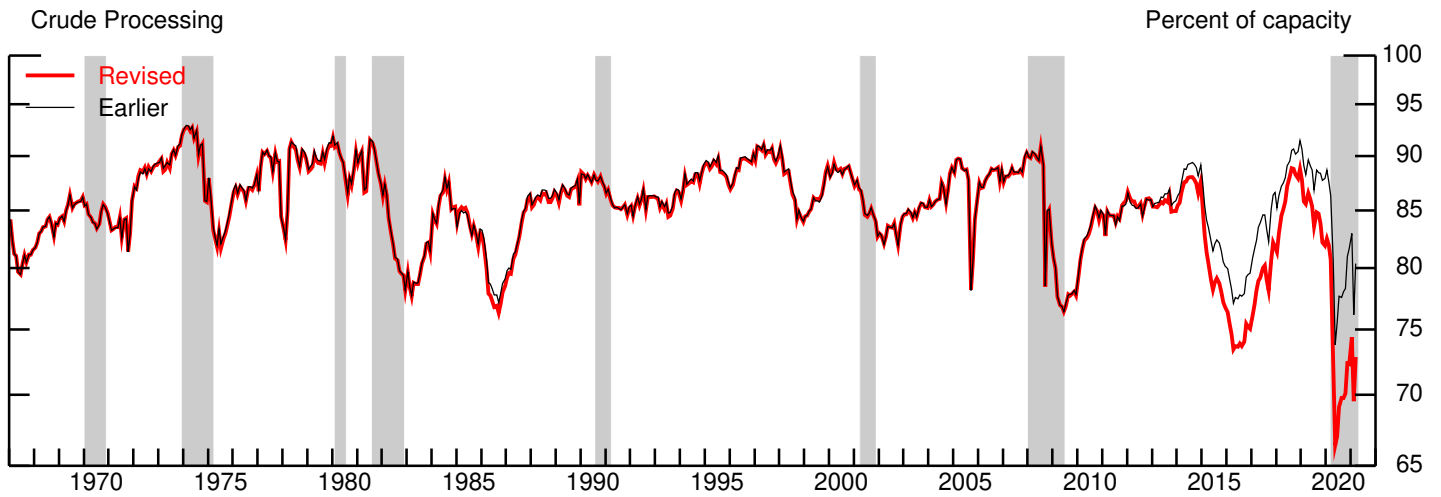


1. For ease of comparison, the earlier indexes are adjusted to equal the revised 2017-based indexes in 2012.



Note: The shaded areas represent periods of business recession as defined by the NBER.

8. Capacity utilization by stage of process



Note: The shaded areas represent periods of business recession as defined by the NBER.

Table 1A
INDUSTRIAL PRODUCTION: Total
 Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual ¹
IP (percent change)																	
1991	-4	-7	-6	.3	1.0	.8	.3	.0	.9	-1	-1	-4	-7.3	2.4	5.8	.8	-1.5
1992	-5	.7	.8	.8	.3	.1	.9	-5	.3	.7	.4	.1	-5	7.3	3.2	4.2	2.9
1993	.4	.5	-1	.3	-4	.2	.2	-1	.5	.8	.5	.5	3.7	.8	1.4	6.5	3.3
1994	.3	.1	1.0	.6	.5	.7	.1	.7	.3	.8	.7	1.0	5.0	7.6	5.2	8.3	5.3
1995	.2	-1	.2	-1	.5	.3	-4	1.3	.4	-2	.2	.4	4.2	1.3	3.8	3.4	4.6
1996	-6	1.4	-1	1.0	.7	.8	.0	.5	.7	.0	.9	.6	2.7	8.9	5.3	5.6	4.6
1997	.2	1.2	.6	.1	.5	.5	.8	1.0	1.0	.9	.8	.5	7.8	5.7	9.6	10.5	7.2
1998	.4	.2	.0	.4	.6	-6	-4	2.1	-1	.8	-1	.4	4.6	2.7	3.0	5.9	5.9
1999	.4	.6	.2	.2	.6	-1	.6	.4	-4	1.3	.5	.8	4.6	3.8	3.6	7.3	4.4
2000	-1	.4	.4	.6	.3	.1	-2	-3	.4	-4	.0	-3	4.1	5.0	-.4	-1.1	3.8
2001	-6	-7	-2	-3	-6	-6	-6	-1	-5	-3	-6	.0	-5.1	-5.0	-5.5	-4.3	-3.1
2002	.7	.0	.8	.5	.4	.8	.0	-1	.1	-3	.6	-5	2.9	6.4	2.5	-.2	.3
2003	.8	.1	-3	-6	.0	.1	.5	-2	.7	.1	.7	.1	2.5	-3.0	2.8	3.9	1.3
2004	.2	.6	-4	.4	.7	-.8	.7	.1	.1	.9	.2	.7	2.8	2.3	2.3	5.8	2.7
2005	.4	.7	-2	.2	.1	.4	-3	.4	-1.9	1.2	1.1	.5	5.8	2.2	-1.7	3.6	3.4
2006	.1	.0	.3	.3	.0	.3	-1	.4	-2	-1	-1	1.0	3.8	2.4	1.5	.9	2.2
2007	-4	1.0	.2	.7	.1	.0	-1	.2	.2	-3	.6	.0	4.0	5.0	.6	1.2	2.6
2008	-1	-4	-3	-7	-6	-2	-5	-1.6	-4.3	.9	-1.3	-2.8	-1.3	-5.8	-12.4	-16.1	-3.5
2009	-2.5	-7	-1.6	-8	-1.0	-.3	1.1	1.1	.8	.3	.4	.3	-20.8	-10.8	6.5	6.4	-11.5
2010	1.1	.3	.7	.4	1.4	.2	.4	.3	.2	-2	.0	1.0	8.0	8.2	5.4	1.6	5.5
2011	-2	-4	1.0	-3	.2	.3	.5	.6	-1	.6	.0	.5	2.1	1.5	4.6	4.0	3.1
2012	.6	.3	-5	.8	.2	.0	.2	-4	-1	.3	.5	.2	3.9	2.6	-.1	2.1	3.0
2013	.0	.5	.4	-1	.1	.1	-3	.6	.6	-1	.3	.2	2.9	1.9	1.6	2.7	2.0
2014	-.3	.8	1.0	.1	.4	.3	.3	-2	.3	.0	.7	-1	2.9	5.4	2.4	2.3	3.0
2015	-.7	-6	-3	-6	-4	-.3	.7	-3	-3	-4	-.7	-6	-4.2	-5.5	.0	-5.5	-1.4
2016	.7	-5	-8	.3	-2	.4	.2	-2	-1	.1	-4	.7	-2.3	-1.6	1.0	-.6	-2.2
2017	-2	-4	.8	.9	.1	.2	-1	-5	.0	1.2	.3	.1	.6	5.9	-1.1	5.4	1.3
2018	.0	.3	.6	1.1	-.8	.7	.2	.6	.0	-1	-1	.0	2.2	5.3	3.4	-.1	3.2
2019	-.5	-6	.1	-6	.2	-1	-3	.6	-4	-8	.5	-4	-3.6	-2.3	.0	-2.6	-.8
2020	-.5	.2	-3.8	-13.6	1.9	6.2	4.1	1.1	-.3	1.1	.5	1.2	-6.7	-42.4	44.5	8.3	-7.2
2021	1.0	-2.9	2.2	.5									2.8				
IP (2017=100)																	
1991	61.4	60.9	60.6	60.8	61.4	61.8	62.0	62.0	62.5	62.5	62.4	62.1	61.0	61.3	62.2	62.3	61.7
1992	61.8	62.2	62.7	63.2	63.4	63.4	64.0	63.7	63.9	64.3	64.6	64.6	62.2	63.3	63.8	64.5	63.5
1993	64.9	65.2	65.2	65.4	65.1	65.2	65.4	65.3	65.7	66.2	66.5	66.8	65.1	65.2	65.5	66.5	65.6
1994	67.1	67.1	67.8	68.2	68.5	69.0	69.1	69.5	69.7	70.3	70.7	71.5	67.3	68.6	69.4	70.8	69.0
1995	71.6	71.5	71.6	71.5	71.8	72.1	71.7	72.7	73.0	72.9	73.0	73.3	71.6	71.8	72.5	73.1	72.2
1996	72.9	74.0	73.9	74.6	75.2	75.7	75.7	76.1	76.6	76.6	77.2	77.7	73.6	75.2	76.1	77.2	75.5
1997	77.9	78.8	79.3	79.3	79.8	80.1	80.8	81.6	82.4	83.1	83.8	84.1	78.6	79.8	81.6	83.7	80.9
1998	84.5	84.6	84.7	85.0	85.5	85.0	84.7	86.4	86.3	87.0	86.9	87.3	84.6	85.2	85.8	87.0	85.7
1999	87.6	88.1	88.3	88.5	89.0	89.0	89.5	89.9	89.5	90.7	91.1	91.8	88.0	88.8	89.6	91.2	89.4
2000	91.8	92.1	92.5	93.1	93.3	93.4	93.2	93.0	93.4	93.0	93.0	92.7	92.1	93.3	93.2	92.9	92.9
2001	92.2	91.6	91.4	91.1	90.5	90.0	89.5	89.4	88.9	88.6	88.1	88.1	91.7	90.5	89.3	88.3	90.0
2002	88.7	88.7	89.4	89.8	90.2	90.9	90.9	90.8	90.9	90.6	91.1	90.6	88.9	90.3	90.9	90.8	90.2
2003	91.4	91.5	91.2	90.6	90.6	90.7	91.2	91.0	91.6	91.7	92.4	92.4	91.4	90.7	91.3	92.2	91.4
2004	92.6	93.1	92.7	93.1	93.8	93.1	93.8	93.9	93.9	94.8	95.0	95.7	92.8	93.3	93.9	95.2	93.8
2005	96.1	96.8	96.7	96.9	97.0	97.4	97.0	97.4	95.5	96.6	97.7	98.2	96.5	97.1	96.6	97.5	96.9
2006	98.3	98.3	98.6	98.9	98.9	99.2	99.1	99.6	99.4	99.3	99.2	100.3	98.4	99.0	99.4	99.6	99.1
2007	99.9	100.8	101.0	101.7	101.8	101.8	101.7	102.0	102.2	101.9	102.5	102.5	100.6	101.8	102.0	102.3	101.7
2008	102.3	101.9	101.6	100.9	100.3	100.1	99.6	98.1	93.8	94.7	93.5	90.8	101.9	100.4	97.2	93.0	98.1
2009	88.6	88.0	86.6	85.9	85.1	84.8	85.7	86.7	87.4	87.7	88.0	88.3	87.7	85.3	86.6	88.0	86.9
2010	89.3	89.6	90.2	90.6	91.8	92.0	92.4	92.7	92.9	92.7	92.8	93.6	89.7	91.5	92.7	93.0	91.7
2011	93.5	93.1	94.0	93.7	93.8	94.1	94.6	95.2	95.1	95.7	95.7	96.2	93.5	93.9	94.9	95.9	94.6
2012	96.8	97.1	96.6	97.3	97.5	97.5	97.7	97.3	97.2	97.5	98.0	98.2	96.8	97.4	97.4	97.9	97.4
2013	98.2	98.6	99.1	99.0	99.1	99.2	98.9	99.5	100.1	99.9	100.2	100.4	98.6	99.1	99.5	100.2	99.3
2014	100.0	100.8	101.8	101.8	102.2	102.6	102.8	102.6	103.0	103.0	103.7	103.6	100.9	102.2	102.8	103.4	102.3
2015	102.8	102.2	101.9	101.3	100.8	100.5	101.2	100.9	100.6	100.2	99.4	98.8	102.3	100.9	100.9	99.5	100.9
2016	99.5	99.0	98.2	98.5	98.3	98.7	98.9	98.7	98.6	98.7	98.2	98.9	98.9	98.5	98.7	98.6	98.7
2017	98.7	98.4	99.1	100.0	100.1	100.3	100.2	99.7	99.7	101.0	101.3	101.4	98.7	100.2	99.9	101.2	100.0
2018	101.4	101.6	102.3	103.4	102.5	103.3	103.5	104.2	104.1	104.0	103.9	103.9	101.8	103.1	103.9	103.9	103.2
2019	103.3	102.7	102.9	102.3	102.5	102.4	102.1	102.7	102.3	101.5	102.0	101.6	103.0	102.4	102.4	101.7	102.3
2020	101.1	101.3	97.4	84.2	85.8	91.2	94.9	95.9	95.6	96.6	97.2	98.3	100.0	87.1	95.5	97.4	95.0
2021	99.3	96.4	98.5	99.0									98.1				

