

# Breakfast Cereal Manufacturing: 2002

Issued December 2004

EC02-311-311230 (RV)

## 2002 Economic Census

*Manufacturing*

Industry Series



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U.S. Department of Commerce  
Economics and Statistics Administration  
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## CONTENTS

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Introduction to the Economic Census .....	v
Manufacturing .....	ix
Tables	
1. Historical Statistics for the Industry: 2002 and Earlier Years ...	1
2. Industry Statistics for Selected States: 2002 .....	2
3. Detailed Statistics by Industry: 2002 .....	3
4. Industry Statistics by Employment Size: 2002.....	4
5. Industry Statistics by Primary Product Class Specialization: 2002 .....	5
6a. Products Statistics: 2002 and 1997 .....	6
6b. Product Class Shipments for Selected States: 2002 and 1997 .	7
7. Materials Consumed by Kind: 2002 and 1997.....	8
Appendixes	
A. Explanation of Terms .....	A-1
B. NAICS Codes, Titles, and Descriptions .....	B-1
C. Methodology.....	C-1
D. Geographic Notes .....	--
E. Metropolitan and Micropolitan Statistical Areas .....	--
F. Comparability of Product Classes and Product Codes: 2002 to 1997.....	F-1

-- Not applicable for this report.

# Introduction to the Economic Census

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## **PURPOSES AND USES OF THE ECONOMIC CENSUS**

The economic census is the major source of facts about the structure and functioning of the nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in "2" and "7."

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the federal government use the data to monitor economic activity and to assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## **INDUSTRY CLASSIFICATIONS**

Data from the 2002 Economic Census are published primarily according to the 2002 North American Industry Classification System (NAICS). NAICS was first adopted in the United States, Canada, and Mexico in 1997. The 2002 Economic Census covers the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), largely covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 100 subsectors (three-digit codes), 317 industry groups (four-digit codes), and, as implemented in the United States, 1,179 industries (six-digit codes).

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## **RELATIONSHIP TO HISTORICAL INDUSTRY CLASSIFICATIONS**

Prior to the 1997 Economic Census, data were published according to the Standard Industrial Classification (SIC) system. While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The 1997 Economic Census *Bridge Between NAICS and SIC* demonstrates the relationships between NAICS and SIC industries. Where changes are significant, it may not be possible to construct time series that include data for points both before and after 1997.

Most industry classifications remained unchanged between 1997 and 2002, but NAICS 2002 includes substantial revisions within the construction and wholesale trade sectors, and a number of revisions for the retail trade and information sectors. These changes are noted in industry definitions and will be demonstrated in the *Bridge Between NAICS 2002 and NAICS 1997*.

For 2002, data for enterprise support establishments (those functioning primarily to support the activities of their company's operating establishments, such as a warehouse or a research and development laboratory) are included in the industry that reflects their activities (such as warehousing). For 1997, such establishments were termed auxiliaries and were excluded from industry totals.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company. (For selected industries, only payroll, employment, and classification are collected for individual establishments, while other data are collected on a consolidated basis.)

## **GEOGRAPHIC AREA CODING**

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for states, metropolitan and micropolitan statistical areas, counties, and corporate municipalities (places) including cities, towns, townships, villages, and boroughs. Respondents were required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from administrative sources is used as a basis for coding.

## **AVAILABILITY OF ADDITIONAL DATA**

All results of the 2002 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on digital versatile discs (DVD-ROMs) for sale by the Census Bureau. The American FactFinder system at the Internet site allows selective retrieval and downloading of the data. For more information, including a description of reports being issued, see the Internet site, write to the U.S. Census Bureau, Washington, DC 20233-6100, or call Customer Services at 301-763-4100.

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart

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from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some service trades in 1933. Censuses of construction, manufacturing, and the other business censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated, providing comparable census data across economic sectors and using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census report forms.

The range of industries covered in the economic census expanded between 1967 and 2002. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity. New for 2002 is coverage of four industries classified in the agriculture, forestry, and fishing sector under the SIC system: landscape architectural services, landscaping services, veterinary services, and pet care services.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. Reports for 1997 were published primarily on the Internet and copies of 1992 reports are also available there. CD-ROMs issued from the 1987, 1992, and 1997 Economic Censuses contain databases that include all or nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

#### **SOURCES FOR MORE INFORMATION**

More information about the scope, coverage, classification system, data items, and publications for the 2002 Economic Census and related surveys is published in the *Guide to the 2002 Economic Census* at [www.census.gov/econ/census02/guide](http://www.census.gov/econ/census02/guide). More information on the methodology, procedures, and history of the census will be published in the *History of the 2002 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).



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# Manufacturing

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## SCOPE

The Manufacturing sector (sector 31-33) comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The assembling of component parts of manufactured products is considered manufacturing, except in cases where the activity is appropriately classified in Sector 23, Construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing.

The materials, substances, or components transformed by manufacturing establishments are raw materials that are products of agriculture, forestry, fishing, mining, or quarrying, as well as products of other manufacturing establishments. The materials used may be purchased directly from producers, obtained through customary trade channels, or secured without recourse to the market by transferring the product from one establishment to another, under the same ownership. The new product of a manufacturing establishment may be finished in the sense that it is ready for utilization or consumption, or it may be semifinished to become an input for an establishment engaged in further manufacturing. For example, the product of the alumina refinery is the input used in the primary production of aluminum; primary aluminum is the input to an aluminum wire drawing plant; and aluminum wire is the input for a fabricated wire product manufacturing establishment.

The subsectors in the manufacturing sector generally reflect distinct production processes related to material inputs, production equipment, and employee skills. In the machinery area, where assembling is a key activity, parts and accessories for manufactured products are classified in the industry of the finished manufactured item when they are made for separate sale. For example, a replacement refrigerator door would be classified with refrigerators and an attachment for a piece of metal working machinery would be classified with metal working machinery. However, components, input from other manufacturing establishments, are classified based on the production function of the component manufacturer. For example, electronic components are classified in Subsector 334, Computer and Electronic Product Manufacturing; and stampings are classified in Subsector 332, Fabricated Metal Product Manufacturing.

Manufacturing establishments often perform one or more activities that are classified outside the manufacturing sector of NAICS. For instance, almost all manufacturing has some captive research and development or administrative operations, such as accounting, payroll, or management. These captive services are treated the same as captive manufacturing activities. When the services are provided by separate establishments, they are classified to the NAICS sector where such services are primary, not in manufacturing.

The boundaries of manufacturing and the other sectors of the classification system can be somewhat blurry. The establishments in the manufacturing sector are engaged in the transformation of materials into new products. Their output is a new product. However, the definition of what constitutes a new product can be somewhat subjective. As clarification, the following activities are

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considered manufacturing in NAICS: milk bottling and pasteurizing; water bottling and processing; fresh fish packaging (oyster shucking, fish filleting); apparel jobbing (assigning of materials to contract factories or shops for fabrication or other contract operations); as well as contracting on materials owned by others; printing and related activities; ready-mixed concrete production; leather converting; grinding of lenses to prescription; wood preserving; electroplating, plating, metal heat treating, and polishing for the trade; lapidary work for the trade; fabricating signs and advertising displays; rebuilding or remanufacturing machinery (i.e., automotive parts); ship repair and renovation; machine shops; and tire retreading.

**Exclusions.** There are activities that are sometimes considered manufacturing, but for NAICS are classified in another sector. These activities include logging, classified in Sector 11, Agriculture, Forestry, Fishing and Hunting is considered a harvesting operation; the beneficiating of ores and other minerals, classified in Sector 21, Mining, is considered part of the activity of mining; the construction of structures and fabricating operations performed at the site of construction by contractors, is classified in Sector 23, Construction; establishments engaged in breaking of bulk and redistribution in smaller lots, including packaging, repackaging, or bottling products, such as liquors or chemicals; the customized assembly of computers; sorting of scrap; mixing paints to customer order; and cutting metals to customer order, classified in Sector 42, Wholesale Trade or Sector 44-45, Retail Trade, produce a modified version of the same product, not a new product; and publishing and the combined activity of publishing and printing, classified in Sector 51, Information, perform the transformation of information into a product where as the value of the product to the consumer lies in the information content, not in the format in which it is distributed (i.e., the book or software diskette).

The tabulations for this sector do not include central administrative offices, warehouses, or other establishments that serve manufacturing establishments within the same organization. Data for such establishments are classified according to the nature of the service they provide. For example, separate headquarters establishments are reported in NAICS Sector 55, Management of Companies and Enterprises.

The reports described below exclude establishments of firms with no paid employees. These “nonemployers,” typically self-employed individuals or partnerships operating businesses that they have not chosen to incorporate, are reported separately in Nonemployer Statistics. The contribution of nonemployers, relatively small for this sector, may be examined at [www.census.gov/nonemployerimpact](http://www.census.gov/nonemployerimpact).

The reports described below cover all manufacturing establishments with one or more paid employees.

**Definitions.** Industry categories are defined in Appendix B, NAICS Codes, Titles, and Descriptions. Other terms are defined in Appendix A, Explanation of Terms.

