

Concentration Ratios in Manufacturing

1997

Issued June 2001

EC97M31S-CR

1997 Economic Census

Manufacturing

Subject Series



U S C E N S U S B U R E A U

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-- Not applicable for this report.

Introduction to the Economic Census

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 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.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of 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 Foodservices
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), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

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 industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, 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 Internal Revenue Service tax forms is used as a basis for coding.

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.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 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.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

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

The range of industries covered in the economic censuses expanded between 1967 and 1992. 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.

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. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including 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 each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census 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.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
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.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. 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. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) 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.

The General Summary 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.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain 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.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

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 classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

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. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that 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 58,000 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 a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

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.

Table 1. Share of Industry Statistics for Companies Ranked by Value Added: 1997

[Percent. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Company rank group based on value added by manufacture ¹	All employees	Payroll	Production workers			Value added by manufacture	Cost of materials	Value of shipments	Total capital expenditures
			Total	Hours	Wages				
50 largest	11.7	17.3	10.6	11.1	16.8	24.0	22.0	23.0	21.3
51st to 100th largest	4.4	5.3	4.2	4.4	5.2	7.7	8.6	8.2	7.3
101st to 150th largest	3.6	4.2	3.7	3.7	4.4	5.2	4.8	5.0	5.3
151st to 200th largest	2.8	3.0	2.9	3.0	3.3	3.8	4.7	4.3	4.1
201st and larger	77.5	70.2	78.6	77.7	70.4	59.3	59.8	59.6	62.0

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

Note: All percentages are independently rounded and do not necessarily add to 100.

Table 2. Share of Value of Shipments Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS code	Industry group and industry	Companies ¹	Value of shipments ² (\$1000)	Percent of value of shipments accounted for by the—				Herfindahl-Herschmann index for 50 largest companies ³
				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
311	Food mfg	21 958	421 737 017	14.3	22.0	34.8	50.8	91.0
3111	Animal food mfg	1 077	27 732 347	23.1	34.7	56.1	73.1	238.8
31111	Animal food mfg	1 077	27 732 347	23.1	34.7	56.1	73.1	238.8
311111	Dog & cat food mfg	129	8 688 239	58.4	80.2	92.4	98.3	1 266.5
311119	Other animal food mfg	962	19 044 108	23.7	36.3	54.5	71.2	240.6
3112	Grain & oilseed milling	534	52 075 763	45.3	59.1	77.1	89.1	711.4
31121	Flour milling & malt mfg	324	11 141 876	38.7	51.8	71.4	89.2	485.7
311211	Flour milling	254	8 001 978	48.4	62.5	79.2	93.4	699.6
311212	Rice milling	56	2 364 582	51.8	75.3	92.5	99.8	894.2
311213	Malt mfg	19	775 316	69.0	94.5	100.0	N	1 458.7
31122	Starch & vegetable fats & oils mfg	179	31 835 054	57.7	73.0	88.3	96.9	1 213.5
311221	Wet corn milling	30	8 455 172	71.7	90.3	99.8	100.0	1 507.4
311222	Soybean processing	43	14 036 271	79.6	94.5	99.5	100.0	2 035.4
311223	Other oilseed processing	32	1 720 738	66.6	81.9	98.9	100.0	2 149.2
311225	Fats & oils refining & blending	91	7 622 873	36.7	63.0	89.5	98.8	602.8
31123	Breakfast cereal mfg	48	9 098 833	82.9	93.5	99.2	100.0	2 445.9
311230	Breakfast cereal mfg	48	9 098 833	82.9	93.5	99.2	100.0	2 445.9
3113	Sugar & confectionery product mfg	1 556	24 114 454	41.9	56.4	75.0	86.3	580.3
31131	Sugar mfg	49	7 399 171	64.4	84.0	95.9	100.0	1 452.2
311311	Sugarcane mills	34	1 457 482	56.6	71.4	94.3	100.0	1 158.7
311312	Cane sugar refining	12	3 209 186	98.7	99.9	100.0	N	D
311313	Beet sugar mfg	8	2 732 503	85.0	100.0	N	N	1 997.6
31132	Chocolate & confectionery mfg from cacao beans ..	152	3 755 268	79.5	92.5	97.6	99.0	2 567.1
311320	Chocolate & confectionery mfg from cacao beans	152	3 755 268	79.5	92.5	97.6	99.0	2 567.1
31133	Confectionery mfg from purchased chocolate	796	7 879 752	65.2	75.3	84.2	92.0	1 600.6
311330	Confectionery mfg from purchased chocolate	796	7 879 752	65.2	75.3	84.2	92.0	1 600.6
31134	Nonchocolate confectionery mfg	578	5 080 263	40.7	60.1	78.0	91.0	623.0
311340	Nonchocolate confectionery mfg	578	5 080 263	40.7	60.1	78.0	91.0	623.0
3114	Fruit & vegetable preserving & specialty food mfg	1 394	46 618 107	26.6	35.6	51.8	69.2	253.3
31141	Frozen food mfg	531	19 691 664	31.3	44.6	62.8	79.8	349.5
311411	Frozen fruit, juice, & vegetable mfg	177	9 549 256	34.3	47.4	70.6	90.5	443.7
311412	Frozen specialty food mfg	363	10 142 408	40.2	56.9	74.9	88.6	530.5
31142	Fruit & vegetable canning, pickling, & drying	887	26 926 443	27.9	39.3	58.3	76.7	342.0
311421	Fruit & vegetable canning	661	15 801 279	24.9	38.0	59.7	77.1	259.3
311422	Specialty canning	122	8 051 059	67.2	83.5	96.1	99.5	2 165.1
311423	Dried & dehydrated food mfg	125	3 074 105	30.3	51.1	80.2	96.9	440.8
3115	Dairy product mfg	1 329	58 670 293	16.5	26.0	45.4	64.2	147.0
31151	Dairy product (except frozen) mfg	948	52 812 384	18.1	28.4	48.6	66.7	169.8
311511	Fluid milk mfg	402	21 995 148	21.3	31.0	50.5	72.2	204.6
311512	Creamery butter mfg	32	1 367 548	52.4	73.2	97.3	100.0	889.8
311513	Cheese mfg	399	20 232 146	34.6	50.9	70.6	85.1	524.6
311514	Dry, condensed, & evaporated dairy product mfg	169	9 217 542	47.1	58.6	78.1	94.0	816.9
31152	Ice cream & frozen dessert mfg	409	5 857 909	32.3	48.7	71.1	88.3	444.7
311520	Ice cream & frozen dessert mfg	409	5 857 909	32.3	48.7	71.1	88.3	444.7
3116	Meat product mfg	2 794	112 979 006	35.0	47.5	61.3	72.1	392.6
31161	Animal slaughtering & processing	2 794	112 979 006	35.0	47.5	61.3	72.1	392.6
311611	Animal (except poultry) slaughtering	1 307	54 284 253	57.0	70.8	81.5	89.7	1 069.1
311612	Meat processed from carcasses	1 163	24 260 511	20.4	30.3	45.0	62.0	171.6
311613	Rendering & meat byproduct processing	137	2 556 547	37.4	54.1	75.5	92.6	569.4
311615	Poultry processing	257	31 877 695	40.6	54.0	72.6	90.0	667.7
3117	Seafood product preparation & packaging	731	6 919 210	12.4	20.9	39.1	61.8	104.9
31171	Seafood product preparation & packaging	731	6 919 210	12.4	20.9	39.1	61.8	104.9
311711	Seafood canning	152	862 118	25.9	42.5	71.4	93.4	342.6
311712	Fresh & frozen seafood processing	586	6 057 092	13.6	22.9	42.2	65.8	120.6

See footnotes at end of table.

Table 2. Share of Value of Shipments Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997—Con.