NOTE: Estimates from December 2020 through April 2021 are subject to further revision in the upcoming monthly releases.
 1. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

Table 1B
CAPACITY AND UTILIZATION: Total
 Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual
Capacity (percent of 2017 output)																	
1991	76.7	76.8	76.9	76.9	77.0	77.1	77.2	77.2	77.3	77.4	77.5	77.7	76.8	77.0	77.2	77.5	77.1
1992	77.8	78.0	78.1	78.3	78.4	78.6	78.8	78.9	79.1	79.3	79.4	79.6	78.0	78.4	78.9	79.4	78.7
1993	79.7	79.8	79.9	80.1	80.2	80.3	80.4	80.5	80.6	80.8	80.9	81.1	79.8	80.2	80.5	80.9	80.4
1994	81.3	81.5	81.7	81.9	82.1	82.4	82.6	82.9	83.2	83.5	83.7	84.0	81.5	82.1	82.9	83.7	82.6
1995	84.3	84.6	84.9	85.2	85.5	85.8	86.1	86.5	86.8	87.2	87.5	87.9	84.6	85.5	86.5	87.5	86.0
1996	88.3	88.7	89.1	89.5	89.9	90.3	90.7	91.2	91.6	92.0	92.5	92.9	88.7	89.9	91.2	92.5	90.6
1997	93.3	93.8	94.3	94.8	95.3	95.8	96.3	96.9	97.5	98.1	98.7	99.3	93.8	95.3	96.9	98.7	96.2
1998	100.0	100.6	101.3	101.9	102.6	103.2	103.8	104.3	104.9	105.4	105.9	106.4	100.6	102.6	104.3	105.9	103.4
1999	106.9	107.3	107.8	108.2	108.6	109.0	109.4	109.8	110.2	110.6	111.0	111.4	107.3	108.6	109.8	111.0	109.2
2000	111.7	112.1	112.5	112.9	113.3	113.6	114.0	114.4	114.8	115.2	115.5	115.9	112.1	113.3	114.4	115.5	113.8
2001	116.3	116.7	117.0	117.4	117.7	118.0	118.3	118.6	118.9	119.1	119.4	119.6	116.7	117.7	118.6	119.4	118.1
2002	119.8	119.9	120.1	120.2	120.3	120.3	120.4	120.4	120.4	120.4	120.4	120.4	119.9	120.3	120.4	120.4	120.3
2003	120.3	120.3	120.3	120.2	120.2	120.1	120.1	120.1	120.1	120.1	120.0	120.0	120.3	120.2	120.1	120.0	120.2
2004	120.0	120.0	119.9	119.9	119.9	119.9	119.9	119.9	119.9	119.9	120.0	120.0	120.0	119.9	119.9	120.0	119.9
2005	120.1	120.2	120.3	120.5	120.6	120.8	121.0	121.1	121.3	121.5	121.6	121.8	120.2	120.6	121.1	121.6	120.9
2006	122.0	122.1	122.3	122.5	122.7	122.9	123.1	123.4	123.6	123.9	124.2	124.5	122.1	122.7	123.4	124.2	123.1
2007	124.8	125.1	125.4	125.7	126.0	126.2	126.4	126.5	126.6	126.6	126.6	126.6	125.1	126.0	126.5	126.6	126.1
2008	126.5	126.4	126.3	126.3	126.2	126.1	126.2	126.2	126.3	126.4	126.6	126.7	126.4	126.2	126.2	126.6	126.4
2009	126.9	127.0	127.1	127.3	127.3	127.4	127.4	127.3	127.2	127.0	126.8	126.6	127.0	127.3	127.3	126.8	127.1
2010	126.4	126.1	125.8	125.6	125.3	125.0	124.8	124.5	124.3	124.2	124.0	123.9	126.1	125.3	124.5	124.1	125.0
2011	123.9	123.9	123.9	123.9	124.0	124.1	124.2	124.3	124.5	124.7	124.9	125.1	123.9	124.0	124.4	124.9	124.3
2012	125.4	125.6	125.8	126.1	126.3	126.5	126.7	126.9	127.2	127.4	127.6	127.8	125.6	126.3	126.9	127.6	126.6
2013	127.9	128.1	128.3	128.4	128.6	128.7	128.9	129.0	129.1	129.2	129.3	129.4	128.1	128.6	129.0	129.3	128.7
2014	129.5	129.6	129.7	129.8	129.9	130.1	130.2	130.3	130.5	130.6	130.7	130.8	129.6	129.9	130.3	130.7	130.1
2015	130.9	131.0	131.0	131.1	131.1	131.1	131.1	131.1	131.1	131.1	131.1	131.1	131.0	131.1	131.1	131.1	131.1
2016	131.1	131.1	131.1	131.1	131.2	131.2	131.2	131.3	131.3	131.3	131.3	131.3	131.1	131.2	131.3	131.3	131.2
2017	131.3	131.3	131.2	131.1	131.0	130.9	130.7	130.6	130.5	130.3	130.2	130.1	131.3	131.0	130.6	130.2	130.8
2018	130.1	130.0	130.0	130.0	130.1	130.1	130.2	130.4	130.6	130.7	130.9	131.1	130.0	130.1	130.4	130.9	130.4
2019	131.3	131.5	131.7	131.9	132.1	132.2	132.4	132.5	132.6	132.7	132.7	132.8	131.5	132.1	132.5	132.7	132.2
2020	132.8	132.8	132.8	132.8	132.8	132.7	132.7	132.7	132.7	132.6	132.6	132.6	132.8	132.8	132.7	132.6	132.7
2021	132.6	132.6	132.7	132.7									132.6				
Utilization (percent)																	
1991	80.0	79.3	78.8	79.0	79.7	80.2	80.4	80.3	80.9	80.7	80.4	80.0	79.4	79.6	80.5	80.3	80.0
1992	79.4	79.8	80.3	80.7	80.8	80.7	81.3	80.6	80.7	81.1	81.3	81.3	79.8	80.8	80.9	81.2	80.7
1993	81.5	81.7	81.5	81.6	81.2	81.3	81.3	81.1	81.4	81.9	82.1	82.4	81.6	81.4	81.3	82.1	81.6
1994	82.5	82.4	83.0	83.3	83.4	83.7	83.6	83.8	83.8	84.2	84.5	85.1	82.6	83.5	83.7	84.6	83.6
1995	84.9	84.5	84.3	83.9	84.0	84.0	83.3	84.1	84.1	83.6	83.4	83.4	84.6	84.0	83.8	83.5	84.0
1996	82.6	83.4	82.9	83.4	83.6	83.8	83.4	83.5	83.6	83.2	83.6	83.7	82.9	83.6	83.5	83.5	83.4
1997	83.4	84.0	84.1	83.7	83.7	83.7	83.9	84.2	84.5	84.7	84.9	84.7	83.8	83.7	84.2	84.8	84.1
1998	84.5	84.1	83.6	83.4	83.4	82.4	81.6	82.8	82.3	82.5	82.1	82.0	84.1	83.0	82.2	82.2	82.9
1999	82.0	82.1	81.9	81.8	82.0	81.6	81.8	81.9	81.2	82.0	82.1	82.5	82.0	81.8	81.6	82.2	81.9
2000	82.2	82.2	82.2	82.4	82.4	82.2	81.7	81.3	81.3	80.8	80.5	80.0	82.2	82.3	81.4	80.4	81.6
2001	79.3	78.5	78.1	77.6	76.9	76.3	75.6	75.3	74.8	74.4	73.8	73.7	78.6	76.9	75.3	74.0	76.2
2002	74.0	73.9	74.4	74.7	75.0	75.5	75.5	75.4	75.5	75.3	75.7	75.3	74.1	75.1	75.5	75.4	75.0
2003	75.9	76.1	75.9	75.4	75.4	75.5	75.9	75.8	76.3	76.4	76.9	77.0	76.0	75.4	76.0	76.8	76.0
2004	77.1	77.6	77.3	77.7	78.2	77.6	78.2	78.3	78.4	79.1	79.2	79.8	77.4	77.8	78.3	79.4	78.2
2005	80.0	80.5	80.3	80.4	80.4	80.6	80.2	80.4	78.7	79.6	80.3	80.6	80.3	80.5	79.8	80.2	80.2
2006	80.6	80.5	80.6	80.8	80.6	80.7	80.5	80.7	80.4	80.1	79.9	80.5	80.6	80.7	80.6	80.2	80.5
2007	80.0	80.6	80.5	80.9	80.8	80.7	80.5	80.6	80.7	80.5	80.9	80.9	80.4	80.8	80.6	80.8	80.6
2008	80.9	80.6	80.4	79.9	79.5	79.3	79.0	77.7	74.3	74.9	73.9	71.7	80.6	79.6	77.0	73.5	77.7
2009	69.8	69.3	68.1	67.5	66.8	66.6	67.3	68.1	68.7	69.0	69.4	69.7	69.1	67.0	68.1	69.4	68.4
2010	70.6	71.0	71.7	72.1	73.3	73.6	74.1	74.5	74.7	74.7	74.8	75.6	71.1	73.0	74.4	75.0	73.4
2011	75.5	75.1	75.9	75.6	75.7	75.8	76.2	76.5	76.4	76.7	76.6	76.9	75.5	75.7	76.4	76.7	76.1
2012	77.2	77.3	76.8	77.2	77.2	77.0	77.1	76.6	76.5	76.6	76.8	76.9	77.1	77.1	76.7	76.8	76.9
2013	76.7	77.0	77.2	77.1	77.0	77.1	76.8	77.2	77.5	77.3	77.5	77.6	77.0	77.1	77.1	77.5	77.2
2014	77.3	77.8	78.5	78.5	78.7	78.9	79.0	78.8	78.9	78.9	79.3	79.2	77.8	78.7	78.9	79.1	78.6
2015	78.6	78.0	77.8	77.3	76.9	76.6	77.2	77.0	76.7	76.4	75.8	75.4	78.1	76.9	76.9	75.9	77.0
2016	75.9	75.5	74.9	75.1	74.9	75.2	75.4	75.2	75.1	75.1	74.8	75.3	75.4	75.1	75.2	75.1	75.2
2017	75.2	74.9	75.5	76.3	76.5	76.6	76.6	76.3	76.5	77.5	77.8	77.9	75.2	76.5	76.5	77.7	76.5
2018	77.9	78.2	78.7	79.5	78.8	79.4	79.5	79.9	79.8	79.5	79.4	79.2	78.3	79.3	79.7	79.4	79.2
2019	78.7	78.1	78.1	77.5	77.6	77.4	77.1	77.5	77.2	76.5	76.8	76.5	78.3	77.5	77.2	76.6	77.4
2020	76.1	76.3	73.4	63.4	64.7	68.7	71.5	72.3	72.1	72.9	73.3	74.2	75.3	65.6	71.9	73.4	71.6
2021	74.9	72.7	74.2	74.6									73.9				