## REPORTS

The following reports provide statistics on this sector:

**Industry Series.** There are 473 reports, each covering a single NAICS industry (six-digit code). These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. The industry reports also include data for states with 100 employees or more in the industry. The data in industry reports are preliminary and subject to change in the following reports.

**Geographic Area Series.** There are 51 separate reports, one for each state and the District of Columbia. Each state report presents similar statistics at the “all manufacturing” level for each state and its metropolitan and micropolitan areas with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

### Subject Series:

x Manufacturing

2002 Economic Census

- **Industry-Product Analysis Summary.** This report presents value of shipments, value of product shipments, percentage of product shipments of the total value of shipments, and percentage of distribution of value of product shipments on the NAICS six-digit industry level and by the six- and seven-digit product code levels. It also includes miscellaneous receipts at the six- and seven-digit product code levels by NAICS six-digit industry levels.
- **General Summary.** This report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.
- **Product Summary.** This report summarizes the products data published in the industry reports. This report also includes a table with data for products that are primary to more than one industry, which are not in the industry reports.
- **Materials Summary.** This report summarizes the materials data published in the industry reports.
- **Concentration Ratio Summary.** This report publishes data on the percentage of value of shipments and value added accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Herfindahl-Herschmann indexes for each industry.
- **Location of Manufacturing Plants Summary.** This report contains statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

**ZIP Code Statistics.** This report contains statistics on the number of establishments for the three- and six-digit NAICS industry by employment-size of the establishment by ZIP Code.

**Other reports.** Data for this sector are also included in reports with multisector coverage, including Nonemployer Statistics, Comparative Statistics, Bridge Between 2002 NAICS and 1997 NAICS, Business Expenses, and the Survey of Business Owners reports.

## GEOGRAPHIC AREAS COVERED

The level of geographic detail varies by report. Maps are available at [www.census.gov/econ2002maps](http://www.census.gov/econ2002maps). Notes specific to areas in the state are included in Appendix D, Geographic Notes.

1. The United States as a whole.
2. States and the District of Columbia.
3. Metropolitan and micropolitan statistical areas with 250 employees or more. A core based statistical areas (CBSA) contains a core area with a substantial population nucleus, together with adjacent communities having a high degree of social and economic integration with that core. CBSAs are differentiated into metropolitan and micropolitan statistical areas based on size criteria. Both metropolitan and micropolitan areas are defined in terms of entire counties, and are listed in Appendix E, Metropolitan and Micropolitan Statistical Areas.
  - a. Metropolitan Statistical Areas (metro areas). Metro areas have at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.
  - b. Micropolitan Statistical Areas (micro areas). Micro areas have at least one urban cluster of at least 10,000 but less than 50,000 population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.
  - c. Metropolitan Divisions (metro divisions). If specified criteria are met, a metro area containing a single core with a population of 2.5 million or more may be subdivided to form smaller groupings of counties referred to as Metropolitan Divisions.

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- d. Combined Statistical Areas (combined areas). If specified criteria are met, adjacent metro and micro areas, in various combinations, may become the components of a new set of areas called Combined Statistical Areas. The areas that combine retain their own designations as metro or micro areas within the larger combined area.
4. Counties and county equivalents defined as of January 1, 2002, with 500 employees or more. Counties are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs, census areas, and city and boroughs. Maryland, Missouri, Nevada, and Virginia have one place or more that is independent of any county organization and constitutes primary divisions of their states. These places are treated as counties and as places.
  5. Economic places with 500 employees or more.
    - a. Municipalities of 2,500 inhabitants or more defined as of January 1, 2002. These are areas of significant population incorporated as cities, boroughs, villages, or towns according to the 2000 Census of Population. For the economic census, boroughs and census areas in Alaska and boroughs in New York are not included in this category.
    - b. Consolidated cities defined as of January 1, 2002. Consolidated cities are consolidated governments that consist of separately incorporated municipalities.
    - c. Townships in Michigan, New Jersey, and Pennsylvania, and towns in New York, Wisconsin, and the six New England states with 10,000 inhabitants or more (according to the 2000 Census of Population).
    - d. Balance of county. Areas outside the entities listed above, including incorporated municipalities with populations of fewer than 2,500, town and townships not qualifying as noted above, and the remainders of counties outside places are categorized as "Balance of county."

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 2002 data are expressed in 2002 dollars, and 1997 data, in 1997 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **COMPARABILITY OF THE 1997 AND 2002 ECONOMIC CENSUSES**

Both the 2002 Economic Census and the 1997 Economic Census present data based on the North American Industry Classification System (NAICS). While there were revisions to selected industries for 2002, this sector is not affected by those revisions.

For 2002, there have been several additional data tables added, which did not exist in 1997. These tables for 2002 include products primary to more than one industry, industry-product analysis, e-commerce value of shipments, and leased and nonleased detail employment statistics by subsectors.

## **RELIABILITY OF DATA**

All data compiled for this sector are subject to nonsampling errors. Nonsampling errors can be attributed to many sources: inability to identify all cases in the actual universe; definition and classification difficulties; differences in the interpretation of questions; errors in recording or coding the data obtained; and other errors of collection, response, coverage, processing, and estimation for missing or misreported data. Selected data in tables titled "Detailed Statistics" are based on the Annual Survey of Manufactures and are subject to sampling errors as well as nonsampling errors.

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No direct measurement of these effects has been obtained except for estimation for missing or misreported data, as by the percentages shown in the tables. Precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize the effects of nonsampling errors. More information on the reliability of the data is included in Appendix C, Methodology.

## **DISCLOSURE**

In accordance with federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at [www.census.gov/epcd/ec02/disclosure.htm](http://www.census.gov/epcd/ec02/disclosure.htm).

The disclosure analysis for "industry statistics" files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. Nonetheless, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures, which can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 55,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data. In addition to the ASM, the Census Bureau conducts the Current Industrial Reports (CIR) program. The CIR program publishes selected detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) Program, which publishes detailed statistics for manufacturing industries at the U.S. level.

In addition, the County Business Patterns program offers annual statistics on the number of establishments, employment, and payroll classified by industry within each county, and Statistics of U.S. Businesses provides annual statistics classified by the employment size of the enterprise, further classified by industry for the United States, and by broader categories for states and metropolitan areas.

## **CONTACTS FOR DATA USERS**

Questions about these data may be directed to the U.S. Census Bureau, Manufacturing & Construction Division, Information Services Center, 301-763-4673 or [ask.census.gov](mailto:ask.census.gov).

## **ABBREVIATIONS AND SYMBOLS**

The following abbreviations and symbols are used with these data:

A	Standard error of 100 percent or more
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue
N	Not available or not comparable
S	Withheld because estimates did not meet publication standards
X	Not applicable
Z	Less than half the unit shown
a	0 to 19 employees
b	20 to 99 employees
c	100 to 249 employees

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e	250 to 499 employees
f	500 to 999 employees
g	1,000 to 2,499 employees
h	2,500 to 4,999 employees
i	5,000 to 9,999 employees
j	10,000 to 24,999 employees
k	25,000 to 49,999 employees
l	50,000 to 99,999 employees
m	100,000 employees or more
p	10 to 19 percent estimated
q	20 to 29 percent estimated
r	Revised
s	Sampling error exceeds 40 percent
nsk	Not specified by kind
-	Represents zero (page image/print only)
(CC)	Consolidated city
(IC)	Independent city

**Table 1. Historical Statistics for the Industry: 2002 and Earlier Years**

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry and year <sup>1</sup>	Com-panies <sup>2</sup>	All estab-lish-ments <sup>3</sup>	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number <sup>4</sup>	Payroll (\$1,000)	Number <sup>4</sup>	Hours (1,000)	Wages (\$1,000)				
311230, Breakfast cereal manufacturing . . . 2002..	46	66	13 019	703 657	10 690	22 936	548 686	6 670 289	2 293 668	8 934 937	'253 193
2001..	N	N	14 018	739 949	11 567	25 355	583 212	8 700 367	2 700 167	11 412 828	287 111
2000..	N	N	14 555	749 214	11 945	26 499	592 173	8 421 720	2 620 601	11 040 270	304 894
1999..	N	N	14 737	751 173	12 151	26 967	605 305	8 209 103	2 566 686	10 773 943	307 693
1998..	N	N	14 876	723 079	12 297	26 618	583 158	7 105 065	2 546 846	9 644 259	362 526
1997..	48	71	14 396	718 069	11 808	26 019	580 950	6 556 228	2 563 392	9 098 833	300 251

<sup>1</sup>Statistics presented for years ending in 2 and 7 are census data. Interim census years are derived in a representative sample of manufacturing establishments canvassed in the Annual Survey of Manufactures (ASM).

<sup>2</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>3</sup>Includes establishments with payroll at any time during the year.

<sup>4</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.



**Table 2. Industry Statistics for Selected States: 2002**

[States that are a disclosure or with less than 100 employees are not shown. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographical definitions, see note at end of table. For information on geographic areas followed by \*, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments <sup>2</sup>		All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number <sup>3</sup>	Payroll (\$1,000)	Number <sup>3</sup>	Hours (1,000)	Wages (\$1,000)				
311230, Breakfast cereal manufacturing												
United States.....	-	66	47	13 019	703 657	10 690	22 936	548 686	6 670 289	2 293 668	8 934 937	1253 193
California.....	-	9	6	777	43 698	567	1 114	30 159	722 530	201 594	925 698	116 707
Massachusetts.....	1	6	1	294	11 944	222	406	7 893	44 228	33 480	78 367	2 382
Michigan.....	2	7	6	2 354	138 460	1 931	4 182	108 848	865 105	336 898	1 193 953	177 187

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Includes establishments with payroll at any time during the year.