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NAICS code	Industry group and industry	Companies ¹	Value of shipments ² (\$1000)	Percent of value of shipments accounted for by the—				Herfindahl-Herschmann index for 50 largest companies ³
				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
311	Food mfg—Con.							
3118	Bakeries & tortilla mfg	10 437	43 722 668	28.6	40.1	55.5	68.1	281.2
31181	Bread & bakery product mfg	9 489	25 953 070	33.2	43.6	58.3	69.0	423.4
311811	Retail bakeries	6 906	1 946 153	2.5	3.9	6.7	11.1	3.7
311812	Commercial bakeries	2 401	21 494 992	39.2	51.3	66.0	77.6	593.0
311813	Frozen cakes, pies, & other pastries mfg	223	2 511 925	38.2	49.8	67.3	86.3	552.1
31182	Cookie, cracker, & pasta mfg	767	16 656 299	41.7	53.3	68.4	85.2	602.0
311821	Cookie & cracker mfg	322	9 889 921	59.9	71.9	87.8	95.3	1 383.3
311822	Flour mixes & dough mfg from purchased flour ..	206	4 999 850	43.7	58.2	77.1	93.6	1 051.4
311823	Dry pasta mfg	249	1 766 528	57.1	74.3	88.0	92.8	1 321.5
31183	Tortilla mfg	217	1 113 299	57.2	64.2	74.7	88.7	1 852.0
311830	Tortilla mfg	217	1 113 299	57.2	64.2	74.7	88.7	1 852.0
3119	Other food mfg	2 493	48 905 169	34.7	42.7	54.4	65.7	366.2
31191	Snack food mfg	466	13 590 607	57.2	63.5	75.8	88.2	1 996.4
311911	Roasted nuts & peanut butter mfg	128	3 933 112	37.5	57.6	79.6	94.9	551.1
311919	Other snack food mfg	340	9 657 495	70.9	76.5	87.5	94.3	D
31192	Coffee & tea mfg	215	7 974 921	52.5	65.6	84.4	95.0	1 028.3
311920	Coffee & tea mfg	215	7 974 921	52.5	65.6	84.4	95.0	1 028.3
31193	Flavoring syrup & concentrate mfg	149	6 590 816	80.7	87.9	93.3	97.9	D
311930	Flavoring syrup & concentrate mfg	149	6 590 816	80.7	87.9	93.3	97.9	D
31194	Seasoning & dressing mfg	525	10 027 200	34.4	46.9	62.9	80.4	395.3
311941	Mayonnaise, dressing, & other prepared sauce mfg	293	5 810 040	40.3	56.5	74.7	91.8	651.0
311942	Spice & extract mfg	241	4 217 160	43.7	53.5	70.1	86.1	798.7
31199	All other food mfg	1 197	10 721 625	19.8	28.1	42.9	60.2	157.9
311991	Perishable prepared food mfg	415	2 730 103	24.3	35.6	54.2	73.5	225.8
311999	All other miscellaneous food mfg	785	7 991 522	23.5	34.6	51.7	70.1	220.3
312	Beverage & tobacco product mfg	2 237	96 971 368	45.1	59.1	72.7	83.7	777.2
3121	Beverage mfg	2 169	60 896 055	40.9	52.1	66.0	79.4	531.5
31211	Soft drink & ice mfg	1 008	32 587 038	45.5	53.6	68.8	82.4	743.3
312111	Soft drink mfg	388	31 376 263	47.2	55.6	70.9	84.8	800.4
312112	Bottled water mfg	109	785 869	51.7	64.4	80.3	94.9	986.6
312113	Ice mfg	514	424 906	24.4	31.3	43.1	60.3	302.3
31212	Breweries	494	18 203 492	89.7	93.4	95.2	96.7	D
312120	Breweries	494	18 203 492	89.7	93.4	95.2	96.7	D
31213	Wineries	637	6 194 564	43.2	59.2	76.6	85.3	837.5
312130	Wineries	637	6 194 564	43.2	59.2	76.6	85.3	837.5
31214	Distilleries	44	3 910 961	59.8	77.0	96.9	100.0	1 075.7
312140	Distilleries	44	3 910 961	59.8	77.0	96.9	100.0	1 075.7
3122	Tobacco mfg	70	36 075 313	83.4	93.3	99.0	99.9	D
31221	Tobacco stemming & redrying	13	3 263 376	83.7	97.8	100.0	N	2 320.2
312210	Tobacco stemming & redrying	13	3 263 376	83.7	97.8	100.0	N	2 320.2
31222	Tobacco product mfg	63	32 811 937	89.0	95.7	99.6	99.9	D
312221	Cigarette mfg	9	29 252 787	98.9	D	100.0	N	D
312229	Other tobacco product mfg	56	3 559 150	62.4	83.5	97.8	99.9	1 846.0
313	Textile mills	3 863	58 707 401	13.8	21.7	35.9	52.9	94.4
3131	Fiber, yarn, & thread mills	358	12 896 617	29.8	42.6	63.4	82.2	344.3
31311	Fiber, yarn, & thread mills	358	12 896 617	29.8	42.6	63.4	82.2	344.3
313111	Yarn spinning mills	229	8 143 185	25.5	40.5	63.9	87.1	294.1
313112	Yarn texturing, throwing, & twisting mills	101	4 231 500	60.3	71.9	87.7	97.8	1 495.3
313113	Thread mills	44	521 932	69.5	83.6	95.8	100.0	1 472.7
3132	Fabric mills	1 796	29 979 595	15.9	23.5	40.7	61.1	122.3
31321	Broadwoven fabric mills	734	18 269 155	23.8	35.4	58.1	80.6	252.1
313210	Broadwoven fabric mills	734	18 269 155	23.8	35.4	58.1	80.6	252.1
31322	Narrow fabric mills & schiffli machine embroidery ..	478	1 645 969	17.2	27.6	49.6	74.9	167.5
313221	Narrow fabric mills	243	1 409 967	20.1	32.2	57.9	84.5	223.5
313222	Schiffli machine embroidery	235	236 002	26.1	43.2	65.5	83.5	310.1
31323	Nonwoven fabric mills	212	4 367 785	33.8	48.2	68.0	86.2	435.8
313230	Nonwoven fabric mills	212	4 367 785	33.8	48.2	68.0	86.2	435.8
31324	Knit fabric mills	407	5 696 706	28.0	38.2	53.9	72.5	272.6
313241	Weft knit fabric mills	236	3 070 633	31.0	39.7	57.8	81.4	425.3
313249	Other knit fabric & lace mills	181	2 626 073	40.4	54.4	72.2	88.6	592.9
3133	Textile & fabric finishing & fabric coating mills	1 827	15 831 189	17.4	26.3	40.6	54.8	131.3
31331	Textile & fabric finishing mills	1 589	13 697 712	20.2	30.4	46.3	61.2	172.2
313311	Broadwoven fabric finishing mills	1 255	9 294 623	28.0	38.4	51.9	66.2	274.8
313312	Textile & fabric finishing mills	346	4 403 089	29.7	41.6	61.7	79.7	323.9
31332	Fabric coating mills	246	2 133 477	14.8	26.2	49.9	75.3	160.2
313320	Fabric coating mills	246	2 133 477	14.8	26.2	49.9	75.3	160.2

See footnotes at end of table.

Table 2. Share of Value of Shipments Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997—Con.