NOTE: Estimates from December 2020 through April 2021 are subject to further revision in the upcoming monthly releases.

Table 2

RATES OF CHANGE IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY: 2016–20¹

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	
Total IP	-9	2.6	2.7	-2.1	-4.2	-6	-1.0	-1.3	-1.5	.0	
MARKET GROUPS											
Final products and nonindustrial supplies	-5	1.8	1.3	-1.9	-3.4	-7	-9	-8	-9	-3	
Consumer goods	.6	-4	.7	-1.3	-8	-4	-2.1	-8	.0	-5	
Durable	2.5	-6	4.4	-4.2	4.2	-6	-1.3	1.4	-6	1.1	
Automotive products	4.9	1.5	5.0	-5.2	5.1	.0	.9	1.5	-2	-8	
Home electronics	1.2	5.4	19.7	3.4	16.0	.4	4.0	14.0	-5.0	14.0	
Appliances, furniture, carpeting	.5	-2.0	-1.7	-2.9	5.2	-4	-1.5	-1	.3	4.7	
Miscellaneous goods	-9	-4.7	5.4	-3.9	.8	-2.3	-6.1	1.4	-1.5	1.0	
Nondurable	.0	-4	-3	-4	-2.2	-4	-2.3	-1.4	.1	-1.0	
Non-energy	-1.1	-1.2	-1.4	.3	-8	-5	-2.8	-1.3	.5	-1.0	
Foods and tobacco	.0	.4	-1.7	1.3	-4	-3	-2.1	-1.5	-3	-1.5	
Clothing	.8	-7.8	-2.7	1.9	-1.2	3.0	2.8	2.4	10.4	3.5	
Chemical products	-2.6	-3.3	-1.1	.0	-8	-1.0	-5.4	-2.4	1.5	-6	
Paper products	-3.7	-4.5	-2.8	-6.0	-4.3	-3	.0	2.7	2.0	-1.3	
Energy	4.1	2.4	2.8	-2.5	-6.6	-2	-6	-1.8	-9	-9	
Business equipment	-2.1	7.1	1.4	-4.2	-8.5	.0	2.2	-2.5	-2.2	-9	
Transit	-3.9	9.0	-4.0	-6.1	-23.9	2.5	8.8	-7.6	2.3	-6.3	
Information processing	4.1	4.8	4.1	1.5	3.5	.1	.7	.6	-4.1	2.4	
Industrial and other	-3.7	7.0	3.6	-5.3	-4.5	-1.4	-6	-7	-3.1	2.6	
Defense and space equipment	-9	1.7	5.0	10.9	1.9	-1.6	2.5	-1.7	2.5	3.0	
Construction supplies	.0	2.2	.7	-2.4	-.2	-.8	-1.9	-1.8	-2.9	1.3	
Business supplies	-.1	1.1	.9	-3.0	-5.0	-1.5	-1.2	.9	-2.0	.2	
Materials	-1.4	3.8	4.4	-2.5	-5.5	-.4	-1.0	-1.7	-2.2	.3	
Non-energy	-.5	1.3	.7	-4.3	-1.6	-.5	-1.4	-2.5	-2.4	1.1	
Durable	-1.0	2.1	2.0	-5.1	-2.8	-.4	-.6	-1.8	-2.8	1.7	
Consumer parts	-.9	-2.5	2.5	-10.7	1.1	-.7	-3.2	-1.4	-2.0	-1.0	
Equipment parts	1.2	4.2	2.0	-1.6	-1.5	.9	2.4	-3.9	-2.3	2.7	
Other	-2.4	2.5	1.9	-5.2	-4.7	-1.0	-1.5	-.8	-3.4	2.0	
Nondurable	.4	.1	-1.3	-3.0	.3	-.7	-2.7	-3.6	-1.6	.5	
Textile	.1	-5.8	.5	-3.8	-4.9	-1.1	-4.5	-4.9	-3.5	2.3	
Paper	.4	-5.3	1.4	-1.3	-7.4	.0	-1.7	1.7	2.3	-1.3	
Chemical	.3	2.2	-3.4	-5.6	2.9	-.3	-2.7	-7.8	-4.0	1.9	
Energy	-3.3	8.5	10.4	.6	-12.3	-.4	.4	.1	-1.7	-2.0	
INDUSTRY GROUPS											
Manufacturing²	-.3	1.3	.7	-2.6	-2.5	-.6	-1.2	-1.5	-1.4	.2	
Manufacturing (NAICS)	31–33	-.3	1.4	.8	-2.4	-2.3	-.6	-1.3	-1.8	-1.4	.3
Durable manufacturing		-.5	2.8	2.4	-3.3	-2.5	-.4	.2	-1.7	-2.0	1.0
Wood products	321	2.8	.8	-3.4	-1.1	.2	-1.9	-4.6	-2.4	-4.2	-.3
Nonmetallic mineral products	327	-1.0	.6	-.9	-2.2	.9	-1.0	-4.7	-2.8	-1.7	2.2
Primary metals	331	-5.3	2.4	4.1	-7.5	-6.3	-1.2	-1.9	-2.0	-3.4	2.9
Fabricated metal products	332	-1.8	3.1	3.5	-3.9	-5.9	-.2	.1	-1.4	-2.7	.3
Machinery	333	-3.6	8.3	3.8	-6.7	-.1	-1.3	-1.0	-1.9	-2.7	3.3
Computer and electronic products	334	6.4	6.3	2.2	2.3	4.1	1.3	2.8	-2.2	-4.0	2.2
Electrical equip., appliances, and components	335	-.5	-1.3	3.9	-3.3	-2.1	-.3	-1.3	.4	-1.2	1.5
Motor vehicles and parts	3361–3	2.2	-1.2	5.9	-8.4	2.8	-.3	-.8	.4	-1.6	-1.0
Aerospace and miscellaneous transportation equipment	3364–9	-2.6	5.3	-2.8	3.8	-13.5	.6	6.1	-5.5	3.3	-1.7
Furniture and related products	337	-1.0	-.9	-.2	-3.9	-5.5	-.6	.7	-1.8	-3.2	5.5
Miscellaneous	339	-3.6	-2.6	4.5	-4.7	-1.4	-2.3	-1.4	2.2	-5.3	3.4
Nondurable manufacturing		.1	-.2	-1.0	-1.5	-2.1	-.7	-2.9	-1.8	-.7	-.5
Food, beverage, and tobacco products	311,2	.1	.3	-1.1	1.4	-.2	-.6	-2.8	-1.2	-.3	-1.4
Textile and product mills	313,4	-1.6	-7.7	1.4	-3.8	-5.6	-2.5	-7.9	.5	-.2	-.2
Apparel and leather	315,6	.9	-7.4	-2.9	1.5	-.8	2.9	2.7	2.3	10.0	3.3
Paper	322	1.1	-3.6	1.9	-1.4	-3.5	-.1	-1.1	1.9	1.2	-1.6
Printing and support	323	.9	-1.0	-.3	-3.7	-8.3	-.7	.2	2.4	-.5	1.2
Petroleum and coal products	324	4.6	3.5	-1.1	-1.2	-12.1	.4	.9	.1	.5	-.8
Chemicals	325	-1.1	-.5	-2.7	-3.1	.0	-.9	-4.8	-5.6	-1.6	.5
Plastics and rubber products	326	-.4	1.0	2.3	-5.1	-2.2	-1.8	-1.8	2.3	-2.5	-.4
Other manufacturing (non-NAICS)	1133,5111	-2.9	-.7	-3.9	-7.6	-9.1	-1.4	2.8	6.1	.5	-.9
Mining	21	-7.4	12.4	14.1	.5	-16.6	-1.2	1.0	.2	-1.8	-3.1
Utilities	2211,2	1.9	2.7	3.0	-1.7	-3.2	-.2	-.4	.4	-.7	-.6
Electric	2211	2.1	1.7	1.5	-1.3	-2.1	.0	-.4	.7	-.4	-.3
Natural gas	2212	.9	9.5	12.9	-4.1	-9.9	-1.7	-.6	.1	-2.0	-3.5

1. Rates of change are calculated as the percent change in the seasonally adjusted index from the fourth quarter of the previous year to the fourth quarter of the year specified in the column heading.