<sup>3</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

**Table 3. Detailed Statistics by Industry: 2002**

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Item	Value
<b>311230, Breakfast cereal manufacturing</b>	
Companies <sup>1</sup> .....	number.. 46
All establishments <sup>2</sup> .....	number.. 66
Establishments with 1 to 19 employees .....	number.. 19
Establishments with 20 to 99 employees .....	number.. 14
Establishments with 100 employees or more .....	number.. 33
All employees <sup>3</sup> .....	number.. 13 019
Total compensation .....	\$1,000.. 895 786
Annual payroll .....	\$1,000.. 703 657
Total fringe benefits .....	\$1,000.. 192 129
Production workers, average for year .....	number.. 10 690
Production workers on March 12 .....	number.. 10 638
Production workers on May 12 .....	number.. 10 641
Production workers on August 12 .....	number.. 10 831
Production workers on November 12 .....	number.. 10 651
Production worker hours .....	1,000.. 22 936
Production worker wages .....	\$1,000.. 548 686
Total cost of materials .....	\$1,000.. 2 293 668
Materials, parts, containers, packaging, etc., used .....	\$1,000.. 2 057 475
Resales .....	\$1,000.. 103 928
Purchased fuels .....	\$1,000.. 44 984
Purchased electricity .....	\$1,000.. 56 808
Contract work .....	\$1,000.. 30 473
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 267 516
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. 120 093
Total value of shipments .....	\$1,000.. 8 934 937
Primary products value of shipments .....	\$1,000.. 7 362 791
Secondary products value of shipments .....	\$1,000.. 1 357 717
Total miscellaneous receipts .....	\$1,000.. 214 429
Value of resales .....	\$1,000.. 209 776
Contract receipts .....	\$1,000.. D
Other miscellaneous receipts .....	\$1,000.. D
Primary products specialization ratio .....	percent.. 84
Value of primary products shipments made in all industries .....	\$1,000.. 7 873 773
Value of primary products shipments made in this industry .....	\$1,000.. 7 362 791
Value of primary products shipments made in other industries .....	\$1,000.. 510 982
Coverage ratio .....	percent.. 94
Value added .....	\$1,000.. 6 670 289
Total inventories, beginning of year .....	\$1,000.. 316 712
Finished goods inventories .....	\$1,000.. 100 868
Work-in-process inventories .....	\$1,000.. 8 897
Materials and supplies inventories .....	\$1,000.. 206 947
Total inventories, end of year .....	\$1,000.. 317 760
Finished goods inventories .....	\$1,000.. 127 213
Work-in-process inventories .....	\$1,000.. 11 572
Materials and supplies inventories .....	\$1,000.. 178 975
Gross value of depreciable assets (acquisition costs) at beginning of year .....	\$1,000.. '4 516 426
Total capital expenditures (new and used) .....	\$1,000.. '253 193
Buildings and other structures (new and used) .....	\$1,000.. '40 656
Machinery and equipment (new and used) .....	\$1,000.. '212 537
Automobiles, trucks, etc., for highway use .....	\$1,000.. '961
Computers and peripheral data processing equipment .....	\$1,000.. '21 004
All other expenditures for machinery and equipment .....	\$1,000.. '190 572
Total retirements .....	\$1,000.. '243 145
Gross value of depreciable assets at end of year .....	\$1,000.. '4 526 474
Depreciation charges during year .....	\$1,000.. '260 367
Total rental payments .....	\$1,000.. 26 692
Buildings and other structures .....	\$1,000.. 14 204
Machinery and equipment .....	\$1,000.. 12 488
Total other expenses <sup>4</sup> .....	\$1,000.. 313 245
Response coverage ratio <sup>5</sup> .....	percent.. 97
Repair and maintenance services of buildings and/or machinery <sup>4</sup> .....	\$1,000.. 64 706
Communications services <sup>4</sup> .....	\$1,000.. 3 759
Legal services <sup>4</sup> .....	\$1,000.. 902
Accounting, auditing, and bookkeeping services <sup>4</sup> .....	\$1,000.. 536
Advertising and promotional services <sup>4</sup> .....	\$1,000.. 72 718
Expensed computer hardware and supplies and purchased computer services <sup>4</sup> .....	\$1,000.. 4 900
Refuse removal (including hazardous waste) services <sup>4</sup> .....	\$1,000.. 7 364
Management consulting and administrative services <sup>4</sup> .....	\$1,000.. 3 580
Taxes and license fees <sup>4</sup> .....	\$1,000.. 26 006
All other expenses <sup>4</sup> .....	\$1,000.. 128 775

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

<sup>3</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

<sup>4</sup>Based on Annual Survey of Manufactures (ASM) sample data.

<sup>5</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those Annual Survey of Manufactures (ASM) establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note 1: The amounts shown for other expenses reflect only those services that establishments purchase from other companies.

Note 2: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 4. Industry Statistics by Employment Size: 2002**

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Employment size class	E <sup>1</sup>	All establishments <sup>2</sup>	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number <sup>3</sup>	Payroll (\$1,000)	Number <sup>3</sup>	Hours (1,000)	Wages (\$1,000)				
311230, Breakfast cereal manufacturing											
All establishments .....	—	66	13 019	703 657	10 690	22 936	548 686	6 670 289	2 293 668	8 934 937	'253 193
Establishments with—											
1 to 4 employees .....	9	13	21	1 015	15	28	762	13 428	3 579	17 007	'356
5 to 9 employees .....	8	2	a	D	D	D	D	D	D	D	D
10 to 19 employees .....	2	4	b	D	D	D	D	D	D	D	D
20 to 49 employees .....	—	6	211	7 790	137	305	3 711	91 382	92 677	182 797	'3 927
50 to 99 employees .....	6	8	583	25 995	427	864	15 359	203 280	61 212	263 247	'5 378
100 to 249 employees .....	1	14	2 603	123 143	2 081	4 299	89 330	1 392 350	361 664	1 748 065	85 874
250 to 499 employees .....	—	12	4 432	228 015	3 749	8 182	181 037	2 575 461	795 458	3 375 398	'74 840
500 to 999 employees .....	—	6	3 859	242 450	3 188	6 653	196 985	2 117 911	740 200	2 834 024	69 230
1,000 to 2,499 employees .....	—	1	g	D	D	D	D	D	D	D	D
2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>4</sup> .....	9	15	39	2 152	30	60	1 669	28 652	7 749	36 401	'1 159

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

<sup>2</sup>Includes establishments with payroll at any time during the year.

<sup>3</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

<sup>4</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 5. Industry Statistics by Primary Product Class Specialization: 2002**

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry or product class code	Industry or primary product class	All establishments <sup>1</sup>	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number <sup>2</sup>	Payroll (\$1,000)	Number <sup>2</sup>	Hours (1,000)	Wages (\$1,000)				
311230	Breakfast cereal manufacturing .....	66	13 019	703 657	10 690	22 936	548 686	6 670 289	2 293 668	8 934 937	'253 193
3112301	Ready-to-serve breakfast cereal foods (except infant cereals) .....	35	9 649	554 503	7 863	16 767	435 441	5 975 290	1 815 726	7 768 534	'216 444
3112304	Other breakfast cereal foods .....	13	3 282	143 985	2 791	6 097	111 240	594 175	405 253	991 806	'33 436

<sup>1</sup>Includes establishments with payroll at any time during the year.