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NAICS code	Industry group and industry	Companies ¹	Value of shipments ² (\$1000)	Percent of value of shipments accounted for by the—				Herfindahl-Herschmann index for 50 largest companies ³
				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
325	Chemical mfg—Con.							
3251	Basic chemical mfg—Con.							
32519	Other basic organic chemical mfg	581	61 302 564	22.7	36.7	55.1	77.5	227.7
325191	Gum & wood chemical mfg	45	814 676	74.6	92.2	98.6	100.0	1 707.4
325192	Cyclic crude & intermediate mfg	36	6 861 138	61.7	79.4	98.2	100.0	1 701.2
325193	Ethyl alcohol mfg	31	1 222 166	63.1	82.9	98.5	100.0	1 225.3
325199	All other basic organic chemical mfg	487	52 404 584	25.3	38.3	56.8	79.6	256.4
3252	Resin, syn rubber, & artificial & syn fibers & filaments mfg	469	64 417 772	26.7	37.7	60.1	84.6	312.9
32521	Resin & synthetic rubber mfg	406	51 379 595	24.8	37.4	60.9	86.3	277.3
325211	Plastics material & resin mfg	299	45 225 887	25.6	39.0	64.2	89.0	304.1
325212	Synthetic rubber mfg	122	6 153 708	39.0	61.8	93.1	98.8	618.2
32522	Artificial & synthetic fibers & filaments mfg	70	13 038 177	69.0	85.1	96.9	99.9	1 588.6
325221	Cellulosic organic fiber mfg	4	1 096 983	100.0	N	N	N	D
325222	Noncellulosic organic fiber mfg	67	11 941 194	69.1	86.6	97.6	99.9	1 708.4
3253	Pesticide, fertilizer, & other agricultural chemical mfg	692	24 176 999	27.4	45.8	70.6	85.8	342.3
32531	Fertilizer mfg	477	12 759 745	39.8	55.1	74.8	87.5	566.9
325311	Nitrogenous fertilizer mfg	116	3 961 254	54.2	75.9	94.2	98.7	902.6
325312	Phosphatic fertilizer mfg	43	5 474 672	70.5	88.1	99.1	100.0	1 675.3
325314	Fertilizer (mixing only) mfg	334	3 323 819	26.3	40.8	57.5	74.2	285.7
32532	Pesticide & other agricultural chemical mfg	222	11 417 254	48.8	73.0	89.1	96.2	811.2
325320	Pesticide & other agricultural chemical mfg	222	11 417 254	48.8	73.0	89.1	96.2	811.2
3254	Pharmaceutical & medicine mfg	1 428	92 932 786	32.3	47.9	66.6	82.5	446.3
32541	Pharmaceutical & medicine mfg	1 428	92 932 786	32.3	47.9	66.6	82.5	446.3
325411	Medicinal & botanical mfg	312	11 888 455	61.5	72.9	84.6	93.3	2 058.7
325412	Pharmaceutical preparation mfg	707	66 734 737	35.6	50.1	71.4	88.5	462.4
325413	In-vitro diagnostic substance mfg	203	8 682 377	62.5	75.9	86.6	94.6	1 685.1
325414	Biological product (except diagnostic) mfg	267	5 627 217	42.9	64.0	82.9	93.8	680.2
3255	Paint, coating, & adhesive mfg	1 724	26 369 629	23.6	35.5	52.2	66.3	220.1
32551	Paint & coating mfg	1 205	19 057 194	32.0	47.0	63.9	75.1	371.2
325510	Paint & coating mfg	1 205	19 057 194	32.0	47.0	63.9	75.1	371.2
32552	Adhesive mfg	540	7 312 435	22.3	32.6	50.5	72.1	217.2
325520	Adhesive mfg	540	7 312 435	22.3	32.6	50.5	72.1	217.2
3256	Soap, cleaning compound, & toilet preparation mfg	2 251	55 141 340	33.7	45.7	63.2	74.9	495.4
32561	Soap & cleaning compound mfg	1 583	30 928 488	40.7	55.1	68.1	78.0	625.9
325611	Soap & other detergent mfg	738	17 772 851	65.6	77.9	85.3	90.6	1 618.6
325612	Polish & other sanitation good mfg	675	8 369 554	55.1	60.7	71.2	83.2	1 090.5
325613	Surface active agent mfg	183	4 786 083	34.3	47.6	69.9	89.1	416.1
32562	Toilet preparation mfg	681	24 212 852	38.6	58.4	74.8	86.6	564.2
325620	Toilet preparation mfg	681	24 212 852	38.6	58.4	74.8	86.6	564.2
3259	Other chemical product mfg	2 287	39 221 070	25.4	32.1	44.5	59.2	378.4
32591	Printing ink mfg	255	4 076 500	55.4	63.1	75.5	88.2	1 227.4
325910	Printing ink mfg	255	4 076 500	55.4	63.1	75.5	88.2	1 227.4
32592	Explosives mfg	66	1 447 274	45.3	68.6	91.1	99.8	726.7
325920	Explosives mfg	66	1 447 274	45.3	68.6	91.1	99.8	726.7
32599	All other chemical product & preparation mfg	1 973	33 697 296	28.0	35.1	47.5	63.0	493.9
325991	Custom compounding of purchased resin	728	7 960 246	14.9	25.2	45.0	67.1	137.2
325992	Photographic film, paper, plate, & chemical mfg ..	276	12 918 747	69.7	83.0	92.9	98.1	D
325998	All other miscellaneous chemical product & preparation mfg	985	12 818 303	19.6	28.6	46.1	63.3	158.8
326	Plastics & rubber products mfg	13 798	159 161 346	8.2	11.4	18.3	28.7	30.2
3261	Plastics product mfg	11 613	124 445 374	3.9	6.9	14.1	24.4	14.1
32611	Unsupported plastics film, sheet, & bag mfg	1 250	24 624 844	13.1	23.0	39.3	56.8	103.5
326111	Unsupported plastics bag mfg	440	7 300 237	24.7	35.9	52.9	70.1	236.4
326112	Unsupported plastics packaging film & sheet mfg	131	3 638 911	52.1	62.7	76.4	91.9	818.6
326113	Unsupported plastics film & sheet (except packaging) mfg	713	13 685 696	17.6	27.7	46.1	66.1	149.2
32612	Plastics pipe, pipe fitting, & unsupported profile shape mfg	1 048	9 228 294	15.8	24.9	41.9	59.5	121.0
326121	Unsupported plastics profile shape mfg	733	4 436 148	25.5	34.8	50.3	65.3	234.5
326122	Plastics pipe & pipe fitting mfg	317	4 792 146	23.9	37.4	59.8	78.8	260.2
32613	Laminated plastics plate, sheet, & shape mfg	438	3 195 293	36.0	53.2	74.3	87.1	523.9
326130	Laminated plastics plate, sheet, & shape mfg	438	3 195 293	36.0	53.2	74.3	87.1	523.9
32614	Polystyrene foam product mfg	379	4 899 240	41.4	50.0	65.5	82.7	665.4
326140	Polystyrene foam product mfg	379	4 899 240	41.4	50.0	65.5	82.7	665.4
32615	Urethane & other foam product (except polystyrene) mfg	447	6 664 656	32.3	43.5	62.9	78.8	403.1
326150	Urethane & other foam product (except polystyrene) mfg	447	6 664 656	32.3	43.5	62.9	78.8	403.1
32616	Plastics bottle mfg	245	6 335 218	32.7	51.8	72.9	88.2	425.0
326160	Plastics bottle mfg	245	6 335 218	32.7	51.8	72.9	88.2	425.0
32619	Other plastics product mfg	8 077	69 497 829	5.1	8.2	14.4	24.0	15.6
326191	Plastics plumbing fixture mfg	539	2 181 207	34.9	44.6	58.8	74.8	396.2
326192	Resilient floor covering mfg	28	1 684 216	86.9	98.9	99.9	100.0	2 983.5
326199	All other plastics product mfg	7 522	65 632 406	5.0	8.1	13.9	23.3	14.9