2. Manufacturing consists of those industries included in the North American Industry Classification System, or NAICS, definition of manufacturing plus those industries—logging and newspaper, periodical, book, and directory publishing—that have traditionally been considered to be a part of manufacturing and are included in the industrial sector.

Table 3
RATES OF CHANGE IN INDUSTRIAL PRODUCTION, SPECIAL AGGREGATES AND SELECTED DETAIL: 2016–20¹

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Total industry	-9	2.6	2.7	-2.1	-4.2	-6	-1.0	-1.3	-1.5	.0
Energy	-1.9	7.0	8.4	-.4	-11.8	-.3	.0	-.4	-1.2	-1.8
Consumer products	4.1	2.4	2.8	-2.5	-6.6	-.2	-.6	-1.8	-.9	-.9
Commercial products	2.2	1.8	2.5	.3	-9.5	-.1	-.3	.0	.3	-2.1
Oil and gas well drilling 213111	-28.5	42.2	27.8	-11.1	-48.3	-2.0	5.0	8.6	11.0	11.8
Converted fuel	.7	2.9	4.8	-2.7	-4.5	.1	.6	1.6	-1.1	-1.0
Primary energy	-5.1	11.3	12.7	2.1	-15.9	-.8	.8	-.1	-1.5	-3.2
Non-energy	-.6	1.4	.7	-2.7	-1.9	-.7	-1.2	-1.5	-1.5	.3
Selected high-technology industries	10.8	8.8	5.0	6.1	9.1	2.9	6.9	-.4	-.8	3.9
Computers and peripheral equipment 3341	-.2	-13.9	29.0	12.2	19.1	-12.4	-26.1	27.6	12.3	12.7
Communications equipment 3342	10.8	12.0	12.2	4.3	12.6	5.8	17.2	5.2	-3.8	11.8
Semiconductors and related electronic components 3344	13.4	11.9	-.7	5.6	5.9	5.4	9.5	-6.7	-2.8	-.8
Excluding selected high-technology industries	-1.0	1.1	.6	-3.0	-2.2	-.8	-1.4	-1.5	-1.6	.2
Motor vehicles and parts 3361–3	2.2	-1.2	5.9	-8.4	2.8	-.3	-.8	.4	-1.6	-1.0
Motor vehicles 3361	1.3	-4.7	11.0	-8.5	3.3	-.4	.7	1.6	-.8	-.8
Motor vehicle parts 3363	3.2	-.2	2.9	-8.1	.5	-.6	-2.8	-1.5	-2.5	-.8
Excluding motor vehicles and parts	-1.2	1.3	.1	-2.5	-2.6	-.8	-1.5	-1.7	-1.6	.3
Consumer goods	-1.0	-1.2	-.8	-.4	-.2	-.6	-2.9	-1.1	.2	-.4
Business equipment	-2.4	8.4	-.8	-4.0	-10.9	.1	2.6	-3.6	-2.6	-1.6
Construction supplies	.0	2.2	.7	-2.4	-.3	-.9	-2.0	-1.8	-2.9	1.3
Business supplies	-1.5	.4	.4	-4.7	-4.1	-2.0	-2.1	1.7	-2.9	.7
Materials	-1.2	1.2	.6	-4.2	-2.0	-.8	-1.8	-2.3	-2.3	1.3
Measures excluding selected high-technology industries										
Total industry	-1.2	2.5	2.6	-2.3	-4.6	-6	-1.2	-1.3	-1.5	-.1
Manufacturing ²	-.7	1.1	.5	-2.8	-2.9	-.7	-1.4	-1.6	-1.4	.1
Durable	-1.2	2.4	2.2	-3.8	-3.3	-.6	-.3	-1.8	-2.2	.7
Measures excluding motor vehicles and parts										
Total industry	-1.1	2.9	2.5	-1.8	-4.7	-.6	-1.0	-1.4	-1.5	.1
Manufacturing ²	-.5	1.5	.2	-2.1	-2.9	-.6	-1.2	-1.7	-1.4	.3
Durable	-1.0	3.5	1.8	-2.4	-3.4	-.4	.3	-2.1	-2.2	1.4
Measures excluding selected high-technology industries and motor vehicles and parts										
Total industry	-1.4	2.8	2.4	-2.0	-5.0	-.7	-1.2	-1.4	-1.5	-.1
Manufacturing ²	-.9	1.3	.1	-2.4	-3.3	-.7	-1.5	-1.7	-1.4	.1
Stage-of-process components of non-energy materials, measures of the input to										
Finished processors	.4	.1	2.0	-4.4	-1.9	.2	-.2	-2.1	-1.4	.9
Primary and semifinished processors	-1.0	2.0	.0	-4.3	-1.5	-.9	-2.2	-2.6	-2.9	1.2
STAGE-OF-PROCESS GROUPS										
Crude	-4.2	6.3	9.3	-.8	-10.5	-1.1	-1.6	-1.5	-2.7	-1.6
Primary and semifinished	.4	2.1	1.3	-3.6	-3.8	-.4	-.5	-.8	-1.9	.4
Finished	-1.2	1.9	1.4	-.8	-2.4	-.7	-1.1	-1.3	-.1	-.5

1. See footnote 1 to table 2.

2. See footnote 2 to table 2.

Table 4**ANNUAL RATES OF CHANGE FOR INDUSTRIAL PRODUCTION: 2016–20¹**

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Total IP	-2.2	1.3	3.2	-8	-7.2	-2	-1.0	-8	-1.6	-3
MARKET GROUPS										
Consumer goods	.6	-1.0	.8	-.8	-3.9	.0	-1.6	-1.3	.2	.2
Durable	2.3	-.2	3.2	-1.6	-7.3	.2	-1.7	1.0	-.1	1.7
Nondurable	.1	-1.3	.1	-.6	-2.9	-.1	-1.5	-2.0	.2	-.3
Business equipment	-5.3	4.6	3.9	-4.0	-13.7	.0	1.0	.7	-4.4	-.8
Defense and space equipment	-3.6	2.3	2.2	9.8	1.8	-.7	.3	-.2	.6	3.5
Construction supplies	.9	1.3	1.7	-1.9	-3.6	.1	-2.2	-1.0	-3.2	.9
Business supplies	.0	.2	2.0	-2.2	-8.2	-.5	-2.1	1.2	-1.2	-.6
Materials	-3.3	2.0	4.7	-.1	-8.0	-.3	-.7	-1.2	-2.1	-.8
Non-energy	-1.0	.5	1.5	-3.0	-6.2	.1	-1.5	-1.7	-2.6	.5
Energy	-7.5	5.1	10.2	4.5	-10.9	-1.4	1.1	.1	-.9	-3.0
INDUSTRY GROUPS										
Manufacturing²	-.8	.6	1.3	-2.0	-6.6	.0	-1.3	-1.0	-1.8	.2
Manufacturing (NAICS)	-.7	.7	1.5	-1.9	-6.4	.0	-1.4	-1.2	-1.9	.2
Durable manufacturing	-2.1	1.7	3.1	-2.1	-8.2	.0	-.5	-.2	-2.7	.8
Nondurable manufacturing	.8	-.4	-.3	-1.8	-4.3	.0	-2.3	-2.2	-1.0	-.3
Other manufacturing (non-NAICS)	-2.9	-.9	-3.3	-4.5	-14.8	-.3	-.3	6.5	2.7	-1.6
Mining	-12.3	8.8	13.0	5.9	-14.2	-2.3	1.4	.6	-1.3	-3.8
Utilities	-.5	-.8	4.9	-.8	-3.4	-.1	.0	.5	.2	-.4

1. The rates of change are calculated as the percent change in the annual averages of not seasonally adjusted industrial production indexes rather than as the percent change between the fourth quarter of one year and the fourth quarter of the next.

2. See footnote 2 to table 2.

Table 5**RATES OF CHANGE IN CAPACITY, BY INDUSTRY GROUPS: 2017–21¹**

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Total industry	-.8	.5	1.4	-.1	.4	-1.2	-1.0	-.8	-.1	-.1
Manufacturing²	-1.3	.1	.2	-.7	.1	-1.6	-.5	-1.2	-.5	-.1
Manufacturing (NAICS)	-1.1	.3	.3	-.5	.3	-1.6	-.5	-1.1	-.5	-.2
Durable manufacturing	-.1	.8	.5	-.4	.3	-.7	-.1	-1.2	-.5	-.3
Nondurable manufacturing	-2.3	-.3	.1	-.7	.3	-2.7	-.9	-1.3	-.6	.0
Other manufacturing (non-NAICS)	-5.0	-4.3	-5.3	-5.8	-5.5	-.8	-.7	-4.1	-1.9	1.0
Mining	.1	2.9	7.4	.3	-1.1	-.3	-4.5	1.6	2.4	.5
Utilities	1.0	.6	1.7	2.9	2.6	-.3	-1.1	-.8	-.2	-.1
Selected high-technology industries	-1.2	6.4	10.4	3.1	8.2	-5.1	3.4	3.3	-1.6	2.1
Manufacturing ² ex. selected high-technology industries	-1.3	-.1	-.2	-.8	-.1	-1.5	-.7	-1.4	-.5	-.2
STAGE-OF-PROCESS GROUPS										
Crude	-.7	1.3	5.2	.1	-.5	-1.3	-4.0	.8	1.8	.5
Primary and semifinished	-.9	-.3	.3	-.1	.6	-.8	-1.1	-1.4	-.3	.0
Finished	-.8	1.2	.5	-.4	.1	-1.9	.2	-1.1	-.8	-.3

1. Rates of change are calculated as the percent change in the seasonally adjusted index from the fourth quarter of the previous year to the fourth quarter of the year specified in the column heading.