<sup>2</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 6a. Products Statistics: 2002 and 1997**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Product code	Product	Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)
311230	Breakfast cereal manufacturing .....	2002.. N 1997.. N	X X	X X	7 873 773 7 446 787
3112301	Ready-to-serve breakfast cereal foods (except infant cereals) .....	2002.. N 1997.. N	X X	X X	7 102 397 6 729 803
31123011	Ready to serve corn flakes and other corn breakfast foods (except infant cereals) .....	2002.. N 1997.. N	X X	X X	2 151 993 2 026 594
3112301111	Ready-to-serve corn flakes and other corn breakfast foods (except infant cereals), with fruits and/or nuts .....	mil lb. 2002.. 6 1997.. 7	X X	S D	260 203 D
3112301121	Ready-to-serve corn flakes and other corn breakfast foods (except infant cereals), without fruits or nuts .....	mil lb. 2002.. 16 1997.. 16	X X	P774.7 D	1 891 790 D
31123012	Ready to serve wheat flakes and other wheat breakfast foods (except infant cereals) .....	2002.. N 1997.. N	X X	X X	1 300 056 1 253 313
3112301231	Ready-to-serve wheat flakes and other wheat breakfast foods (except infant cereals), with fruits and/or nuts .....	mil lb. 2002.. 8 1997.. 7	X X	276.4 P258.8	493 152 463 675
3112301241	Ready-to-serve wheat flakes and other wheat breakfast foods (except infant cereals), without fruits or nuts .....	mil lb. 2002.. 11 1997.. 12	X X	438.2 405.0	806 904 789 638
31123013	Ready to serve oat breakfast foods (except infant cereals) .....	2002.. N 1997.. N	X X	X X	D 1 274 297
3112301351	Ready-to-serve oat breakfast foods (except infant cereals), with fruits and/or nuts .....	mil lb. 2002.. 5 1997.. 5	X X	D S	D 62 834
3112301361	Ready-to-serve oat breakfast foods (except infant cereals), without fruits and/or nuts .....	mil lb. 2002.. 8 1997.. 10	X X	D 526.5	D 1 211 463
31123014	Ready to serve rice breakfast foods (except infant cereals) .....	2002.. N 1997.. N	X X	X X	655 500 789 536
3112301471	Ready-to-serve rice breakfast foods (except infant cereals), with fruits and/or nuts .....	mil lb. 2002.. 2 1997.. 1	X X	D D	D D
3112301481	Ready to serve rice breakfast foods (except infant cereals), without fruits or nuts .....	mil lb. 2002.. 13 1997.. 10	X X	308.1 D	D D
31123015	Ready-to-serve breakfast preparations of other grains and mixed grains (except infant cereals) .....	2002.. N 1997.. N	X X	X X	D 1 318 742
3112301591	Ready-to-serve breakfast preparations of other grains and mixed grains (except infant cereals), with fruits and/or nuts .....	mil lb. 2002.. 7 1997.. 6	X X	D D	D D
31123015A1	Ready-to-serve breakfast preparations of other grains and mixed grains (except infant cereals), without fruits or nuts .....	mil lb. 2002.. 13 1997.. 10	X X	D D	D D
3112301Y	Ready-to-serve breakfast cereal foods (except infant cereals), nsk .....	2002.. N 1997.. N	X X	X X	49 382 67 321
3112301YVV	Ready-to-serve breakfast cereal foods (except infant cereals), nsk .....	2002.. N 1997.. N	X X	X X	49 382 67 321
3112304	Other breakfast cereal foods .....	2002.. N 1997.. N	X X	X X	663 686 690 561
31123041	Other breakfast cereal foods .....	2002.. N 1997.. N	X X	X X	663 686 688 549
3112304111	Infants' cereals, all types .....	mil lb. 2002.. 8 1997.. 2	X X	S D	95 158 D
3112304121	Instant hot cereals, all types of grains (mix with hot water and eat type) .....	mil lb. 2002.. 6 1997.. 6	X X	S 39.0	334 680 384 915
3112304131	Farina and other wheat foods intended to be cooked before serving, except instant and infants' cereals .....	mil lb. 2002.. 7 1997.. 5	X X	S D	84 510 D
3112304141	Rolled oats and oatmeal intended to be cooked before serving, except instant and infants' cereals .....	mil lb. 2002.. 8 1997.. 10	X X	140.3 S	D 92 411
3112304151	Cereal preparations of other grains and mixed grains intended to be cooked before serving, except instant and infants' cereals .....	mil lb. 2002.. 3 1997.. 4	X X	D 3.6	D 36 065
3112304Y	Other breakfast cereal foods, nsk .....	2002.. N 1997.. N	X X	X X	- 2 012
3112304YVV	Other breakfast cereal foods, nsk .....	2002.. N 1997.. N	X X	X X	- 2 012
311230W	Breakfast cereal manufacturing, nsk, total .....	2002.. N 1997.. N	X X	X X	107 690 26 423
311230WY	Breakfast cereal manufacturing, nsk, total .....	2002.. N 1997.. N	X X	X X	107 690 26 423
311230WYVV	Breakfast cereal manufacturing, nsk, for nonadministrative-record establishments .....	2002.. N 1997.. N	X X	X X	72 702 8 564
311230WYVY	Breakfast cereal manufacturing, nsk, for administrative-record establishments .....	2002.. N 1997.. N	X X	X X	34 988 17 859

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p-10 to 19 percent estimated; q-20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 6b. Product Class Shipments for Selected States: 2002 and 1997**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 2002. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographic definitions, see note at end of table. For information on geographic areas followed by \*, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)
3112301	Ready-to-serve breakfast cereal foods (except infant cereals)	
	United States.....	2002.. 7 102 397 1997.. 6 729 803
	Michigan.....	2002.. 1 078 866 1997.. N
3112304	Other breakfast cereal foods	
	United States.....	2002.. 663 686 1997.. 690 561

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

**Table 7. Materials Consumed by Kind: 2002 and 1997**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Material code	Material consumed	Quantity	Delivered cost (\$1,000)
311230	<b>Breakfast cereal manufacturing</b>		
0090001	Total materials .....	X	2 057 475
	.....2002..	X	2 303 772
	.....1997..	X	
11114003	Wheat ..... mil bushels .....	S	74 132
	.....2002..	110.9	72 079
	.....1997..	817.2	92 673
11119913	Oats ..... mil bushels .....	S	103 950
	.....2002..		
	.....1997..		
11115003	Corn ..... mil bushels .....	S	45 480
	.....2002..	D	D
	.....1997..	D	D
11119911	Barley..... mil bushels .....	S	1 706
	.....2002..	S	9 606
	.....1997..	S	
11116000	Rice, rough ..... mil lb. ....	372.3	45 549
	.....2002..	321.5	60 911
	.....1997..		
11110003	Other grains (excluding wheat, oats, corn, barley, and rice (rough)) ..... mil bushels .....	16.5	13 085
	.....2002..	S	6 291
	.....1997..	S	
31121119	Corn grits ..... 1,000 cwt. ....	3 723.7	38 486
	.....2002..	S	47 170
	.....1997..	D	D
31121121	Corn meal and flakes ..... 1,000 cwt. ....	D	D
	.....2002..	S	58 408
	.....1997..		
31121101	Wheat flour ..... 1,000 cwt. ....	1 870.5	22 770
	.....2002..	S	38 350
	.....1997..	S	
31121133	Flour (excluding wheat) ..... mil lb. ....	333.4	46 133
	.....2002..	1723.1	100 307
	.....1997..	D	D
31121131	Prepared flour mixes ..... mil lb. ....	D	D
	.....2002..	D	D
	.....1997..		
31131005	Sugar, cane and beet (sugar solids), excluding brown ..... 1,000 s tons .....	578.5	253 904
	.....2002..	608.9	339 926
	.....1997..	16.5	3 917
31131009	Brown sugar, cane and beet (sugar solids) ..... 1,000 s tons .....	S	19 516
	.....2002..	S	24 221
	.....1997..	S	38 940
31100015	Fats and oils ..... mil lb. ....	78.9	
	.....2002..	87.4	
	.....1997..		
31142307	Raisins ..... 1,000 cwt. ....	591.9	46 917
	.....2002..	S	69 555
	.....1997..	S	
31142313	Fruits, dried (excluding raisins) ..... 1,000 cwt. ....	400.5	64 554
	.....2002..	S	23 401
	.....1997..	D	D
31191103	Nutmeats, dried and dehydrated ..... 1,000 cwt. ....	D	D
	.....2002..	31.0	11 389
	.....1997..		
11100031	Nuts and nutmeats, raw ..... 1,000 cwt. ....	145 450.0	26 388
	.....2002..	S	40 234
	.....1997..	X	D
001900A1	Packaging paper and plastics film, coated and laminated ..... 2002..	X	139 885
	.....1997..	X	152 376
001900A3	Bags (plastics, foil, and coated paper) ..... 2002..	X	26 224
	.....1997..	X	74 363
32222401	Bags (uncoated paper and multiwall) ..... 2002..	X	D
	.....1997..	X	D
32221001	Paperboard containers, boxes, and corrugated paperboard ..... 2002..	X	397 620
	.....1997..	X	484 114
00970099	All other materials and components, parts, containers, and supplies ..... 2002..	X	472 600
	.....1997..	X	455 361
00971000	Materials, ingredients, containers, and supplies, nsk ..... 2002..	X	183 975
	.....1997..	X	47 954

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p-10 to 19 percent estimated; q-20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and, then, to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory data by stage of fabrication**

Total inventories and three detailed components (1)finished goods, (2)work-in-process, and (3)materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc. Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.
3. Cost of fuels consumed for heat and power. Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity. The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work. This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.



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## **Specific materials consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials that were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the "Cost of all other materials" Census material code 00970099.

Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the "Materials not specified by kind" Census materials code 00971000.

## **Duplication in cost of materials and value of shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries.

Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **SELECTED PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of selected purchased services for the repair and maintenance services of buildings and/or machinery; communication services; legal services; accounting, auditing, and bookkeeping services; advertising and promotional services; expensed computer hardware and supplies and purchased computer services; refuse removal services; management consulting and administrative services; taxes and license fees; and all other expenses not previously stated. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services. These expenses are normally considered as nonproduction related costs purchased from other companies.

Included in the cost of selected purchased services for the repair and maintenance services of buildings and/or machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Excluded from this item are extensive repairs or reconstruction that was capitalized, which is considered capital expenditures; costs incurred directly by the establishment in using its own work force to perform repairs and maintenance work; and repairs and maintenance provided by the building or machinery owner as part of the rental contract.