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326	Plastics & rubber products mfg—Con.							
3262	Rubber product mfg	2 271	34 715 972	36.8	46.4	57.8	68.4	444.8
32621	Tire mfg	736	15 699 140	68.4	85.8	93.0	96.4	1 517.8
326211	Tire mfg (except retreading)	110	14 728 525	72.4	90.8	98.0	99.8	1 690.3
326212	Tire retreading	628	970 615	25.5	36.5	50.1	64.5	260.6
32622	Rubber & plastics hoses & belting mfg	149	4 025 238	49.3	61.9	80.2	94.9	786.1
326220	Rubber & plastics hoses & belting mfg	149	4 025 238	49.3	61.9	80.2	94.9	786.1
32629	Other rubber product mfg	1 408	14 991 594	12.1	20.4	34.4	51.6	82.5
326291	Rubber product mfg for mechanical use	608	6 668 381	19.2	28.8	45.7	67.6	166.3
326299	All other rubber product mfg	827	8 323 213	17.5	27.5	43.2	60.8	139.7
327	Nonmetallic mineral product mfg	11 921	86 464 708	9.1	16.4	27.7	41.5	52.1
3271	Clay product & refractory mfg	1 715	9 107 840	13.5	22.5	40.1	60.4	108.5
32711	Pottery, ceramics, & plumbing fixture mfg	1 204	3 992 979	21.8	33.7	51.6	71.8	210.7
327111	Vitreous china plumbing fixture & bathroom accessories mfg	43	1 109 995	63.8	87.2	99.1	100.0	1 456.7
327112	Vitreous china, fine earthenware, & other pottery product mfg	1 034	1 715 783	24.7	35.9	54.0	70.9	244.8
327113	Porcelain electrical supply mfg	131	1 167 201	32.4	48.5	73.3	93.2	487.5
32712	Clay building material & refractories mfg	519	5 114 861	20.8	33.4	56.0	75.6	215.5
327121	Brick & structural clay tile mfg	127	1 411 833	40.4	58.3	73.9	92.2	549.9
327122	Ceramic wall & floor tile mfg	157	851 405	58.5	75.6	91.3	97.4	1 309.4
327123	Other structural clay product mfg	48	117 376	44.0	68.7	100.0	827.2	827.2
327124	Clay refractory mfg	115	1 115 939	39.9	54.7	75.2	93.2	575.1
327125	Nonclay refractory mfg	91	1 618 308	41.2	60.5	85.9	98.1	603.3
3272	Glass & glass product mfg	1 996	22 732 942	31.0	46.3	68.3	84.2	359.0
32721	Glass & glass product mfg	1 996	22 732 942	31.0	46.3	68.3	84.2	359.0
327211	Flat glass mfg	13	2 795 507	77.4	99.5	100.0	N	1 828.9
327212	Other pressed & blown glass & glassware mfg	465	6 094 602	48.2	68.8	90.9	96.6	760.5
327213	Glass container mfg	11	4 198 122	91.1	98.0	100.0	N	2 959.9
327215	Glass product mfg made of purchased glass	1 522	9 644 711	28.8	45.2	64.4	77.1	366.3
3273	Cement & concrete product mfg	5 930	34 591 507	8.3	14.4	25.0	35.8	40.7
32731	Cement mfg	176	6 531 747	33.5	52.0	78.7	96.9	466.6
327310	Cement mfg	176	6 531 747	33.5	52.0	78.7	96.9	466.6
32732	Ready-mix concrete mfg	2 888	17 219 886	7.0	11.1	20.0	33.0	29.4
327320	Ready-mix concrete mfg	2 888	17 219 886	7.0	11.1	20.0	33.0	29.4
32733	Concrete pipe, brick, & block mfg	955	4 852 512	16.4	22.0	31.9	45.3	96.7
327331	Concrete block & brick mfg	708	2 844 076	12.5	17.7	28.1	43.4	69.8
327332	Concrete pipe mfg	264	2 008 436	26.4	37.3	55.4	73.9	290.6
32739	Other concrete product mfg	2 079	5 987 362	10.0	15.8	26.7	41.8	52.6
327390	Other concrete product mfg	2 079	5 987 362	10.0	15.8	26.7	41.8	52.6
3274	Lime & gypsum product mfg	230	5 533 623	54.0	65.4	81.5	95.3	1 000.8
32741	Lime mfg	46	1 168 450	44.9	65.1	88.5	100.0	719.4
327410	Lime mfg	46	1 168 450	44.9	65.1	88.5	100.0	719.4
32742	Gypsum product mfg	185	4 365 173	68.4	79.1	93.4	97.9	1 557.2
327420	Gypsum product mfg	185	4 365 173	68.4	79.1	93.4	97.9	1 557.2
3279	Other nonmetallic mineral product mfg	2 159	14 498 796	33.4	42.2	50.7	61.3	333.3
32791	Abrasive product mfg	319	4 660 043	60.4	65.3	74.0	84.2	1 691.7
327910	Abrasive product mfg	319	4 660 043	60.4	65.3	74.0	84.2	1 691.7
32799	All other nonmetallic mineral product mfg	1 849	9 838 753	28.6	37.8	48.0	61.4	277.2
327991	Cut stone & stone product mfg	1 004	1 244 735	19.2	23.6	33.0	46.3	153.2
327992	Ground or treated mineral & earth mfg	261	2 362 480	27.0	38.0	59.2	80.5	369.5
327993	Mineral wool mfg	201	4 422 507	62.0	75.5	86.1	95.3	1 203.6
327999	All other miscellaneous nonmetallic mineral product mfg	404	1 809 031	17.5	28.0	47.0	67.1	155.2
331	Primary metal mfg	4 076	168 117 728	13.8	22.3	37.3	54.1	97.4
3311	Iron & steel mills & ferroalloy mfg	209	58 383 159	31.9	51.4	73.0	91.8	424.7
33111	Iron & steel mills & ferroalloy mfg	209	58 383 159	31.9	51.4	73.0	91.8	424.7
331111	Iron & steel mills	191	56 994 468	32.7	52.7	74.8	93.6	445.3
331112	Electrometallurgical ferroalloy product mfg	19	1 388 691	60.6	82.4	100.0	N	1 122.8
3312	Steel product mfg from purchased steel	503	18 516 877	16.7	25.6	40.5	62.0	126.6
33121	Iron & steel pipes & tubes mfg from purchased steel	166	7 450 132	19.5	29.7	51.6	81.7	199.6
331210	Iron & steel pipes & tubes mfg from purchased steel	166	7 450 132	19.5	29.7	51.6	81.7	199.6
33122	Rolling & drawing of purchased steel	346	11 066 745	24.8	35.1	54.9	76.0	240.4
331221	Cold-rolled steel shape mfg	153	6 239 017	44.0	60.0	80.6	96.3	630.5
331222	Steel wire drawing	199	4 827 728	21.3	35.6	56.0	79.7	223.2
3313	Alumina & aluminum production & processing	248	32 550 279	48.0	64.0	79.1	89.1	816.3
33131	Alumina & aluminum production & processing	248	32 550 279	48.0	64.0	79.1	89.1	816.3
331311	Alumina refining	5	1 219 057	D	100.0	N	N	D
331312	Primary aluminum production	13	6 224 610	59.2	81.7	100.0	N	1 230.6
331314	Secondary smelting & alloying of aluminum	87	3 595 436	40.7	53.7	76.0	94.3	629.6
331315	Aluminum sheet, plate, & foil mfg	41	13 708 307	65.0	85.4	97.9	100.0	1 447.0
331316	Aluminum extruded product mfg	105	6 177 701	44.5	58.9	75.2	91.1	680.0
331319	Other aluminum rolling & drawing	30	1 625 168	62.7	79.4	98.4	100.0	1 162.8

See footnotes at end of table.