2. See footnote 2 to table 2.

Table 6**REVISED AND EARLIER CAPACITY UTILIZATION RATES, BY INDUSTRY GROUPS**

Percent of capacity, seasonally adjusted

Item	Revised Rate					Difference between revised and earlier rates (percentage points)				
	1972-2020 Ave.	2017 Q4	2018 Q4	2019 Q4	2020 Q4	2017 Q4	2018 Q4	2019 Q4	2020 Q4	
Total industry		79.6	77.7	79.4	76.6	73.4	.1	-.1	-.6	-.5
Manufacturing¹		78.2	77.1	77.5	75.4	74.0	1.3	.5	.4	.9
Manufacturing (NAICS)	31-33	78.1	77.3	77.7	75.6	74.2	1.1	.2	.0	.6
Durable manufacturing		76.8	76.4	77.6	74.7	73.1	1.6	.5	-.2	.9
Wood products	321	76.7	81.2	79.8	79.0	78.8	.6	2.3	2.3	2.2
Nonmetallic mineral products	327	73.4	67.9	68.7	69.0	72.1	.1	.8	2.3	6.7
Primary metals	331	77.7	68.0	72.0	68.7	65.7	-1.1	-2.6	-2.5	.0
Fabricated metal products	332	77.6	78.4	80.6	77.8	74.1	.0	-1.0	-2.6	-2.4
Machinery	333	77.6	76.5	80.3	75.5	76.3	1.9	.3	-1.5	1.4
Computer and electronic products	334	77.4	75.9	74.6	72.0	73.5	5.4	2.9	-.5	1.9
Electrical equip., appliances, and components	335	81.6	76.1	76.6	74.3	74.4	1.2	.4	.9	2.7
Motor vehicles and parts	3361-3	75.1	77.0	79.0	72.4	73.6	.1	-.8	-1.6	-2.8
Aerospace and miscellaneous transportation equipment	3364-9	74.2	78.9	75.6	77.1	66.1	3.5	-.9	1.4	-.8
Furniture and related products	337	77.1	79.7	82.5	81.3	79.6	1.7	4.6	4.9	10.0
Miscellaneous	339	76.7	80.1	83.2	78.1	77.4	.7	3.7	1.5	5.9
Nondurable manufacturing		79.9	78.4	77.8	76.6	75.5	.7	.0	.4	.4
Food, beverage, and tobacco products	311,2	80.3	78.5	76.5	76.7	76.5	1.5	.7	1.3	.6
Textile and product mills	313,4	78.3	68.7	71.7	69.1	65.3	-2.5	-.3	.3	.0
Apparel and leather	315,6	76.2	66.1	68.4	73.1	74.6	1.3	4.2	11.9	13.2
Paper	322	86.7	86.1	88.7	86.6	84.1	-.5	1.4	1.3	-.2
Printing and support	323	79.4	75.8	75.0	76.0	71.5	.5	2.2	5.6	5.8
Petroleum and coal products	324	84.7	83.7	83.1	78.5	70.1	2.8	2.8	-.5	-.1
Chemicals	325	76.6	75.1	74.2	73.1	73.9	-.3	-3.7	-3.0	-2.0
Plastics and rubber products	326	82.0	84.0	86.3	82.3	81.3	.3	5.5	6.8	6.6
Other manufacturing (non-NAICS)	1133,5111	79.5	70.5	70.8	69.1	66.7	4.8	9.5	12.0	12.1
Mining	21	86.2	80.7	89.4	83.7	69.6	-6.3	-2.8	-5.6	-9.3
Utilities	2211,2	85.0	78.8	80.8	78.0	73.4	-.4	.8	.8	.5
Selected high-technology industries		77.4	77.6	76.6	73.6	77.8	6.1	3.4	.5	4.5
Computers and peripheral equipment	3341	78.0	74.3	75.8	68.5	81.9	.5	2.6	-4.6	4.5
Communications equipment	3342	75.5	64.6	63.1	61.5	64.6	.4	.0	1.1	7.9
Semiconductors and related electronic components	3344	78.9	84.5	83.4	80.5	84.5	10.4	5.3	.7	2.6
Measures excluding selected high-technology industries										
Total industry		79.7	77.7	79.4	76.7	73.3	.0	-.1	-.6	-.6
Manufacturing ¹		78.2	77.1	77.5	75.4	73.9	1.1	.4	.4	.8
STAGE-OF-PROCESS GROUPS										
Crude		85.4	81.3	88.1	82.9	72.4	-4.7	-2.6	-5.1	-8.0
Primary and semifinished		80.2	77.9	79.2	76.0	73.4	1.0	1.2	.8	1.3
Finished		76.8	76.0	75.8	75.0	73.9	1.3	.1	.7	1.0

1. See footnote 2 to table 2.

Table 7A
INDUSTRIAL PRODUCTION: Manufacturing¹
 Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual ²
IP (percent change)																	
1991	-7	-7	-7	.5	.7	.9	.5	.1	1.0	-1	-2	-2	-8.8	1.9	7.4	1.6	-1.9
1992	-6	.9	1.0	.5	.6	.3	.9	-5	.1	.6	.4	-1	.5	8.3	4.2	3.1	3.7
1993	.9	.3	-2	.5	-1	-1	.2	-2	.7	.9	.5	.6	4.7	1.3	.7	7.2	3.5
1994	.1	.2	1.3	.9	.6	.3	.4	.9	.4	.9	.8	1.1	4.9	9.6	6.1	10.0	5.9
1995	.2	-3	.3	-3	.3	.5	-7	1.2	.9	-1	.1	.4	4.4	.8	3.2	4.2	5.1
1996	-7	1.5	-2	1.3	.8	.9	.4	.4	.8	-1	.9	.9	1.9	10.1	7.7	5.9	4.9
1997	.1	1.4	.9	-1	.7	.6	.7	1.2	1.0	.9	1.0	.6	9.4	6.9	10.6	11.6	8.4
1998	.8	.2	-2	.5	.5	-7	-4	2.4	-1	.9	.1	.6	6.1	2.1	3.3	7.9	6.7
1999	.3	.9	.0	.3	.8	-2	.4	.6	-4	1.5	.7	.7	5.2	4.3	3.2	8.7	5.1
2000	.0	.3	.6	.6	.0	.2	.1	-6	.5	-4	-3	-6	4.5	4.9	-4	-2.7	4.1
2001	-5	-7	-2	-4	-6	-6	-5	-4	-4	-5	-4	-2	-5.9	-5.3	-5.9	-4.0	-3.7
2002	.6	.0	.7	.3	.5	1.0	-1	.1	.1	-4	.5	-6	3.5	5.9	3.3	-5	.4
2003	.8	-1	.1	-8	.0	.5	.3	-4	.9	.1	.8	.0	2.0	-2.4	2.5	4.4	1.3
2004	-1	.7	.0	.3	.7	-7	.9	.5	.0	1.0	.0	.7	2.6	3.3	4.0	5.5	3.1
2005	.7	.9	-5	.4	.3	.1	-3	.6	-1.1	1.4	.9	.1	6.4	2.5	-6	6.1	4.1
2006	.8	-3	.0	.4	-3	.3	-3	.7	.1	-5	.1	1.5	3.9	.8	1.0	1.5	2.6
2007	-4	.3	.9	.7	-1	.3	.0	-3	.3	-2	.5	.1	4.4	5.8	.4	1.2	2.8
2008	-2	-7	-4	-1.0	-6	-7	-1.1	-1.2	-3.4	-7	-2.5	-3.3	-2.5	-8.2	-13.7	-21.9	-4.8
2009	-3.2	-1	-1.9	-7	-1.1	-2	1.6	1.1	1.0	.1	1.0	-2	-24.7	-10.5	8.6	7.1	-13.8
2010	1.1	-1	1.3	.8	1.3	.0	.6	.1	.0	.1	.1	.5	6.7	10.5	4.3	1.5	5.9
2011	.1	.2	.6	-5	.0	.1	.6	.5	.3	.5	-2	.7	2.9	-2	4.4	3.8	2.9
2012	.8	.3	-5	.5	-4	.3	-2	-1	-2	-2	.6	.7	5.3	.6	-1.3	1.1	2.6
2013	-3	.4	-1	-3	.3	.1	-8	.9	.1	.1	.0	-2	2.6	.1	.1	1.6	.9
2014	-1.0	.9	.8	.0	.3	.3	.5	-6	.0	-1	.7	-2	-1.0	4.6	1.6	.2	1.1
2015	-5	-7	.3	.0	.0	-4	.8	-5	-3	-1	-3	-3	-3.2	-7	.6	-2.9	-6
2016	.5	-3	-1	-2	.0	.2	.2	-5	.2	.1	-1	.0	-3	-1.3	.1	.1	-8
2017	.3	-1	-3	1.1	-1	.0	-2	-3	.0	1.0	.0	-2	.3	3.2	-1.8	3.6	.6
2018	-4	.9	.1	.6	-8	.5	.2	.2	.0	-5	-4	.2	.5	2.7	1.9	-2.4	1.3
2019	-7	-5	-1	-8	.1	.2	-4	.5	-6	-7	.7	.0	-4.3	-3.5	-5	-1.9	-2.0
2020	-2	.0	-4.4	-15.8	4.6	7.3	4.0	1.6	.1	1.5	.6	.7	-5.7	-44.7	55.8	11.2	-6.6
2021	1.2	-3.6	3.0	.2									1.8				
IP (2017=100)																	
1991	60.8	60.4	60.0	60.2	60.6	61.2	61.5	61.6	62.2	62.2	62.0	61.9	60.4	60.7	61.8	62.0	61.2
1992	61.5	62.1	62.7	63.1	63.4	63.6	64.2	63.9	64.0	64.4	64.6	64.6	62.1	63.4	64.0	64.5	63.5
1993	65.2	65.4	65.2	65.6	65.5	65.4	65.5	65.4	65.8	66.4	66.7	67.1	65.3	65.5	65.6	66.7	65.8
1994	67.2	67.3	68.1	68.8	69.2	69.4	69.6	70.2	70.5	71.2	71.8	72.5	67.5	69.1	70.1	71.8	69.6
1995	72.7	72.5	72.7	72.5	72.7	73.0	72.5	73.4	74.1	74.0	74.0	74.3	72.6	72.7	73.3	74.1	73.2
1996	73.8	74.8	74.7	75.6	76.2	76.9	77.2	77.6	78.2	78.1	78.8	79.5	74.4	76.2	77.7	78.8	76.8
1997	79.6	80.7	81.5	81.4	82.0	82.5	83.1	84.1	84.9	85.7	86.5	87.0	80.6	81.9	84.0	86.4	83.2
1998	87.6	87.8	87.6	88.0	88.5	87.8	87.4	89.6	89.5	90.3	90.4	90.9	87.7	88.1	88.8	90.5	88.8
1999	91.2	92.0	92.0	92.3	93.0	92.8	93.2	93.8	93.3	94.7	95.4	96.0	91.7	92.7	93.4	95.4	93.3
2000	96.1	96.3	96.9	97.6	97.6	97.7	97.8	97.1	97.6	97.2	96.9	96.4	96.4	97.6	97.5	96.9	97.1
2001	95.9	95.2	95.0	94.7	94.1	93.5	93.0	92.6	92.3	91.9	91.5	91.8	95.4	94.1	92.7	91.7	93.5
2002	92.3	92.3	93.0	93.3	93.7	94.6	94.5	94.6	94.7	94.4	94.9	94.3	92.5	93.9	94.6	94.5	93.9
2003	95.0	94.9	95.0	94.3	94.3	94.7	95.0	94.6	95.4	95.5	96.3	96.3	95.0	94.4	95.0	96.0	95.1
2004	96.2	96.9	96.9	97.2	97.9	97.2	98.1	98.6	98.6	99.5	99.5	100.2	96.7	97.5	98.4	99.7	98.1
2005	100.9	101.8	101.3	101.7	102.0	102.1	101.8	102.3	101.2	102.7	103.6	103.7	101.3	101.9	101.8	103.3	102.1
2006	104.5	104.2	104.2	104.6	104.3	104.6	104.2	105.0	105.1	104.6	104.7	106.2	104.3	104.5	104.8	105.2	104.7
2007	105.8	106.1	107.0	107.8	107.7	108.0	108.0	107.7	108.0	107.8	108.4	108.5	106.3	107.8	107.9	108.3	107.6
2008	108.2	107.5	107.0	106.0	105.3	104.6	103.5	102.2	98.8	98.1	95.7	92.5	107.6	105.3	101.5	95.4	102.4
2009	89.5	89.4	87.7	87.1	86.2	86.0	87.3	88.3	89.1	89.2	90.1	90.0	88.9	86.4	88.2	89.8	88.3
2010	90.9	90.8	92.0	92.7	93.9	93.9	94.4	94.5	94.6	94.6	94.8	95.2	91.2	93.5	94.5	94.9	93.5
2011	95.3	95.4	96.0	95.5	95.5	95.6	96.2	96.6	96.9	97.3	97.2	97.8	95.6	95.5	96.5	97.5	96.3
2012	98.7	99.0	98.5	99.0	98.7	98.9	98.7	98.6	98.4	98.2	98.8	99.5	98.7	98.9	98.6	98.8	98.8
2013	99.2	99.6	99.6	99.3	99.6	99.7	98.9	99.8	99.9	100.0	100.0	99.8	99.5	99.5	99.6	99.9	99.6
2014	98.8	99.7	100.6	100.5	100.8	101.1	101.6	101.0	101.0	100.9	101.6	101.4	99.7	100.8	101.2	101.3	100.7
2015	100.8	100.1	100.4	100.4	100.4	100.0	100.8	100.4	100.0	100.0	99.7	99.4	100.4	100.3	100.4	99.7	100.2
2016	99.9	99.5	99.4	99.3	99.2	99.4	99.6	99.1	99.3	99.4	99.3	99.3	99.6	99.3	99.3	99.3	99.4
2017	99.6	99.5	99.2	100.3	100.2	100.1	99.9	99.6	99.7	100.7	100.7	100.5	99.4	100.2	99.7	100.6	100.0
2018	100.1	101.0	101.2	101.8	101.0	101.5	101.8	102.0	102.0	101.5	101.1	101.3	100.8	101.4	101.9	101.3	101.3
2019	100.6	100.0	99.9	99.2	99.2	99.4	99.0	99.5	98.9	98.2	98.9	98.9	100.2	99.3	99.2	98.7	99.3
2020	98.7	98.7	94.3	79.4	83.1	89.1	92.7	94.1	94.2	95.6	96.2	96.8	97.2	83.8	93.7	96.2	92.7
2021	98.0	94.5	97.3	97.5									96.6				