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Included in the cost of selected purchased services for communication is the actual expense incurred or payable during the year for any type of communication. Such types of communication include telephone, data transmission, telegraph, Internet, connectivity, FAX, telex, photo transmission, paging, cellular telephone, on-line access and related services, etc.

Included in the cost of selected purchased services for legal services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of the establishment for these services.

Included in the cost of selected accounting, auditing, and bookkeeping services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected advertising and promotional services are payments made to other companies for these services that were paid directly by the establishment. These include payments for printing, media coverage, and other services and materials. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected expensed computer hardware and supplies and purchased computer services are actual expenses incurred or payable during the year for this item. Purchases for computer hardware and supplies, computer services (software, data transmission, processing services, Web design, etc.) are all included. Excluded are services provided by other establishments of the same company (such as a separate central data processing unit).

Included in the cost of selected purchased refuse removal services are payments made to other companies for these services that were paid directly by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures and the salaries paid to employees of the establishment for these services.

Included in the cost of selected purchased management consulting and administrative services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected purchased taxes and license fees are payments made to other companies for these services that were paid directly by the establishment, excluding income, sales, payroll, and excise taxes. Excluded are also the salaries paid to employees of this establishment for these services.

### **Response coverage ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and nonreporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **NUMBER OF EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period that included the 12th of the months specified on the report form. Included are employees on paid sick leave, paid holidays, and paid vacations; not included are proprietors and partners of unincorporated businesses.

These individuals comprise of all full-time and part-time employees who are on the payrolls of establishments who worked or received pay for any part of the pay period including the 12th of March, May, August, and November.

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The “all employees” number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November

### **Production Workers**

The “production workers” number includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant’s own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

### **All Other Employees**

The “other employees” covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **TOTAL FRINGE BENEFITS**

This item is the employer’s costs for social security tax, unemployment tax, workmen’s compensation insurance, state disability insurance pension plans, stock purchase plans, union-negotiated benefits, life insurance premiums, and insurance premiums on hospital and medical plans for employees.

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of federal old age and survivors’ insurance, unemployment compensation, and workers’ compensation. Payments for voluntary programs include all programs not specifically required by legislation, whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS VALUE OF DEPRECIABLE ASSETS (ACQUISITION COSTS) AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms.

It shows the value of depreciable assets for the beginning of year (BOY) and end of year (EOY). The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year.

Accordingly, the value of assets at the end of the year includes the value of construction in progress.

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In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

## **ESTABLISHMENT**

An establishment is a single physical location where business is conducted or where services or industrial operations are performed. Data in this sector includes those establishments where manufacturing is performed. A separate report was required for each manufacturing establishment (plant) with one employee or more that were in operation at any time during the year.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

## **Company**

A company or ("enterprise") is comprised of all the establishments that operate under the ownership or control of a single organization. A company may be a business, service, or membership organization; consist of one or several establishments; and operate at one or several locations. It includes all subsidiary organizations, all establishments that are majority-owned by the company or any subsidiary, and all the establishments that can be directed or managed by the company or any subsidiary.

A company may have one or many establishments. Examples include product and service sales offices (retail and wholesale), industrial production plants, processing or assembly operations, mines or well sites, and support operations (such as an administrative office, warehouse, customer service center, or regional headquarters). Each establishment should receive, complete, and return a separate census form.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

## **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

## **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits.

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As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. Since the 1997 census programs, information is collected on the output of almost 10,000 individual product items.

In the manufacturing sector for 2002, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are 1,450 product classes (seven-digit codes), 5,674 census products, and an additional 3,746 ten-digit product codes. The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives.

Comparability with previous figures was given considerable weight in the selection of product categories, so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

### **PRODUCTION-WORKER HOURS**

This item covers all hours worked or paid for at the manufacturing plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave when the employee was not at the establishment.

### **QUANTITY OF ELECTRICITY PURCHASED FOR HEAT AND POWER**

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

### **RENTAL PAYMENTS**

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained, if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments.

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However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

### **RETIREMENTS OF DEPRECIABLE ASSETS**

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

### **CAPITAL EXPENDITURES FOR NEW AND USED PLANT AND EQUIPMENT**

Represents the total new and used capital expenditures reported by establishments in operation and any known plants under construction.

These data include expenditures for:

1. Permanent additions and major alterations to manufacturing and mining establishments.
2. New and used machinery and equipment used for replacement and additions to plant capacity, if they are of the type for which depreciation, depletion, or (for mining establishments) Office of Minerals Exploration accounts are ordinarily maintained. In addition, for mining establishments, these data include expenditures made during the year for development and exploration of mineral properties. For manufacturing establishments, these data are broken down into three types.
  - a. Automobiles, trucks, etc. for highway use. These include vehicles acquired under a lease-purchase agreement and excludes vehicles leased or normally designed to transport materials, property, or equipment on mining, construction, petroleum development, and similar projects. These vehicles are of such size or weight as to be normally restricted by state laws or regulations from operating on public highways. It also excludes purchases of vehicles that are purchased by a company for highway use.
  - b. Computers and peripheral data processing equipment. This item include all purchases of computers and related equipment.
  - c. All other expenditures for machinery and equipment excluding automobiles and computer equipment.

Capital expenditures include work done by contract, as well as by the establishment's own workforce.

These data exclude expenditures for land and mineral rights and cost of maintenance and repairs charged as current operating expenses.

### **VALUE ADDED**

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

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For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

### **VALUE OF SHIPMENTS**

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments: Reported contract work — receipts for work or services that a plant performed for others on their materials. Value of resales — sales of products brought and sold without further manufacture, processing, or assembly. Other miscellaneous receipts — such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are: Primary products value of shipments. Secondary product value of shipments. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

### **Duplication in cost of materials and value of shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since, the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries.

Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

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Before 1962, cost of materials and value of shipments were not published for some industries that included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **Specialization and coverage ratio**

These items are not collected on the report forms, but are derived from the data shown in Table 3. An establishment is classified in a particular industry, if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.).

Specialization and coverage ratio have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1 through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.



# Appendix B.

## NAICS Codes, Titles, and Descriptions

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### **311230 BREAKFAST CEREAL MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing breakfast cereal foods.

# Appendix C.

## Methodology

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### SOURCES OF THE DATA

The manufacturing sector includes approximately 350,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing. The amount of information requested from manufacturing establishments was dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the Annual Survey of Manufactures (ASM).

Establishments in the 2002 Economic Census are divided into those sent report forms and those not sent report forms. The coverage of and the method of obtaining census information from each are described below:

1. Establishments sent a report form:

- a. ASM sample establishments. This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments, as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-10000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A. Explanation of Terms, for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 473 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries, as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in certain cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided

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for the respondent to describe significant materials not listed on the form.

A wide variety of special inquiries were included to measure activities peculiar to a given industry, such as operations performed and equipment used.

- b. Large and medium establishments (non-ASM). Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census — manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.
- c. Small single-establishment companies (non-ASM). This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated “short form” was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics, because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the “not specified by kind” (nsk) categories.

## 2. Establishments not sent a report form:

- a. Small single-establishment companies not sent a report form. Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and the Census Bureau’s ability to assign the correct six-digit NAICS industry classification to the establishment. For each six-digit NAICS industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report that requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments, but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit NAICS group classification codes available in the files. For manufacturing, these establishments were sent a

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separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics, other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

- b. All nonemployers, i.e., all firms subject to federal income tax, with no paid employees, during 2002 are excluded as in previous censuses. Data for nonemployers are not included in this report, but are released in the annual *Nonemployer Statistics* series.

The report forms used to collect information for establishments in this sector are available at [help.econ.census.gov/econhelp/resources/](http://help.econ.census.gov/econhelp/resources/).

A more detailed examination of census methodology is presented in the *History of the Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

The classifications for all establishments covered in the 2002 Economic Census — Manufacturing are classified in 1 of 473 industries in accordance with the industry definitions in the *North American Industry Classification System (NAICS), United States, 2002* manual. There were no changes between the 2002 edition and the 1997 edition affecting this sector. When applicable, Appendix F of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 2002, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are 1,450 product classes (seven-digit codes), 5,674 census products, and an additional 3,746 ten-digit product codes. The ten-digit products are considered the primary products of the industry with the same first six digits.

For the 2002 Economic Census — Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 2002, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

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The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments that may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry's output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

#### **ESTABLISHMENT BASIS OF REPORTING**

The 2002 Economic Census — Manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports, if the plant records permit such a separation and if the activities are substantial in size.

In 2002, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures, except for data on number of establishments for a few industries.

The 2002 Economic Census — Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

#### **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The ASM sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1999 survey year based on the 1997 Economic Census — Manufacturing. This sample will be in place through the 2003 ASM.

In 1997, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the establishments in the 1997 manufacturing population were partitioned into two components for developing estimates within the ASM. The details of each are described below:

1. Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies

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that operate at more than one physical location). Approximately 200,000 of the 370,000 establishments in the 1997 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1999 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1997 census. Supplemental samples representing both 1998 and 1999 births (newly active establishments that were not included in the 1997 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 2003.