Table 2. Share of Value of Shipments Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS code	Industry group and industry	Companies ¹	Value of shipments ² (\$1000)	Percent of value of shipments accounted for by the—				Herfindahl-Herschmann index for 50 largest companies ³
				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
332	Fabricated metal product mfg—Con.							
3329	Other fabricated metal product mfg	6 040	49 786 338	9.8	16.3	29.2	43.8	57.2
33291	Metal valve mfg	1 077	21 983 284	18.1	28.5	43.4	61.4	144.0
332911	Industrial valve mfg	429	8 965 193	27.5	37.5	56.5	75.5	323.2
332912	Fluid power valve & hose fitting mfg	360	6 594 554	40.3	53.4	70.3	85.8	529.6
332913	Plumbing fixture fitting & trim mfg	97	3 616 737	44.6	57.6	77.9	95.7	783.3
332919	Other metal valve & pipe fitting mfg	220	2 806 800	22.9	35.5	60.2	81.9	249.6
33299	All other fabricated metal product mfg	5 011	27 803 054	11.8	18.5	31.7	45.9	73.6
332991	Ball & roller bearing mfg	116	6 093 840	49.4	66.3	89.5	98.6	887.3
332992	Small arms ammunition mfg	107	976 944	88.9	93.8	97.5	99.4	D
332993	Ammunition (except small arms) mfg	45	1 471 101	66.5	84.5	98.7	100.0	1 782.9
332994	Small arms mfg	189	1 248 048	41.5	64.9	87.5	94.6	663.2
332995	Other ordnance & accessories mfg	65	1 362 401	78.3	88.6	95.9	99.8	1 935.8
332996	Fabricated pipe & pipe fitting mfg	806	4 118 699	18.6	26.1	38.8	55.5	130.9
332997	Industrial pattern mfg	668	623 605	11.0	17.5	30.2	48.0	66.8
332998	Enameled iron & metal sanitary ware mfg	82	1 553 730	54.1	74.1	93.8	99.4	1 301.0
332999	All other miscellaneous fabricated metal product mfg	2 955	10 354 686	11.8	17.1	26.0	40.1	60.2
333	Machinery mfg	27 983	270 687 165	11.5	15.6	23.9	34.3	55.4
3331	Agriculture, construction, & mining machinery mfg	2 832	54 181 573	37.8	45.7	57.2	69.3	572.5
33311	Agricultural implement mfg	1 386	23 371 367	50.6	60.1	71.1	81.8	1 246.1
333111	Farm machinery & equipment mfg	1 264	15 995 219	53.2	60.4	70.5	80.1	1 707.2
333112	Lawn & garden tractor & home lawn & garden equipment mfg	127	7 376 148	64.4	80.3	94.3	98.8	1 171.7
33312	Construction machinery mfg	723	22 117 440	49.6	59.5	72.6	84.6	1 020.3
333120	Construction machinery mfg	723	22 117 440	49.6	59.5	72.6	84.6	1 020.3
33313	Mining & oil & gas field machinery mfg	748	8 692 766	23.6	36.7	57.7	75.2	245.8
333131	Mining machinery & equipment mfg	261	2 705 885	38.4	50.9	69.9	86.1	515.5
333132	Oil & gas field machinery & equipment mfg	494	5 986 881	30.5	46.2	68.5	83.4	391.7
3332	Industrial machinery mfg	4 439	36 658 714	13.5	18.7	29.1	41.9	89.4
33321	Sawmill & woodworking machinery mfg	312	1 296 200	30.0	43.2	62.9	81.2	344.8
333210	Sawmill & woodworking machinery mfg	312	1 296 200	30.0	43.2	62.9	81.2	344.8
33322	Plastics & rubber industry machinery mfg	427	3 570 320	30.2	41.5	57.2	76.5	373.9
333220	Plastics & rubber industry machinery mfg	427	3 570 320	30.2	41.5	57.2	76.5	373.9
33329	Other industrial machinery mfg	3 713	31 792 194	15.4	21.4	32.5	45.8	114.9
333291	Paper industry machinery mfg	330	3 386 920	37.2	53.1	69.5	83.4	490.3
333292	Textile machinery mfg	454	1 766 419	24.4	36.4	53.8	72.0	269.3
333293	Printing machinery & equipment mfg	504	3 786 716	29.6	41.5	59.2	75.8	326.8
333294	Food product machinery mfg	573	2 857 928	19.1	27.1	41.0	60.0	139.8
333295	Semiconductor machinery mfg	244	11 162 764	43.5	59.4	77.2	91.4	818.4
333298	All other industrial machinery mfg	1 634	8 831 447	10.6	16.6	27.8	43.3	57.5
3333	Commercial & service industry machinery mfg	2 492	26 009 857	30.2	35.7	45.8	58.8	401.5
33331	Commercial & service industry machinery mfg	2 492	26 009 857	30.2	35.7	45.8	58.8	401.5
333311	Automatic vending machine mfg	117	1 327 998	67.9	84.1	92.3	97.5	1 484.3
333312	Commercial laundry, drycleaning, & pressing machine mfg	63	604 939	44.7	65.4	92.0	99.7	779.0
333313	Office machinery mfg	158	3 162 823	53.0	68.2	81.2	93.5	1 208.3
333314	Optical instrument & lens mfg	482	3 139 837	25.4	38.4	56.1	74.7	263.2
333315	Photographic & photocopying equipment mfg	412	8 290 986	80.9	85.0	90.6	94.5	D
333319	Other commercial & service industry machinery mfg	1 274	9 483 274	14.0	21.9	36.7	54.6	95.3
3334	Ventilation, heating, AC, & commercial refrigeration equip mfg	1 563	30 791 331	29.7	39.8	54.9	67.3	283.3
33341	Ventilation, heating, AC, & commercial refrigeration equip mfg	1 563	30 791 331	29.7	39.8	54.9	67.3	283.3
333411	Air purification equipment mfg	333	2 218 051	21.3	33.3	53.8	75.1	207.5
333412	Industrial & commercial fan & blower mfg	173	1 899 077	22.5	38.4	64.4	87.2	276.4
333414	Heating equipment (except warm air furnaces) mfg	441	3 707 615	20.2	31.0	49.8	72.6	182.9
333415	AC & warm air heating & commercial/industrial refrig equip mfg	646	22 966 588	39.2	52.6	71.6	83.5	491.0
3335	Metalworking machinery mfg	10 000	30 417 553	7.3	10.7	16.8	26.1	23.2
33351	Metalworking machinery mfg	10 000	30 417 553	7.3	10.7	16.8	26.1	23.2
333511	Industrial mold mfg	2 475	5 087 422	6.6	9.8	16.8	26.7	22.4
333512	Machine tool (metal cutting types) mfg	368	5 331 245	24.7	40.7	59.2	75.5	267.2
333513	Machine tool (metal forming types) mfg	219	2 247 954	21.2	33.8	54.6	74.7	208.7
333514	Special die & tool, die set, jig, & fixture mfg	4 667	8 237 755	5.5	8.4	14.6	24.0	16.5
333515	Cutting tool & machine tool accessory mfg	1 820	5 379 842	21.6	27.9	40.0	54.0	206.4
333516	Rolling mill machinery & equipment mfg	98	700 084	53.0	72.7	87.0	97.0	908.1
333518	Other metalworking machinery mfg	446	3 433 251	17.2	27.4	43.9	64.7	140.7
3336	Engine, turbine, & power transmission equipment mfg	789	30 508 866	42.5	57.8	73.1	85.8	596.2
33361	Engine, turbine, & power transmission equipment mfg	789	30 508 866	42.5	57.8	73.1	85.8	596.2
333611	Turbine & turbine generator set unit mfg	68	5 854 113	78.2	90.1	97.4	99.9	2 390.1
333612	Speed changer, industrial high-speed drive, & gear mfg	237	2 391 269	29.0	45.7	68.6	83.6	345.2
333613	Mechanical power transmission equipment mfg	259	3 252 399	26.1	41.6	64.6	86.6	303.4
333618	Other engine equipment mfg	245	19 011 085	55.8	76.0	90.1	97.0	1 019.1

See footnotes at end of table.