NOTE: Estimates from December 2020 through April 2021 are subject to further revision in the upcoming monthly releases.

1. See footnote 2 to table 2.

2. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

Table 7B
CAPACITY AND UTILIZATION: Manufacturing¹

Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual
Capacity (percent of 2017 output)																	
1991	77.4	77.5	77.6	77.6	77.7	77.8	77.9	78.0	78.1	78.2	78.3	78.4	77.5	77.7	78.0	78.3	77.9
1992	78.6	78.8	79.0	79.1	79.3	79.5	79.8	80.0	80.1	80.3	80.5	80.7	78.8	79.3	79.9	80.5	79.6
1993	80.8	81.0	81.1	81.3	81.4	81.5	81.6	81.8	81.9	82.1	82.2	82.4	81.0	81.4	81.8	82.3	81.6
1994	82.6	82.8	83.1	83.3	83.6	83.8	84.1	84.4	84.7	85.0	85.3	85.6	82.8	83.6	84.4	85.3	84.0
1995	86.0	86.3	86.7	87.0	87.4	87.7	88.1	88.5	88.9	89.4	89.8	90.3	86.3	87.4	88.5	89.8	88.0
1996	90.7	91.2	91.7	92.2	92.7	93.2	93.7	94.2	94.7	95.2	95.8	96.3	91.2	92.7	94.2	95.8	93.5
1997	96.8	97.4	97.9	98.5	99.1	99.7	100.4	101.0	101.7	102.4	103.2	103.9	97.4	99.1	101.0	103.2	100.2
1998	104.7	105.5	106.2	107.0	107.8	108.5	109.2	109.9	110.5	111.1	111.7	112.3	105.5	107.8	109.8	111.7	108.7
1999	112.9	113.4	114.0	114.5	115.0	115.5	116.0	116.5	117.0	117.4	117.9	118.4	113.4	115.0	116.5	117.9	115.7
2000	118.9	119.4	119.9	120.4	120.9	121.3	121.8	122.3	122.8	123.3	123.7	124.2	119.4	120.9	122.3	123.7	121.6
2001	124.6	125.1	125.5	125.9	126.2	126.6	126.9	127.1	127.4	127.6	127.8	128.0	125.1	126.2	127.1	127.8	126.6
2002	128.1	128.2	128.3	128.4	128.4	128.5	128.5	128.5	128.5	128.5	128.5	128.5	128.2	128.4	128.5	128.5	128.4
2003	128.5	128.5	128.5	128.5	128.5	128.4	128.4	128.4	128.4	128.3	128.3	128.2	128.5	128.5	128.4	128.3	128.4
2004	128.2	128.2	128.1	128.1	128.0	128.0	128.0	128.0	128.1	128.2	128.3	128.4	128.2	128.0	128.1	128.3	128.1
2005	128.6	128.8	129.0	129.3	129.5	129.8	130.0	130.3	130.6	130.8	131.1	131.3	128.8	129.5	130.3	131.1	129.9
2006	131.5	131.8	132.0	132.2	132.4	132.6	132.9	133.1	133.4	133.7	134.0	134.3	131.8	132.4	133.1	134.0	132.8
2007	134.7	135.0	135.4	135.8	136.2	136.5	136.9	137.2	137.4	137.6	137.8	137.9	135.1	136.2	137.2	137.8	136.5
2008	138.0	138.0	137.9	137.8	137.7	137.6	137.4	137.2	137.1	136.9	136.7	136.5	138.0	137.7	137.2	136.7	137.4
2009	136.3	136.1	135.9	135.7	135.6	135.4	135.2	135.0	134.8	134.7	134.5	134.3	136.1	135.6	135.0	134.5	135.3
2010	134.1	133.9	133.7	133.4	133.2	133.0	132.7	132.5	132.3	132.1	131.9	131.7	133.9	133.2	132.5	131.9	132.9
2011	131.5	131.4	131.3	131.2	131.1	131.1	131.1	131.2	131.2	131.3	131.5	131.6	131.4	131.2	131.2	131.5	131.3
2012	131.7	131.9	132.0	132.2	132.3	132.5	132.6	132.8	132.9	133.1	133.2	133.3	131.9	132.3	132.8	133.2	132.5
2013	133.4	133.5	133.6	133.6	133.7	133.7	133.7	133.7	133.7	133.7	133.7	133.6	133.5	133.7	133.7	133.7	133.6
2014	133.6	133.5	133.5	133.4	133.3	133.2	133.1	133.0	132.9	132.7	132.6	132.4	133.5	133.3	133.0	132.6	133.1
2015	132.3	132.2	132.0	131.9	131.8	131.7	131.7	131.7	131.6	131.6	131.7	131.7	132.2	131.8	131.7	131.7	131.8
2016	131.8	131.9	131.9	132.0	132.1	132.2	132.2	132.3	132.3	132.3	132.2	132.2	131.9	132.1	132.3	132.2	132.1
2017	132.1	131.9	131.8	131.6	131.5	131.3	131.1	130.9	130.8	130.6	130.5	130.4	131.9	131.5	131.0	130.5	131.2
2018	130.4	130.3	130.3	130.3	130.3	130.3	130.4	130.5	130.5	130.6	130.7	130.8	130.3	130.3	130.5	130.7	130.4
2019	130.9	130.9	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	130.9	130.8	130.9	131.0	131.0	130.9	131.0
2020	130.8	130.7	130.6	130.5	130.4	130.4	130.3	130.2	130.1	130.1	130.0	130.0	130.7	130.4	130.2	130.0	130.3
2021	130.0	129.9	129.9	129.9									129.9				
Utilization (percent)																	
1991	78.6	78.0	77.3	77.6	78.0	78.7	79.0	79.0	79.7	79.5	79.2	78.9	78.0	78.1	79.2	79.2	78.6
1992	78.3	78.8	79.4	79.7	79.9	80.0	80.5	79.9	79.8	80.1	80.2	80.0	78.8	79.9	80.1	80.1	79.7
1993	80.6	80.7	80.4	80.7	80.4	80.2	80.3	79.9	80.3	80.9	81.1	81.4	80.6	80.4	80.2	81.1	80.6
1994	81.3	81.2	82.1	82.5	82.8	82.7	82.8	83.2	83.3	83.7	84.1	84.7	81.5	82.7	83.1	84.2	82.9
1995	84.5	84.0	83.9	83.3	83.2	83.3	82.3	82.9	83.3	82.8	82.4	82.3	84.1	83.3	82.8	82.5	83.2
1996	81.3	82.1	81.4	82.0	82.2	82.5	82.4	82.3	82.6	82.0	82.3	82.6	81.6	82.2	82.5	82.3	82.2
1997	82.2	82.9	83.2	82.6	82.7	82.7	82.8	83.3	83.5	83.6	83.8	83.7	82.8	82.7	83.2	83.7	83.1
1998	83.7	83.2	82.5	82.3	82.1	80.9	80.1	81.5	81.0	81.3	80.9	81.0	83.1	81.8	80.9	81.1	81.7
1999	80.8	81.1	80.7	80.6	80.9	80.3	80.3	80.5	79.8	80.7	80.9	81.1	80.9	80.6	80.2	80.9	80.6
2000	80.8	80.7	80.9	81.0	80.7	80.5	80.3	79.4	79.5	78.9	78.4	77.6	80.8	80.8	79.7	78.3	79.9
2001	76.9	76.1	75.7	75.2	74.5	73.9	73.3	72.9	72.5	72.0	71.6	71.7	76.3	74.5	72.9	71.8	73.9
2002	72.1	72.0	72.4	72.6	73.0	73.7	73.6	73.6	73.7	73.4	73.8	73.4	72.2	73.1	73.6	73.5	73.1
2003	74.0	73.9	73.9	73.4	73.4	73.7	74.0	73.7	74.3	74.4	75.1	75.1	73.9	73.5	74.0	74.9	74.1
2004	75.0	75.6	75.6	75.9	76.5	76.0	76.6	77.0	76.9	77.6	77.5	78.0	75.4	76.1	76.9	77.7	76.5
2005	78.4	79.0	78.5	78.7	78.7	78.7	78.3	78.5	77.5	78.5	79.0	78.9	78.6	78.7	78.1	78.8	78.6
2006	79.4	79.1	79.0	79.1	78.8	78.9	78.5	78.9	78.8	78.2	78.1	79.1	79.2	78.9	78.7	78.5	78.8
2007	78.5	78.6	79.0	79.4	79.1	79.1	78.9	78.5	78.6	78.4	78.7	78.7	78.7	79.2	78.7	78.6	78.8
2008	78.4	77.9	77.6	76.9	76.5	76.0	75.3	74.5	72.1	71.7	70.0	67.7	78.0	76.5	73.9	69.8	74.5
2009	65.7	65.7	64.5	64.2	63.6	63.5	64.6	65.4	66.1	66.2	67.0	67.0	65.3	63.8	65.4	66.7	65.3
2010	67.8	67.8	68.8	69.5	70.5	70.6	71.2	71.4	71.5	71.7	71.9	72.3	68.1	70.2	71.3	71.9	70.4
2011	72.4	72.6	73.1	72.8	72.8	72.9	73.3	73.6	73.8	74.1	73.9	74.4	72.7	72.8	73.6	74.1	73.3
2012	74.9	75.1	74.6	74.9	74.6	74.7	74.4	74.2	74.0	73.8	74.2	74.6	74.9	74.7	74.2	74.2	74.5
2013	74.4	74.6	74.5	74.3	74.5	74.6	74.0	74.6	74.7	74.8	74.8	74.7	74.5	74.5	74.5	74.8	74.6
2014	74.0	74.7	75.4	75.4	75.6	75.9	76.4	76.0	76.0	76.0	76.6	76.5	74.7	75.6	76.1	76.4	75.7
2015	76.2	75.7	76.0	76.1	76.2	75.9	76.6	76.2	76.0	75.9	75.7	75.4	76.0	76.1	76.3	75.7	76.0
2016	75.8	75.5	75.4	75.2	75.1	75.2	75.3	74.9	75.0	75.1	75.1	75.2	75.5	75.2	75.1	75.1	75.2
2017	75.4	75.4	75.3	76.2	76.2	76.3	76.2	76.1	76.2	77.1	77.2	77.0	75.4	76.2	76.2	77.1	76.2
2018	76.8	77.5	77.6	78.1	77.5	77.9	78.0	78.2	78.1	77.7	77.3	77.5	77.3	77.8	78.1	77.5	77.7
2019	76.8	76.4	76.3	75.7	75.7	75.9	75.6	76.0	75.5	75.0	75.6	75.6	76.5	75.8	75.7	75.4	75.8
2020	75.5	75.5	72.2	60.8	63.7	68.3	71.2	72.3	72.4	73.5	74.0	74.5	74.4	64.3	71.9	74.0	71.2
2021	75.4	72.7	74.9	75.1									74.4				