The 1999-2003 ASM sample design is similar to the one used since 1984. Companies in the 1997 Economic Census — Manufacturing with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1999-2003 sample, there are approximately 500 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. Across these arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1997 Economic Census — Manufacturing.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1997 industry classification and its 1997 product class data. For each product class (1,755) and six-digit industry (473), a desired reliability constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints, while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by the Census Bureau's primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) that permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

2. Nonmail stratum. The initial nonmail component of the survey was comprised of approximately 170,000 small, single-establishment companies that were tabulated as administrative records in the 1997 Economic Census — Manufacturing. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## **RELIABILITY OF DATA**

All data compiled in the economic census are subject to nonsampling errors. Nonsampling errors can be attributed to many sources during the development or execution of the census. The following are two ways that further explain this method: ASM Estimating Procedure. Most of the ASM

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estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1997 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the “difference” between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1998-2002 ASM estimates, the 1997 Economic Census — Manufacturing values serve as the base year. For the 2003 ASM, the base will be updated to be the 2002 Economic Census — Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contained approximately 170,000 individual establishments in 1999, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication. ASM Data Qualifications. The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists, but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

- From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
- From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
- From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

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For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 2002 Economic Census — Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

#### **DISCLOSURE**

In accordance with federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at [www.census.gov/epcd/ec02/disclosure.htm](http://www.census.gov/epcd/ec02/disclosure.htm).

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. Nonetheless, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures, which can be suppressed even though value of shipments data are published.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas and Micropolitan Statistical Areas

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Not applicable for this report.

# Appendix F. Comparability of Product Classes and Product Codes: 2002 to 1997

2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3111111	3111111	3111111	3112111	3112111	3112111	3112214	3112214	3112214
311111111	311111111	311111111	311211111	311211111	311211111	311221411	311221411	311221411
311111121	311111121	311111121	311211121	311211121	311211121	311221421	311221421	311221421
311111231	311111231	311111231	311211331	311211331	311211331	311221431	311221431	311221431
311111341	311111341	311111341	311211441	311211441	311211441	3112214YVW	3112214YVW	3112214YVW
311111YVW	311111YVW	311111YVW	311211551	311211551	311211551			
			311211561	311211561	311211561	3112218	3112218 pt	3112217 pt
3111114	3111114	3111114	311211671	311211671	311211671	311221811	311221811	311221711
311114111	311114111	311114111	311211681	311211681	311211681	311221812	311221812	311221712
311114221	311114221	311114221	311211791	311211791	311211791	311221813	311221813	311221713 pt
311114231	311114231	311114231	3112117A1	3112117A1	3112117A1	3112218YVW	3112218YVW pt	3112217YVW pt
311114341	311114341	311114341						
311114351	311114351	311114351	3112117B1	3112117B1	3112117B1	311221A	311221A	311221A
311114YVW	311114YVW	311114YVW	3112118C1	3112118C1	3112118C1	311221A111	311221A111	311221A111
			3112118D1	3112118D1	3112118D1	311221A21	311221A21	311221A21
311111W	311111W	311111W	3112118E1	3112118E1	3112118E1	311221A231	311221A231	311221A231
311111WYVW	311111WYVW	311111WYVW	3112118F1	3112118F1	3112118F1	311221A241	311221A241	311221A241
311111WYVY	311111WYVY	311111WYVY	311211YVW	311211YVW	311211YVW	311221AYVW	311221AYVW	311221AYVW
3111191	3111191	3111191	3112114	3112114	3112114	311221W	311221W pt	311221W pt
311119111	311119111	311119111	311211411	311211411	311211411	311221WYVW	311221WYVW pt	311221WYVW pt
311119121	311119121	311119121	311211421	311211421	311211421	311221WYVY	311221WYVY pt	311221WYVY pt
3111191231	3111191231	3111191231	3112114YVW	3112114YVW	3112114YVW			
3111191341	3111191341	3111191341				3112221	3112221	3112221
3111191351	3111191351	3111191351	3112117	3112117	3112117	3112221111	3112221111	3112221111
3111191361	3111191361	3111191361	311211711	311211711	311211711	3112221221	3112221221	3112221221
3111191371	3111191371	3111191371	3112117121	3112117121	3112117121	3112221231	3112221231	3112221231
3111191381	3111191381	3111191381	3112117131	3112117131	3112117131	3112221241	3112221241	3112221241
3111191391	3111191391	3111191391	3112117141	3112117141	3112117141	3112221YVW	3112221YVW	3112221YVW
31111913A1	31111913A1	31111913A1	3112117151	3112117151	3112117151			
31111913B1	31111913B1	31111913B1	3112117161	3112117161	3112117161	3112224	3112224	3112224
31111913C1	31111913C1	31111913C1	3112117171	3112117171	3112117171	311222411	311222411	311222411
3111191YVW	3111191YVW	3111191YVW	3112117181	3112117181	3112117181	311222421	311222421	311222421
			3112117YVW	3112117YVW	3112117YVW	3112224261	3112224261	3112224261
						3112224YVW	3112224YVW	3112224YVW
3111194	3111194	3111194	311211A	311211A	311211A			
3111194100	3111194100	3111194100	311211A111	311211A111	311211A111	311222W	311222W	311222W
			311211A121	311211A121	311211A121	311222WYVW	311222WYVW	311222WYVW
3111197	3111197	3111197	311211A131	311211A131	311211A131	311222WYVY	311222WYVY	311222WYVY
3111197111	3111197111	3111197111	311211A141	311211A141	311211A141			
3111197121	3111197121	3111197121	311211A151	311211A151	311211A151	3112231	3112231	3112231
3111197YVW	3111197YVW	3111197YVW	311211A161	311211A161	311211A161	3112231100	3112231100	3112231100
			311211A171	311211A171	311211A171			
311119A	311119A	311119A	311211AYVW	311211AYVW	311211AYVW			
311119A100	311119A100	311119A100				3112234	3112234	3112234
						3112234100	3112234100	3112234100
311119D	311119D	311119D	311211B pt	311211D	311211D			
311119D111	311119D111	311119D111	311211B pt	3114234 pt	3114234 pt	3112237	3112237	3112237
311119D121	311119D121	311119D121	311211B111	311211D111	311211D111	3112237100	3112237100	3112237100
311119DYVW	311119DYVW	311119DYVW	311211B121	311211D121	311211D121			
			311211B131	3114234145	3114234141 pt	311223A	311223A	311223A
311119G	311119G	311119G	311211BYVW pt	311211DYVW	311211DYVW	311223A111	311223A111	311223A111
311119G100	311119G100	311119G100	311211BYVW pt	3114234YVW pt	3114234YVW pt	311223A221	311223A221	311223A221
						311223A231	311223A231	311223A231
311119J	311119J	311119J	311211W pt	311211W	311211W	311223AYVW	311223AYVW	311223AYVW
311119J111	311119J111	311119J111						
311119J121	311119J121	311119J121	311211W pt	311423W pt	311423W pt	311223D	311223D	311223D
311119JYVW	311119JYVW	311119JYVW	311211WYVW pt	311211WYVW	311211WYVW	311223D111	311223D111	311223D111
			311211WYVW pt	311423WYVW pt	311423WYVW pt	311223D121	311223D121	311223D121
311119M	311119M	311119M	311211WYVY pt	311211WYVY	311211WYVY	311223DYVW	311223DYVW	311223DYVW
311119M111	311119M111	311119M111	311211WYVY pt	311423WYVY pt	311423WYVY pt			
311119M121	311119M121	311119M121				311223G	311223G	311223G
311119M131	311119M131	311119M131	3112120 pt	3112120	3112120	311223G111	311223G111	311223G111
311119M141	311119M141	311119M141				311223G121	311223G121	311223G121
311119M151	311119M151	311119M151	3112120 pt	311999C	311999D pt	311223G131	311223G131	311223G131
311119M161	311119M161	311119M161	3112120111	3112120111	3112120111	311223G141	311223G141	311223G141
311119M171	311119M171	311119M171	3112120221	3112120221	3112120221	311223G151	311223G151	311223G151
311119M181	311119M181	311119M181	3112120331	3112120331	3112120331	311223G161	311223G161	311223G161
311119M191	311119M191	311119M191	3112120441	3112120441	3112120441	311223G171	311223G171	311223G171
311119MYVW	311119MYVW	311119MYVW	3112120451	3112120451	3112120451	311223G181	311223G181	311223G181
			3112120461	3112120461	3112120461	311223G191	311223G191	311223G191
311119P	311119P	311119P	3112120471	3112120471	3112120471	311223GYVW	311223GYVW	311223GYVW
311119P111	311119P113	311119P111	3112120481	3112120481	3112120481			
311119P121	311119P121	311119P121	3112120511	311999C100	311999D141 pt	311223J	311223J	311223J
311119P131	311119P131	311119P131	3112120YVW pt	3112120YVW	3112120YVW	311223J111	311223J111	311223J111
311119P141	311119P141	311119P141	3112120YVW pt	311999CYVW pt	311999DYVW pt	311223J121	311223J121	311223J121
311119P151	311119P151	311119P151	3112120YVY pt	3112120YVY	3112120YVY	311223J131	311223J131	311223J131
311119PYVW	311119PYVW	311119PYVW	3112120YVY pt	311999CYVW pt	311999DYVW pt	311223J141	311223J141	311223J141
						311223JYVW	311223JYVW	311223JYVW
311119R	311119T pt	311119T pt	3112130	3112130	3112130			
311119R121	311119T121	311119T121	3112130100	3112130100	3112130100	311223W	311223W	311223W
311119R131	311119T131	311119T131	3112130YVW	3112130YVW	3112130YVW	311223WYVW	311223WYVW	311223WYVW
311119R141	311119T141	311119T141	3112130YVY	3112130YVY	3112130YVY			
311119R151	311119T151	311119T151				3112252 pt	3112252 pt	3112252 pt
311119R161	311119T161	311119T161	3112211	3112211	3112211	3112252111	3112252111	3112252111
311119R171	311119T171	311119T171	3112211111	3112211111	3112211111	3112252221	3112252221	3112252221
311119R181	311119T181	311119T181	3112211121	3112211121	3112211121	3112252331	3112252331	3112252331
311119RYVW	311119TYVW pt	311119TYVW pt	3112211131	3112211131	3112211131	3112252441	3112252441	3112252441
			3112211141	3112211141	3112211141	3112252551	3112252551	3112252551
311119W	311119W pt	311119W pt	3112211251	3112211251	3112211251	3112252561	3112252561	3112252561
311119WYVW	311119WYVW pt	311119WYVW pt	3112211261	3112211261	3112211261	3112252571	3112252571	3112252571
311119WYVY	311119WYVY pt	311119WYVY pt	3112211371	3112211371	3112211371	3112252581	3112252581	3112252581
			3112211YVW	3112211YVW	3112211YVW			