Table 2. Share of Value of Shipments Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS code	Industry group and industry	Companies ¹	Value of shipments ² (\$1000)	Percent of value of shipments accounted for by the—				Herfindahl-Herschmann index for 50 largest companies ³
				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
336	Transportation equipment mfg—Con.							
3369	Other transportation equipment mfg	758	8 883 036	37.9	55.7	77.3	86.0	563.3
33699	Other transportation equipment mfg	758	8 883 036	37.9	55.7	77.3	86.0	563.3
336991	Motorcycle, bicycle, & parts mfg	373	3 382 689	67.5	76.7	85.9	92.3	2 036.5
336992	Military armored vehicle, tank, & tank component mfg	37	1 063 668	85.0	92.4	99.0	100.0	D
336999	All other transportation equipment mfg	349	4 436 679	50.7	75.3	83.0	90.6	885.2
337	Furniture & related product mfg	19 838	64 299 098	11.2	17.6	27.5	37.2	55.5
3371	Household & institutional furniture & kitchen cabinet mfg	14 732	36 418 307	13.8	19.5	28.8	40.0	73.3
33711	Wood kitchen cabinet & counter top mfg	7 872	9 029 834	18.2	25.7	36.5	45.0	133.1
337110	Wood kitchen cabinet & counter top mfg	7 872	9 029 834	18.2	25.7	36.5	45.0	133.1
33712	Household & institutional furniture mfg	6 867	27 388 473	17.7	24.6	34.7	47.2	117.3
337121	Upholstered household furniture mfg	1 566	8 232 635	31.5	39.1	53.7	68.7	301.0
337122	Nonupholstered wood household furniture mfg	3 677	11 318 807	25.7	36.5	50.5	64.3	237.5
337124	Metal household furniture mfg	389	2 417 293	26.2	41.0	63.4	82.2	288.9
337125	Household furniture (except wood & metal) mfg	211	547 227	45.2	60.1	78.5	91.2	635.0
337127	Institutional furniture mfg	977	4 554 577	18.8	27.0	41.2	58.7	147.3
337129	Wood television, radio, & sewing machine cabinet mfg	99	317 934	45.8	63.0	85.6	96.6	752.0
3372	Office furniture (including fixtures) mfg	4 086	21 517 554	28.7	35.9	42.8	51.4	252.5
33721	Office furniture (including fixtures) mfg	4 086	21 517 554	28.7	35.9	42.8	51.4	252.5
337211	Wood office furniture mfg	639	3 021 800	34.9	42.2	54.8	70.0	399.4
337212	Custom architectural woodwork & millwork mfg	1 094	2 205 019	7.8	11.7	19.9	34.5	34.4
337214	Office furniture (except wood) mfg	303	8 341 389	64.7	78.7	87.0	93.7	1 272.2
337215	Showcase, partition, shelving, & locker mfg	2 073	7 949 346	9.9	15.5	26.2	41.1	53.7
3379	Other furniture related product mfg	1 071	6 363 237	34.4	44.5	55.5	66.8	355.6
33791	Mattress mfg	628	3 936 972	38.6	44.8	55.3	68.3	561.0
337910	Mattress mfg	628	3 936 972	38.6	44.8	55.3	68.3	561.0
33792	Blind & shade mfg	443	2 426 265	54.1	65.9	76.0	86.7	979.5
337920	Blind & shade mfg	443	2 426 265	54.1	65.9	76.0	86.7	979.5
339	Miscellaneous mfg	30 335	99 729 798	7.4	11.4	19.4	30.2	33.2
3391	Medical equipment & supplies mfg	12 123	44 893 840	16.3	24.0	37.4	54.4	137.5
33911	Medical equipment & supplies mfg	12 123	44 893 840	16.3	24.0	37.4	54.4	137.5
339111	Laboratory apparatus & furniture mfg	371	2 220 507	19.0	33.3	55.1	74.4	202.5
339112	Surgical & medical instrument mfg	1 456	18 292 919	31.4	44.0	61.6	76.7	366.8
339113	Surgical appliance & supplies mfg	1 511	15 233 098	17.0	29.3	51.3	68.9	166.8
339114	Dental equipment & supplies mfg	849	2 666 147	34.5	46.1	64.7	78.8	400.0
339115	Ophthalmic goods mfg	520	3 497 595	43.3	59.0	78.3	88.2	645.2
339116	Dental laboratories	7 490	2 983 574	5.1	6.6	9.2	13.9	8.8
3399	Other miscellaneous mfg	18 232	54 835 958	5.7	10.0	17.8	27.1	21.2
33991	Jewelry & silverware mfg	3 737	8 303 714	11.1	17.0	28.7	45.1	65.2
339911	Jewelry (except costume) mfg	2 278	5 320 508	12.5	19.6	34.2	50.2	81.4
339912	Silverware & plated ware mfg	158	892 378	68.4	77.0	88.2	95.9	2 134.3
339913	Jewelers' material & lapidary work mfg	391	802 515	27.3	41.9	62.5	79.3	296.8
339914	Costume jewelry & novelty mfg	917	1 288 313	25.2	41.2	55.3	69.0	256.3
33992	Sporting & athletic goods mfg	2 477	10 633 528	21.4	29.2	43.6	59.7	161.1
339920	Sporting & athletic goods mfg	2 477	10 633 528	21.4	29.2	43.6	59.7	161.1
33993	Doll, toy, & game mfg	995	4 763 522	40.0	49.8	61.9	76.2	495.9
339931	Doll & stuffed toy mfg	239	300 678	31.1	51.1	72.2	89.6	403.9
339932	Game, toy, & children's vehicle mfg	756	4 462 844	42.7	53.1	66.0	80.1	564.0
33994	Office supplies (except paper) mfg	999	4 329 053	31.2	41.4	56.9	74.3	342.3
339941	Pen & mechanical pencil mfg	106	1 538 812	65.4	77.7	89.6	98.0	1 374.8
339942	Lead pencil & art good mfg	171	1 278 701	52.4	65.6	83.7	94.6	1 047.9
339943	Marking device mfg	617	661 173	25.5	37.8	53.6	68.0	233.6
339944	Carbon paper & inked ribbon mfg	106	850 367	40.3	58.6	81.8	95.1	572.6
33995	Sign mfg	5 580	7 997 974	7.9	12.2	19.5	30.9	34.5
339950	Sign mfg	5 580	7 997 974	7.9	12.2	19.5	30.9	34.5
33999	All other miscellaneous mfg	4 475	18 808 167	9.5	16.3	27.5	42.6	54.9
339991	Gasket, packing, & sealing device mfg	561	5 243 005	23.5	35.7	54.7	72.2	223.5
339992	Musical instrument mfg	552	1 324 529	32.6	45.5	68.1	83.3	420.8
339993	Fastener, button, needle, & pin mfg	240	838 928	46.3	56.2	70.8	88.6	952.2
339994	Broom, brush, & mop mfg	306	2 083 585	25.9	38.2	60.5	79.7	286.2
339995	Burial casket mfg	161	1 219 943	74.2	80.2	88.4	95.4	2 964.6
339999	All other miscellaneous mfg	2 660	8 098 177	15.1	23.3	37.8	51.4	100.5

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

²For most industries, data are value of shipments. For industries 311411, 311412, 311421, 311422, 311711, 311712, 311941, 311999, 312140, 312210, 312221, and 312229, value of production is shown. For industry 336611, value of work done is shown.

³The Herfindahl-Herschmann index is calculated by summing the squares of the individual company percentages for the 50 largest companies or the universe, whichever is lower.