NOTE: Estimates from December 2020 through April 2021 are subject to further revision in the upcoming monthly releases.

1. See footnote 2 to table 2.

Table 8
ANNUAL PROPORTIONS IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY

Item		2013	2014	2015	2016	2017	2018	2019	2020
Total IP		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MARKET GROUPS									
Final products and nonindustrial supplies		51.3	52.6	55.8	56.7	56.0	55.6	56.7	56.6
Consumer goods		24.2	24.8	27.2	28.3	27.6	27.1	27.6	28.4
Durable		5.0	5.4	6.1	6.4	6.1	6.0	6.1	6.0
Automotive products		2.6	2.8	3.3	3.6	3.4	3.4	3.4	3.2
Home electronics		.2	.2	.2	.2	.1	.1	.2	.2
Appliances, furniture, carpeting		.8	.8	.9	.9	.9	.9	.9	.9
Miscellaneous goods		1.5	1.6	1.7	1.8	1.6	1.6	1.7	1.7
Nondurable		19.1	19.4	21.1	21.9	21.5	21.1	21.5	22.4
Non-energy		14.4	14.9	16.5	17.0	16.2	15.7	16.3	16.9
Foods and tobacco		8.4	8.6	9.4	9.8	9.5	9.1	9.5	9.9
Clothing		.2	.2	.2	.2	.2	.2	.2	.2
Chemical products		4.4	4.7	5.4	5.5	5.1	5.0	5.2	5.3
Paper products		.9	.9	1.0	1.0	.9	.9	.9	1.0
Energy		4.8	4.6	4.6	4.9	5.3	5.4	5.1	5.5
Business equipment		9.6	10.0	10.3	10.0	10.2	10.2	10.2	9.2
Transit		2.3	2.6	2.9	2.8	3.1	3.1	3.0	2.1
Information processing		2.1	2.0	2.2	2.1	2.1	2.0	2.0	2.1
Industrial and other		5.2	5.3	5.3	5.1	5.0	5.1	5.2	5.0
Defense and space equipment		2.2	2.2	2.2	2.2	2.2	2.2	2.6	2.8
Construction supplies		3.8	4.0	4.4	4.6	4.6	4.6	4.7	5.0
Business supplies		10.4	10.5	10.9	11.1	10.8	10.7	10.8	10.7
Materials		48.7	47.4	44.2	43.3	44.0	44.4	43.3	43.4
Non-energy		26.5	27.1	28.3	28.5	27.9	27.5	27.3	27.4
Durable		16.2	16.9	17.4	17.5	17.1	17.0	17.0	16.7
Consumer parts		2.8	3.0	3.2	3.2	3.1	3.0	2.8	2.5
Equipment parts		5.0	5.3	5.3	5.1	5.0	4.9	5.0	4.9
Other		8.4	8.6	9.0	9.2	9.1	9.1	9.2	9.4
Nondurable		10.2	10.3	10.8	11.0	10.8	10.5	10.3	10.7
Textile		.4	.4	.4	.4	.4	.4	.4	.4
Paper		1.8	1.8	1.9	1.9	1.8	1.7	1.7	1.6
Chemical		5.0	5.0	5.2	5.4	5.4	5.2	4.9	5.3
Energy		22.3	20.3	16.0	14.7	16.1	16.9	16.0	16.0
INDUSTRY GROUPS									
Manufacturing		70.8	72.4	76.9	78.1	76.8	75.9	76.4	75.9
Manufacturing (NAICS)	31–33	68.5	70.1	74.5	75.8	74.6	73.8	74.3	73.9
Durable manufacturing		36.3	37.7	39.5	39.6	39.0	38.9	39.3	38.1
Wood products	321	1.1	1.2	1.3	1.4	1.4	1.4	1.4	1.7
Nonmetallic mineral products	327	1.7	1.9	2.1	2.2	2.1	2.1	2.2	2.3
Primary metals	331	2.6	2.6	2.5	2.6	2.6	2.6	2.4	2.3
Fabricated metal products	332	5.4	5.6	5.8	5.7	5.7	5.8	6.0	6.0
Machinery	333	5.6	5.8	5.7	5.4	5.4	5.5	5.5	5.4
Computer and electronic products	334	5.2	5.1	5.2	5.2	5.1	5.0	5.0	5.0
Electrical equip., appliances, and components	335	1.7	1.8	1.9	1.9	1.8	1.8	1.9	1.9
Motor vehicles and parts	3361–3	4.6	5.1	5.8	6.1	5.7	5.7	5.6	4.9
Aerospace and miscellaneous transportation equipment	3364–9	4.4	4.7	5.0	4.8	5.1	5.0	5.3	4.8
Furniture and related products	337	1.0	1.1	1.2	1.3	1.2	1.2	1.2	1.2
Miscellaneous	339	2.9	2.8	3.0	3.0	2.8	2.8	2.9	2.8
Nondurable manufacturing		32.2	32.5	35.0	36.2	35.6	34.9	35.0	35.7
Food, beverage, and tobacco products	311,2	10.3	10.6	11.6	12.1	11.6	11.4	11.9	12.4
Textile and product mills	313,4	.7	.7	.7	.7	.7	.6	.7	.6
Apparel and leather	315,6	.2	.2	.2	.2	.2	.2	.2	.2
Paper	322	2.5	2.5	2.6	2.6	2.5	2.4	2.4	2.4
Printing and support	323	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.3
Petroleum and coal products	324	3.2	2.9	2.8	2.9	3.7	3.8	3.4	3.3
Chemicals	325	10.9	11.1	12.1	12.4	11.9	11.5	11.4	11.9
Plastics and rubber products	326	3.0	3.2	3.5	3.7	3.5	3.5	3.6	3.5
Other manufacturing (non-NAICS)	1133,5111	2.3	2.3	2.4	2.4	2.2	2.1	2.1	2.0
Mining	21	19.7	17.4	12.3	10.7	12.4	13.4	12.5	12.2
Utilities	2211,2	9.6	10.1	10.8	11.1	10.8	10.7	11.1	11.9
Electric	2211	8.5	8.9	9.5	9.7	9.3	9.3	9.7	10.3
Natural gas	2212	1.1	1.2	1.3	1.5	1.5	1.4	1.5	1.7

NOTE: The IP proportion data are estimates of the industries' relative contributions to the overall change in IP between the reference year and the following year. For example, a 1 percent increase in durable goods manufacturing between 2020 and 2021 would account for a 0.381 percent increase in total IP.