2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3112252591	3112251591	3112251591	3113301	3113301	3113301	3114211	3114211	3114211
31122525A1	31122515A1	31122515A1	3113301100	3113301100	3113301000	3114211111	3114211111	3114211111
31122525A5A1	3112218135	3112217131 pt				3114211121	3114211121	3114211121
31122525B1	31122515B1	31122515B1	3113302	3113302	3113302	3114211131	3114211131	3114211131
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3114235143	3114234143	3114234141 pt	3115141661	3115141661	3115141661	311611G171	311611G171	311611G171
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3114238121	311999F121	311999D141 pt	3115145442	3115144421	3115144421 pt	311611P141	311611P141	311611P141
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3115115461	3115115461	3115114461	311514D141	311514D141	311514D141	311611WYWW pt	311611WYWW pt	311611WYWW pt
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3115115481	3115115481	3115114481	311514D161	311514D161	311514D161	3116121	3116121	3116121
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3115117	3115117	3115117	311514W pt	311511W pt	311511W pt	3116121121	3116121121	3116121121
3115117111	3115117111	3115117111	311514W pt	311514W	311514W	3116121231	3116121231	3116121231
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311511A	311511A	311511A	311514WYWW pt	311514WYWW	311514WYWW	3116121671	3116121671	3116121671
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3116135243 pt.	3116134241 pt.	3116134241	311712291	31171227B1	3117122991	311812WYVW pt.	311812WYVW pt.	311812WYVW pt.
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3116135251	3116134251	3116134251	3117122AB1	31171228D1	3117122AB1	311812WYVW pt.	311812WYVW pt.	311812WYVW pt.
3116135261	3116134261	3116134261	3117122BC1	31171229E1	3117122BC1	3118130	3118130	3118130
3116135271	3116134271	3116134271	3117122CD1	3117122AF1	3117122CD1	3118130111	3118130111	3118130111
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311613532	3116134YVW	3116134YVW	3117122H1	3117122YVW	3117122H1	3118130361	3118130361	3118130361
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311613535	3116134YVW	3116134YVW	3117122K1	3117122YVW	3117122K1	3118130391	3118130391	3118130391
311613536	3116134YVW	3116134YVW	3117122L1	3117122YVW	3117122L1	3118130401	3118130401	3118130401
311613537	3116134YVW	3116134YVW	3117122M1	3117122YVW	3117122M1	3118130411	3118130411	3118130411
311613538	3116134YVW	3116134YVW	3117122N1	3117122YVW	3117122N1	3118130421	3118130421	3118130421
311613539	3116134YVW	3116134YVW	3117122O1	3117122YVW	3117122O1	3118130431	3118130431	3118130431
311613540	3116134YVW	3116134YVW	3117122P1	3117122YVW	3117122P1	3118130441	3118130441	3118130441
311613541	3116134YVW	3116134YVW	3117122Q1	3117122YVW	3117122Q1	3118130451	3118130451	3118130451
311613542	3116134YVW	3116134YVW	3117122R1	3117122YVW	3117122R1	3118130461	3118130461	3118130461
311613543	3116134YVW	3116134YVW	3117122S1	3117122YVW	3117122S1	3118130471	3118130471	3118130471
311613544	3116134YVW	3116134YVW	3117122T1	3117122YVW	3117122T1	3118130481	3118130481	3118130481
311613545	3116134YVW	3116134YVW	3117122U1	3117122YVW	3117122U1	3118130491	3118130491	3118130491
311613546	3116134YVW	3116134YVW	3117122V1	3117122YVW	3117122V1	3118130501	3118130501	3118130501
311613547	3116134YVW	3116134YVW	3117122W1	3117122YVW	3117122W1	3118130511	3118130511	3118130511
311613548	3116134YVW	3116134YVW	3117122X1	3117122YVW	3117122X1	3118130521	3118130521	3118130521
311613549	3116134YVW	3116134YVW	3117122Y1	3117122YVW	3117122Y1	3118130531	3118130531	3118130531
311613550	3116134YVW	3116134YVW	3117122Z1	3117122YVW	3117122Z1	3118130541	3118130541	3118130541
311613551	3116134YVW	3116134YVW	3117123	3117123	3117123	3118130551	3118130551	3118130551
311613552	3116134YVW	3116134YVW	311712311	311712311	311712311	3118130561	3118130561	3118130561
311613553	3116134YVW	3116134YVW	311712312	311712312	311712312	3118130571	3118130571	3118130571
311613554	3116134YVW	3116134YVW	311712313	311712313	311712313	3118130581	3118130581	3118130581
311613555	3116134YVW	3116134YVW	311712314	311712314	311712314	3118130591	3118130591	3118130591
311613556	3116134YVW	3116134YVW	311712315	311712315	311712315	3118130601	3118130601	3118130601
311613557	3116134YVW	3116134YVW	311712316	311712316	311712316	3118130611	3118130611	3118130611
311613558	3116134YVW	3116134YVW	311712317	311712317	311712317	3118130621	3118130621	3118130621
311613559	3116134YVW	3116134YVW	311712318	311712318	311712318	3118130631	3118130631	3118130631
311613560	3116134YVW	3116134YVW	311712319	311712319	311712319	3118130641	3118130641	3118130641
311613561	3116134YVW	3116134YVW	311712320	311712320	311712320	3118130651	3118130651	3118130651
311613562	3116134YVW	3116134YVW	311712321	311712321	311712321	3118130661	3118130661	3118130661
311613563	3116134YVW	3116134YVW	311712322	311712322	311712322	3118130671	3118130671	3118130671
311613564	3116134YVW	3116134YVW	311712323	311712323	311712323	3118130681	3118130681	3118130681
311613565	3116134YVW	3116134YVW	311712324	311712324	311712324	3118130691	3118130691	3118130691
311613566	3116134YVW	3116134YVW	311712325	311712325	311712325	3118130701	3118130701	3118130701
311613567	3116134YVW	3116134YVW	311712326	311712326	311712326	3118130711	3118130711	3118130711
311613568	3116134YVW	3116134YVW	311712327	311712327	311712327	3118130721	3118130721	3118130721
311613569	3116134YVW	3116134YVW	311712328	311712328	311712328	3118130731	3118130731	3118130731
311613570	3116134YVW	3116134YVW	311712329	311712329	311712329	3118130741	3118130741	3118130741
311613571	3116134YVW	3116134YVW	311712330	311712330	311712330	3118130751	3118130751	3118130751
311613572	3116134YVW	3116134YVW	311712331	311712331	311712331	3118130761	3118130761	3118130761
311613573	3116134YVW	3116134YVW	311712332	311712332	311712332	3118130771	3118130771	3118130771
311613574	3116134YVW	3116134YVW	311712333	311712333	311712333	3118130781	3118130781	3118130781
311613575	3116134YVW	3116134YVW	311712334	311712334	311712334	3118130791	3118130791	3118130791
311613576	3116134YVW	3116134YVW	311712335	311712335	311712335	3118130801	3118130801	3118130801
311613577	3116134YVW	3116134YVW	311712336	311712336	311712336	3118130811	3118130811	3118130811
311613578	3116134YVW	3116134YVW	311712337	311712337	311712337	3118130821	3118130821	3118130821
311613579	3116134YVW	3116134YVW	311712338	311712338	311712338	3118130831	3118130831	3118130831
311613580	3116134YVW	3116134YVW	311712339	311712339	311712339	3118130841	3118130841	3118130841
311613581	3116134YVW	3116134YVW	311712340	311712340	311712340	3118130851	3118130851	3118130851
311613582	3116134YVW	3116134YVW	311712341	311712341	311712341	3118130861	3118130861	3118130861
311613583	3116134YVW	3116134YVW	311712342	311712342	311712342	3118130871	3118130871	3118130871
311613584	3116134YVW	3116134YVW	311712343	311712343	311712343	3118130881	3118130881	3118130881
311613585	3116134YVW	3116134YVW	311712344	311712344	311712344	3118130891	3118130891	3118130891
311613586	3116134YVW	3116134YVW	311712345	311712345	311712345	3118130901	3118130901	3118130901