Table 3. Share of Value Added Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS code	Industry group and industry	Companies ¹	Value added by manufacture (\$1000)	Percent of value added accounted for by the ² —				Herfindahl-Herschmann index for 50 largest companies ³
				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
327	Nonmetallic mineral product mfg—Con.							
3274	Lime & gypsum product mfg	230	2 816 807	56.8	67.5	84.2	95.7	1 077.3
32741	Lime mfg	46	614 959	48.0	67.5	89.8	100.0	758.5
327410	Lime mfg	46	614 959	48.0	67.5	89.8	100.0	758.5
32742	Gypsum product mfg	185	2 201 848	71.8	83.3	94.4	98.1	1 704.3
327420	Gypsum product mfg	185	2 201 848	71.8	83.3	94.4	98.1	1 704.3
3279	Other nonmetallic mineral product mfg	2 159	8 676 593	36.5	46.0	54.2	64.4	412.2
32791	Abrasive product mfg	319	2 918 902	63.9	68.6	77.2	85.5	2 061.1
327910	Abrasive product mfg	319	2 918 902	63.9	68.6	77.2	85.5	2 061.1
32799	All other nonmetallic mineral product mfg	1 849	5 757 691	31.8	40.6	50.9	63.8	341.4
327991	Cut stone & stone product mfg	1 004	790 761	21.3	26.4	36.3	49.1	196.4
327992	Ground or treated mineral & earth mfg	261	1 427 108	31.9	43.0	63.6	82.4	517.2
327993	Mineral wool mfg	201	2 601 843	66.8	77.6	87.7	95.9	1 441.3
327999	All other miscellaneous nonmetallic mineral product mfg	404	937 979	16.9	28.4	46.0	66.6	151.5
331	Primary metal mfg	4 076	68 749 487	16.4	25.1	36.8	52.2	107.7
3311	Iron & steel mills & ferroalloy mfg	209	25 432 010	38.3	58.6	76.9	92.8	536.2
33111	Iron & steel mills & ferroalloy mfg	209	25 432 010	38.3	58.6	76.9	92.8	536.2
331111	Iron & steel mills	191	24 868 550	39.1	59.9	78.6	94.3	560.3
331112	Electrometallurgical ferroalloy product mfg	19	563 460	62.5	81.2	100.0	N	1 244.1
3312	Steel product mfg from purchased steel	503	6 762 383	15.7	24.3	38.7	60.7	115.6
33121	Iron & steel pipes & tubes mfg from purchased steel	166	2 784 745	19.8	30.4	53.2	82.4	208.5
331210	Iron & steel pipes & tubes mfg from purchased steel	166	2 784 745	19.8	30.4	53.2	82.4	208.5
33122	Rolling & drawing of purchased steel	346	3 977 638	23.8	33.3	52.0	74.4	214.7
331221	Cold-rolled steel shape mfg	153	2 030 226	46.6	60.2	80.9	96.2	646.0
331222	Steel wire drawing	199	1 947 412	19.4	32.6	55.2	79.4	205.8
3313	Alumina & aluminum production & processing	248	10 063 942	48.6	63.1	77.2	87.8	1 023.3
33131	Alumina & aluminum production & processing	248	10 063 942	48.6	63.1	77.2	87.8	1 023.3
331311	Alumina refining	5	329 432	D	100.0	N	N	D
331312	Primary aluminum production	13	2 432 972	63.6	83.9	100.0	N	1 313.4
331314	Secondary smelting & alloying of aluminum	87	796 535	32.8	47.4	68.6	93.1	420.4
331315	Aluminum sheet, plate, & foil mfg	41	3 546 870	65.8	84.2	97.9	100.0	2 406.8
331316	Aluminum extruded product mfg	105	2 476 351	41.8	55.9	73.3	91.1	666.2
331319	Other aluminum rolling & drawing	30	481 782	56.0	76.6	99.7	100.0	1 045.2
3314	Nonferrous metal (except aluminum) production & processing	698	9 598 600	19.4	29.8	48.0	69.5	167.5
33141	Nonferrous metal (except aluminum) smelting & refining	134	2 455 517	41.2	60.8	84.6	97.2	683.7
331411	Primary smelting & refining of copper	9	1 029 440	91.5	D	100.0	N	2 826.8
331419	Other nonferrous metal primary smelting & refining	127	1 426 077	36.8	54.6	80.5	96.5	493.9
33142	Copper rolling, drawing, extruding, & alloying	154	2 951 706	41.0	53.8	73.8	92.2	574.5
331421	Copper rolling, drawing, & extruding	91	2 303 999	50.2	66.6	87.3	99.1	850.2
331422	Copper wire (except mechanical) drawing	33	324 392	53.5	75.1	97.2	100.0	948.0
331423	Secondary smelting, refining, & alloying of copper	34	323 315	53.0	70.2	91.2	100.0	904.5
33149	Other nonferrous metal rolling, drawing, extruding, & alloying	440	4 191 377	25.6	36.6	58.0	77.3	267.5
331491	Other nonferrous metal rolling, drawing, & extruding	220	2 982 604	34.8	49.1	71.9	88.5	443.7
331492	Other nonferrous metal secondary smelting, refining, & alloying	233	1 208 773	29.7	42.9	63.3	83.6	329.1
3315	Foundries	2 521	16 892 552	12.8	21.0	34.2	48.3	83.4
33151	Ferrous metal foundries	986	10 449 320	17.2	29.6	47.6	64.5	159.5
331511	Iron foundries	602	7 043 449	24.3	39.3	58.1	74.3	262.2
331512	Steel investment foundries	145	1 656 130	48.0	62.1	78.1	91.3	811.9
331513	Steel foundries (except investment)	263	1 749 741	27.2	38.4	61.8	84.2	359.5
33152	Nonferrous metal foundries	1 559	6 443 232	12.2	18.2	30.1	47.1	70.3
331521	Aluminum die-casting foundries	291	1 967 631	21.0	33.3	53.9	75.4	212.1
331522	Nonferrous (except aluminum) die-casting foundries	267	1 128 064	17.9	28.6	50.1	74.5	172.4
331524	Aluminum foundries (except die-casting)	592	2 195 343	16.0	26.9	47.0	68.2	152.8
331525	Copper foundries (except die-casting)	301	511 783	13.5	23.2	42.5	67.8	128.6
331528	Other nonferrous foundries (except die-casting)	136	640 411	74.9	82.4	90.1	97.1	2 369.4
332	Fabricated metal product mfg	58 516	133 493 077	3.0	5.1	9.8	16.3	6.8
3321	Forging & stamping	3 026	12 458 562	6.9	10.7	18.0	28.7	24.4
33211	Forging & stamping	3 026	12 458 562	6.9	10.7	18.0	28.7	24.4
332111	Iron & steel forging	390	2 423 265	24.3	34.3	51.8	73.4	230.2
332112	Nonferrous forging	75	991 288	46.6	65.0	88.7	99.1	910.0
332114	Custom roll forming	360	1 343 729	25.1	34.4	52.1	70.4	337.3
332115	Crown & closure mfg	55	430 618	52.5	77.3	93.1	99.9	973.6
332116	Metal stamping	2 051	6 471 538	7.1	10.1	16.5	27.4	23.0
332117	Powder metallurgy part mfg	114	798 124	31.9	47.1	69.5	91.3	385.1
3322	Cutlery & handtool mfg	1 545	7 483 422	20.9	30.8	48.3	65.3	201.1
33221	Cutlery & handtool mfg	1 545	7 483 422	20.9	30.8	48.3	65.3	201.1
332211	Cutlery & flatware (except precious) mfg	163	1 565 685	69.6	79.0	90.2	97.2	2 500.2
332212	Hand & edge tool mfg	1 164	4 296 327	20.8	32.3	49.3	65.9	183.8
332213	Saw blade & handsaw mfg	166	878 749	39.8	54.3	79.4	93.6	659.4
332214	Kitchen utensil, pot, & pan mfg	69	742 661	61.5	81.7	94.3	99.9	1 460.1

See footnotes at end of table.

Table 3. Share of Value Added Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997—Con.