Table 9

INDUSTRIAL PRODUCTION AND CAPACITY UTILIZATION: SUMMARY

Seasonally adjusted

Industrial production	2017=100						Percent change						Apr. '20 to Apr. '21
	2020 Nov. ^r	2020 Dec. ^r	2021 Jan. ^r	2021 Feb. ^r	2021 Mar. ^r	2021 Apr. ^r	2020 Nov. ^r	2020 Dec. ^r	2021 Jan. ^r	2021 Feb. ^r	2021 Mar. ^r	2021 Apr. ^r	
Total index	97.2	98.3	99.3	96.4	98.5	99.0	.5	1.2	1.0	-2.9	2.2	.5	17.6
<i>Previous estimates</i>	104.8	105.9	106.8	103.1	105.6	106.3	.9	1.1	.9	-3.5	2.4	.7	16.5
Major market groups													
Final Products	97.2	98.7	99.7	97.8	99.1	99.5	.5	1.5	1.0	-2.0	1.4	.4	23.8
Consumer goods	98.3	100.4	100.8	98.3	99.0	99.5	.1	2.2	.4	-2.5	.7	.5	18.5
Business equipment	91.2	91.6	93.4	91.5	94.1	94.1	1.1	.4	2.0	-2.0	2.9	.0	44.2
Nonindustrial supplies	95.0	96.1	96.5	94.6	96.2	96.1	.1	1.2	.4	-2.0	1.6	-.1	14.4
Construction	98.7	100.3	101.0	97.5	101.8	100.5	.5	1.7	.7	-3.4	4.4	-1.3	15.0
Materials	97.7	98.6	99.8	95.5	98.5	99.5	.8	.9	1.2	-4.2	3.1	.9	13.0
Major industry groups													
Manufacturing (see note below)	96.2	96.8	98.0	94.5	97.3	97.5	.6	.7	1.2	-3.6	3.0	.2	22.9
<i>Previous estimates</i>	101.8	102.6	103.8	99.7	102.8	103.2	.9	.7	1.2	-4.0	3.1	.4	23.0
Mining	100.3	100.4	103.6	95.0	103.2	104.2	3.5	.1	3.2	-8.3	8.6	.9	1.2
Utilities	97.8	103.5	100.8	107.7	98.1	100.6	-2.5	5.8	-2.6	6.9	-8.9	2.5	1.3
Capacity utilization													Capacity growth
	Percent of capacity												
	Average 1972-2020	1988-89 high	1990-91 low	1994-95 high	2008-09 low	2020 Apr.	2020 Nov. ^r	2020 Dec. ^r	2021 Jan. ^r	2021 Feb. ^r	2021 Mar. ^r	2021 Apr. ^r	Apr. '20 to Apr. '21
Total industry	79.6	85.2	78.8	85.1	66.6	63.4	73.3	74.2	74.9	72.7	74.2	74.6	-.1
<i>Previous estimates</i>	79.6	85.1	78.8	85.0	66.7	64.2	73.9	74.7	75.3	72.7	74.4	74.9	-.1
Manufacturing (see note below)	78.2	85.6	77.3	84.7	63.5	60.8	74.0	74.5	75.4	72.7	74.9	75.1	-.5
<i>Previous estimates</i>	78.1	85.5	77.3	84.6	63.7	60.1	73.1	73.7	74.6	71.6	73.8	74.1	-.2
Mining	86.2	86.0	83.8	88.3	78.3	71.7	70.3	70.6	73.0	67.0	72.9	73.7	-1.6
Utilities	85.0	93.1	84.6	93.2	78.0	73.8	71.4	75.4	73.2	78.1	71.0	72.6	2.8
Stage-of-process groups													
Crude	85.4	87.7	84.6	89.7	76.5	72.1	73.0	73.2	74.7	67.0	72.4	73.9	-1.0
Primary and semifinished	80.2	86.5	78.1	87.9	63.5	64.7	72.8	74.2	74.3	73.8	73.7	74.0	.2
Finished	76.8	83.4	77.5	80.7	66.5	59.1	73.9	74.5	75.7	73.7	75.6	75.6	-.4

^r Revised.
 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 of its industrial output data from the SIC system to NAICS.

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. 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 the manufacturing, mining, and electric and gas utilities industries; the reference period for the index is 2017. Manufacturing consists of those industries included in the North American Industry Classification System, or NAICS, definition of manufacturing *plus* those industries—logging and newspaper, periodical, book, and directory publishing—that have traditionally been considered to be manufacturing and included in the industrial sector. For the period since 2012, the total IP index has been constructed from 296 individual series based on the 2017 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 at 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 typically 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 semiconductors. When suitable data on physical 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 Manufactures*, prepared by the Bureau of the Census; the *Minerals Yearbook*, prepared by the U.S. 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 Bulletin* 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 the geometric mean of the change in output (I), and, as can be seen below, is computed using the unit value added estimate for the current month (p_m) and the estimate for previous month:

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

The IP proportions (typically shown in the first column of the relevant tables in the monthly 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 percentage point ($0.06 \times 10\% = 0.6\%$). 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/ipdisk/ipweightssa.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 74 percent of the source data (in value-added terms) are available; the fraction of available source data increases to 83 percent for estimates in the second month that the estimate is published, 93 percent in the third month, 97 percent in the fourth month, 98 percent in the fifth month, and 98 percent in the sixth month. Data availability by data type in 2020 is summarized in the table below:

Availability of Monthly IP Data in Publication Window

(Percent of value added in 2020; the numbers may not sum because of rounding.)

Type of data	Month of estimate					
	1st	2nd	3rd	4th	5th	6th
Physical product	31	40	50	54	55	55
Production-worker hours	43	43	43	43	43	43
IP data received	74	83	93	97	98	98
IP data estimated	26	17	7	3	2	2

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 more than one-half of the series (in terms of value added) that ultimately are based on physical product data (31 percent out of a total of 55 percent). Of the 31 percent, about three-quarters (26 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-13 ARIMA. For series based on production-worker hours, the current seasonal factors were estimated with data through January 2021; for other series, the factors were estimated with data through at least December 2020. Series are pre-adjusted for the effects of holidays or the business cycle when appropriate. For the data since 1972, all seasonally adjusted aggregate indexes are calculated by aggregating the seasonally adjusted indexes of the individual series. Additional documentation and X-13 specifications can be found on the Board's website at www.federalreserve.gov/releases/G17/About.htm.

Reliability. The average revision to the *level* of the total IP index, without regard to sign, between the first and the fourth estimates was 0.29 percent during the 1987–2020 period. The average revision to the *percent change* in total IP, without regard to sign, from the first to the fourth estimates was 0.23 percentage point during the 1987–2020

period. In most cases (about 85.57 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. 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, or 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—logging and newspaper, periodical, book, and directory publishing—that have traditionally been considered to be manufacturing and included in the industrial sector. 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 (for example, paper, industrial chemicals, petroleum refining, motor vehicles), as well as for electric utilities and mining; these industries represent about 26 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 about 68 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 6 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 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, now discontinued, was the primary source of manufacturing utilization rates for many years. This survey of large companies reported, on average, higher utilization rates than those reported by

establishments covered by the annual *Survey of Plant Capacity* (the primary source of factory operating rates through 2006, after which it was discontinued) for the fourteen years they overlapped.

Adjustments have been made to keep the industry utilization rates currently reported by the Federal Reserve (now based on the QSPC) 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 Census utilization surveys.

Perspective. Over the 1972–2020 period, the average total industry utilization rate was 79.6 percent; for manufacturing, the average factory operating rate was 78.2 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 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

References. The release for the annual revision that was published on May 28, 2021, is available on the Board's website (www.federalreserve.gov/releases/g17/revisions/Current/DefaultRev.htm). A summary of the annual revision that incorporated back to 1972 production and capacity indexes reclassified according to the North American Industry Classification System is available in an article in the *Federal Reserve Bulletin*, vol. 89 (April 2003), pp. 151–176. A description of the aggregation methods for industrial production and capacity utilization is included in an article in the *Federal Reserve Bulletin*, vol. 83 (February 1997), pp. 67–92. The Federal Reserve methodology for constructing industry-level measures of capital is detailed in "Capital Stock Estimates for Manufacturing Industries: Methods and Data" by Mike Mohr and Charles Gilbert (1996), which can be obtained at www.federalreserve.gov/releases/g17/CapitalStockDocLatest.pdf.

Industrial Production—1986 Edition contains a more detailed description of the other methods used to compile the industrial production index, plus a history of its development, a glossary of terms, and a bibliography. The major revisions to the IP indexes and capacity utilization since 1990 have been described in the *Federal Reserve Bulletin* (April 1990, June 1990, June 1993, March 1994, January 1995, January 1996, February 1997, February 1998, January 1999, March 2000, March 2001, March 2002, April 2003, Winter 2004, Winter 2005, March 2006, May 2007, August 2008, August 2009) or in online staff studies (www.federalreserve.gov/releases/g17/articles/rev2010/industrial10.pdf, www.federalreserve.gov/releases/g17/articles/rev2012/industrial12.pdf, www.federalreserve.gov/releases/g17/articles/rev2013/industrial13.pdf).

Release Schedule

In 2021, the G.17 will be published at 9:15 a.m. on:

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

This release schedule is available on the Board's website at <http://www.federalreserve.gov/releases/g17>.