311613587	3116134YVW	3116134YVW	311712346	311712346	311712346	3118130911	3118130911	3118130911
311613588	3116134YVW	3116134YVW	311712347	311712347	311712347	3118130921	3118130921	3118130921
311613589	3116134YVW	3116134YVW	311712348	311712348	311712348	3118130931	3118130931	3118130931
311613590	3116134YVW	3116134YVW	311712349	311712349	311712349	3118130941	3118130941	3118130941
311613591	3116134YVW	3116134YVW	311712350	311712350	311712350	3118130951	3118130951	3118130951
311613592	3116134YVW	3116134YVW	311712351	311712351	311712351	3118130961	3118130961	3118130961
311613593	3116134YVW	3116134YVW	311712352	311712352	311712352	3118130971	3118130971	3118130971
311613594	3116134YVW	3116134YVW	311712353	311712353	311712353	3118130981	3118130981	3118130981
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2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3119197	3119197	3119197	3119414	3119414	3119414	3119910YWW pt	311999AYWV pt	311999AYWV pt
3119197111	3119197111	3119197111	3119414111	3119414111	3119414111	3119910YWW pt	311999AYWV pt	311999AYWV pt
3119197221	3119197221	3119197221	3119414221	3119414221	3119414221	3119910YWW pt	311999AYWV pt	311999AYWV pt
3119197YWW	3119197YWW	3119197YWW	3119414YWW	3119414YWW	3119414YWW	3119910YWW pt	311999AYWV pt	311999AYWV pt
311919W	311919W	311919W	3119417	3119417	3119417	3119911	3119991	3119991
311919WYWW	311919WYWW	311919WYWW	3119417111	3119417111	3119417111	3119911111	3119991111	3119991111
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3119201	3119201	3119201	3119417331	3119417331	3119417331	3119911131	3119991131	3119991131
3119201111	3119201111	3119201111	3119417441	3119417441	3119417441	3119911141	3119991141	3119991141
3119201211	3119201211	3119201211	3119417YWW	3119417YWW	3119417YWW	3119911151	3119991151	3119991151
3119201331	3119201331	3119201331	311941W	311941W	311941W	3119911YWW	3119991YWW	3119991YWW
3119201YWW	3119201YWW	3119201YWW	311941WYWW	311941WYWW	311941WYWW	3119994	3119994	3119994
3119205 pt	3119204	3119204	311941WYWWY	311941WYWWY	311941WYWWY	3119994111	3119994111	3119994111
3119205 pt	3119424 pt	3119424 pt	3119421	3119421	3119421	3119994121	3119994121	3119994121
3119205111	3119204111	3119204111	3119421111	3119421111	3119421111	3119994YWW	3119994YWW	3119994YWW
3119205121	3119204121	3119204121	3119421121	3119421121	3119421121	3119997	3119997	3119997
3119205131	3119424141	3119424141	3119421131	3119421131	3119421131	3119997111	3119997111	3119997111
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3119207	3119207	3119207	3119421YWW	3119421YWW	3119421YWW	3119997141	3119997141	3119997141
3119207111	3119207111	3119207111	3119425 pt	3119307 pt	3119307 pt	3119997YWW	3119997YWW	3119997YWW
3119207221	3119207221	3119207221	3119425 pt	3119425 pt	3119425 pt	311999B pt	311999A pt	311999A pt
3119207231	3119207231	3119207231	3119425111	3119425111	3119425111	311999B pt	311999B pt	311999D pt
3119207YWW	3119207YWW	3119207YWW	3119425121	3119425121	3119425121	311999B11 pt	311999A113 pt	311999A111 pt
311920W pt	311920W	311920W	3119425131	3119425131	3119425131	311999B111 pt	311999A113 pt	311999A111 pt
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311920WYWW pt	311942WYWW pt	311942WYWW pt	3119427	3119427	3119427	311999B131 pt	311999A133 pt	311999A131 pt
311920WYWW pt	311942WYWW pt	311942WYWW pt	3119427111	3119427111	3119427111	311999B131 pt	311999A133 pt	311999A131 pt
311920WYWW pt	311942WYWW pt	311942WYWW pt	3119427121	3119427121	3119427121	311999B141 pt	311999A143 pt	311999A141 pt
311920WYWW pt	311942WYWW pt	311942WYWW pt	3119427131	3119427131	3119427131	311999B141 pt	311999A143 pt	311999A141 pt
3119301	3119301	3119301	3119427241	3119427241	3119427241	311999B1YWW pt	311999AYWV pt	311999AYWV pt
3119301111	3119301111	3119301111	3119427251	3119427251	3119427251	311999BYWW pt	311999BYWW pt	311999DYWW pt
3119301121	3119301121	3119301121	3119427YWW	3119427YWW	3119427YWW	311999G	311999G	311999G
3119301YWW	3119301YWW	3119301YWW	311942W pt	311930W pt	311930W pt	311999G111	311999G111	311999G111
3119304	3119304	3119304	311942W pt	311942W pt	311942W pt	311999G121	311999G121	311999G121
3119304111	3119304111	3119304111	311942YWW pt	312120W pt	312120W pt	311999G131	311999G131	311999G131
3119304121	3119304121	3119304121	311942YWW pt	312120W pt	312120W pt	311999G141	311999G141	311999G141
3119304131	3119304131	3119304131	311942YWW pt	312120W pt	312120W pt	311999G151	311999G151	311999G151
3119304141	3119304141	3119304141	311942YWW pt	312120W pt	312120W pt	311999G161	311999G161	311999G161
3119304151	3119304151	3119304151	311942YWW pt	312120W pt	312120W pt	311999G171	311999G171	311999G171
3119304161	3119304161	3119304161	3119910 pt	3118231 pt	3118230 pt	311999G181	311999G181	311999G181
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3119305	3121117	3121117	3119910 pt	3119910 pt	3119910 pt	311999J	311999J	311999J
3119305111	3121117111	3121117111	3119910 pt	3119910 pt	3119910 pt	311999J111	311999J111	311999J111
3119305121	3121117121	3121117121	3119910 pt	3119910 pt	3119910 pt	311999J121	311999J121	311999J121
3119305YWW	3121117YWW	3121117YWW	3119910 pt	311999A pt	311999A pt	311999JYWW	311999JYWW	311999JYWW
3119308	3119307 pt	3119307 pt	3119910 pt	311999A pt	311999A pt	311999P pt	311422A pt	311422A pt
3119308111	3119307111	3119307111	3119910111	3119910111	3119910111	311999P pt	311999M	311999M
3119308121	3119307121	3119307121	3119910221	3119910221	3119910221	311999P101	311999M101	311999M101
3119308141	3119307141	3119307141	3119910331	3119910331	3119910331	311999P105	311422A136	311422A136
3119308YWW	3119307YWW pt	3119307YWW pt	3119910441	3119910441	3119910441	311999P111	311999M111	311999M111
311930W pt	311930W pt	311930W pt	3119910551	3119910551	3119910551	311999P111	311999M111	311999M111
311930W pt	312111W pt	312111W pt	3119910561	3119910561	3119910561	311999P121	311999M121	311999M121
311930WYWW pt	311930WYWW pt	311930WYWW pt	3119910671	3119910671	3119910671	311999P131	311999M131	311999M131
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311930WYWW pt	312111WYWW pt	312111WYWW pt	3119910811 pt	3118231211 pt	3118230221	311999P151	311999M151	311999M151
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3119411	3119411	3119411	3119910911 pt	3118231321 pt	3118230451	311999P171	311999M171	311999M171
3119411111	3119411111	3119411111	3119910911 pt	3118231321 pt	3118230461	311999PYWW pt	311422AYWW pt	311422AYWW pt
3119411121	3119411121	3119411121	3119910A11 pt	311999A125 pt	311999A121 pt	311999PYWW pt	311999MYWW	311999MYWW
3119411131	3119411131	3119411131	3119910A11 pt	311999A125 pt	311999A121 pt	311999W pt	311999W pt	311999W pt
3119411YWW	3119411YWW	3119411YWW	3119910A21 pt	311999A145 pt	311999A151 pt	311999WYWW pt	311422WYWW pt	311422WYWW pt
			3119910A21 pt	311999A145 pt	311999A161 pt	311999WYWW pt	311999WYWW pt	311999WYWW pt
			3119910YWW pt	3118230YWW pt	3118230YWW pt	311999WYWW pt	311999WYWW pt	311999WYWW pt
			3119910YWW pt	3118230YWW pt	3118230YWW pt	311999WYWWY pt	311999WYWWY pt	311999WYWWY pt
			3119910YWW pt	3118230YWW pt	3118230YWW pt	311999WYWWY pt	311999WYWWY pt	311999WYWWY pt