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NAICS code	Industry group and industry	Companies ¹	Value added by manufacture (\$1000)	Percent of value added accounted for by the ² —				Herfindahl-Herschmann index for 50 largest companies ³
				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
333	Machinery mfg—Con.							
3333	Commercial & service industry machinery mfg	2 492	14 215 075	31.1	37.1	49.2	60.8	552.8
33331	Commercial & service industry machinery mfg	2 492	14 215 075	31.1	37.1	49.2	60.8	552.8
333311	Automatic vending machine mfg	117	604 438	66.2	83.2	91.1	97.1	1 490.9
333312	Commercial laundry, drycleaning, & pressing machine mfg	63	270 351	45.0	66.0	91.4	99.8	770.0
333313	Office machinery mfg	158	1 807 173	60.8	71.3	83.0	94.5	1 340.7
333314	Optical instrument & lens mfg	482	1 979 483	30.4	39.8	55.3	73.7	320.4
333315	Photographic & photocopying equipment mfg	412	4 478 703	D	85.7	90.7	94.4	D
333319	Other commercial & service industry machinery mfg	1 274	5 074 927	16.8	25.6	40.5	57.9	120.1
3334	Ventilation, heating, AC, & commercial refrigeration equip mfg	1 563	14 637 803	28.0	37.3	52.4	65.3	252.0
33341	Ventilation, heating, AC, & commercial refrigeration equip mfg	1 563	14 637 803	28.0	37.3	52.4	65.3	252.0
333411	Air purification equipment mfg	333	1 199 939	22.6	36.8	57.3	77.6	244.1
333412	Industrial & commercial fan & blower mfg	173	1 003 573	24.0	39.5	53.7	87.2	289.0
333414	Heating equipment (except warm air furnaces) mfg	441	2 068 353	19.7	30.1	49.3	72.3	181.4
333415	AC & warm air heating & commercial/industrial refrig equip mfg	646	10 365 938	39.2	52.0	71.4	83.1	481.8
3335	Metalworking machinery mfg	10 000	19 331 066	6.9	9.6	15.2	23.2	21.7
33351	Metalworking machinery mfg	10 000	19 331 066	6.9	9.6	15.2	23.2	21.7
333511	Industrial mold mfg	2 475	3 685 924	6.3	9.4	16.3	26.1	20.6
333512	Machine tool (metal cutting types) mfg	368	2 666 276	24.9	40.4	56.9	73.9	277.3
333513	Machine tool (metal forming types) mfg	219	1 285 781	22.9	35.8	55.2	74.5	225.7
333514	Special die & tool, die set, jig, & fixture mfg	4 667	5 938 346	5.7	8.6	14.6	24.0	16.6
333515	Cutting tool & machine tool accessory mfg	1 820	3 614 484	22.7	28.9	39.9	53.7	228.4
333516	Rolling mill machinery & equipment mfg	98	363 586	53.9	70.9	86.0	97.5	920.5
333518	Other metalworking machinery mfg	446	1 776 669	16.3	24.6	39.4	60.1	120.0
3336	Engine, turbine, & power transmission equipment mfg	789	14 530 618	39.8	54.8	69.6	83.6	566.2
33361	Engine, turbine, & power transmission equipment mfg	789	14 530 618	39.8	54.8	69.6	83.6	566.2
333611	Turbine & turbine generator set unit mfg	68	2 841 914	79.4	90.5	97.0	99.9	2 403.9
333612	Speed changer, industrial high-speed drive, & gear mfg	237	1 461 859	30.8	44.6	67.0	82.9	350.8
333613	Mechanical power transmission equipment mfg	259	1 886 164	24.7	40.1	65.7	86.5	300.8
333618	Other engine equipment mfg	245	8 340 681	56.9	75.6	89.4	96.9	1 052.8
3339	Other general-purpose machinery mfg	6 347	31 332 176	5.6	10.5	21.5	36.6	32.2
33391	Pump & compressor mfg	723	6 640 563	18.8	29.6	50.6	72.8	174.7
333911	Pump & pumping equipment mfg	406	3 403 918	24.2	39.2	60.7	83.0	275.6
333912	Air & gas compressor mfg	269	2 646 794	32.2	48.1	71.2	90.2	406.4
333913	Measuring & dispensing pump mfg	63	589 851	56.1	77.4	93.5	99.5	1 108.1
33392	Material handling equipment mfg	1 741	7 238 952	12.4	21.6	36.5	49.8	86.2
333921	Elevator & moving stairway mfg	178	748 229	50.8	63.5	76.0	89.6	777.6
333922	Conveyor & conveying equipment mfg	864	3 069 183	18.0	24.3	35.2	50.8	116.2
333923	Overhead traveling crane, hoist, & monorail system mfg	283	1 451 136	32.9	47.2	68.4	84.8	407.1
333924	Industrial truck, tractor, trailer, & stacker machinery mfg	435	1 970 404	36.7	47.6	63.3	77.7	431.7
33399	All other general-purpose machinery mfg	3 938	17 452 661	9.4	17.5	29.5	44.2	58.8
333991	Power-driven handtool mfg	198	1 983 354	47.5	68.3	88.9	95.8	825.0
333992	Welding & soldering equipment mfg	218	2 027 004	50.4	61.7	74.1	88.9	772.8
333993	Packaging machinery mfg	644	2 706 010	19.0	28.5	45.4	64.1	161.0
333994	Industrial process furnace & oven mfg	378	1 514 761	21.3	35.0	51.2	70.4	205.0
333995	Fluid power cylinder & actuator mfg	282	2 155 657	47.5	56.4	71.2	87.7	724.0
333996	Fluid power pump & motor mfg	149	1 526 099	47.5	73.0	89.6	96.4	798.7
333997	Scale & balance (except laboratory) mfg	110	329 428	50.7	62.7	78.8	94.5	1 029.4
333999	All other miscellaneous general-purpose machinery mfg	2 005	5 210 348	13.7	19.8	32.4	48.6	97.9
334	Computer & electronic product mfg	15 492	252 629 768	20.8	30.3	42.3	56.1	170.7
3341	Computer & peripheral equipment mfg	1 870	44 111 746	28.1	48.8	69.8	85.0	359.6
33411	Computer & peripheral equipment mfg	1 870	44 111 746	28.1	48.8	69.8	85.0	359.6
334111	Electronic computer mfg	531	25 908 268	40.0	68.4	90.0	96.6	658.2
334112	Computer storage device mfg	203	7 386 606	52.1	76.9	93.0	98.2	902.4
334113	Computer terminal mfg	141	531 875	40.0	63.8	84.7	96.4	611.7
334119	Other computer peripheral equipment mfg	1 015	10 284 997	41.9	54.8	69.0	83.1	557.3
3342	Communications equipment mfg	2 078	48 040 124	36.4	49.2	65.2	77.4	434.6
33421	Telephone apparatus mfg	548	23 766 132	55.3	68.9	81.6	90.4	1 061.1
334210	Telephone apparatus mfg	548	23 766 132	55.3	68.9	81.6	90.4	1 061.1
33422	Radio & TV broadcasting & wireless communications equipment mfg	1 096	21 773 109	47.9	59.0	71.2	81.4	836.5
334220	Radio & TV broadcasting & wireless communications equipment mfg	1 096	21 773 109	47.9	59.0	71.2	81.4	836.5
33429	Other communications equipment mfg	461	2 500 883	43.3	54.8	72.0	86.1	679.1
334290	Other communications equipment mfg	461	2 500 883	43.3	54.8	72.0	86.1	679.1
3343	Audio & video equipment mfg	521	2 372 815	34.1	51.1	69.9	85.6	437.2
33431	Audio & video equipment mfg	521	2 372 815	34.1	51.1	69.9	85.6	437.2
334310	Audio & video equipment mfg	521	2 372 815	34.1	51.1	69.9	85.6	437.2

See footnotes at end of table.

Table 3. Share of Value Added Accounted for by the 4, 8, 20, and 50 Largest Companies in Each of the 3-, 4-, 5-, and 6-Digit NAICS Industries: 1997—Con.

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				4 largest companies	8 largest companies	20 largest companies	50 largest companies	
336	Transportation equipment mfg—Con.							
3363	Motor vehicle parts mfg	4 767	73 797 867	38.3	45.6	57.6	68.3	531.4
33631	Motor vehicle gasoline engine & engine parts mfg . .	924	9 597 585	47.8	61.3	74.3	86.8	777.6
336311	Carburetor, piston, piston ring, & valve mfg	122	1 587 949	57.3	77.9	92.9	98.6	1 246.7
336312	Gasoline engine & engine parts mfg	810	8 009 636	51.6	64.2	76.7	89.0	817.4
33632	Motor vehicle electrical & electronic equipment mfg	981	9 574 476	51.6	59.2	73.0	84.8	1 398.4
336321	Vehicular lighting equipment mfg	99	1 612 341	57.8	76.8	92.6	99.4	1 136.8
336322	Other motor vehicle electrical & electronic equipment mfg	890	7 962 135	53.5	62.5	75.2	85.7	1 594.5
33633	Motor vehicle steering & suspension component (except spring) mfg	183	5 234 835	63.4	76.6	87.6	97.4	1 801.2
336330	Motor vehicle steering & suspension component (except spring) mfg	183	5 234 835	63.4	76.6	87.6	97.4	1 801.2
33634	Motor vehicle brake system mfg	203	4 046 472	51.6	72.7	87.6	96.7	1 011.4
336340	Motor vehicle brake system mfg	203	4 046 472	51.6	72.7	87.6	96.7	1 011.4
33635	Motor vehicle transmission & power train parts mfg .	427	11 916 802	55.4	78.1	89.8	95.6	952.1
336350	Motor vehicle transmission & power train parts mfg	427	11 916 802	55.4	78.1	89.8	95.6	952.1
33636	Motor vehicle seating & interior trim mfg	280	4 272 286	61.2	73.4	85.7	95.5	1 355.3
336360	Motor vehicle seating & interior trim mfg	280	4 272 286	61.2	73.4	85.7	95.5	1 355.3
33637	Motor vehicle metal stamping	662	10 915 335	45.0	50.1	58.4	70.3	663.4
336370	Motor vehicle metal stamping	662	10 915 335	45.0	50.1	58.4	70.3	663.4
33639	Other motor vehicle parts mfg	1 321	18 240 076	31.7	41.6	56.6	71.3	337.0
336391	Motor vehicle air-conditioning mfg	58	2 701 288	82.4	91.7	98.6	99.9	D
336399	All other motor vehicle parts mfg	1 271	15 538 788	24.7	36.1	53.3	69.4	228.5
3364	Aerospace product & parts mfg	1 530	57 688 592	55.6	75.0	85.2	90.8	1 030.8
33641	Aerospace product & parts mfg	1 530	57 688 592	55.6	75.0	85.2	90.8	1 030.8
336411	Aircraft mfg	172	20 767 608	80.9	94.6	98.0	99.6	2 526.2
336412	Aircraft engine & engine parts mfg	281	11 679 669	74.2	79.9	86.2	93.4	1 753.7
336413	Other aircraft part & auxiliary equipment mfg	1 049	13 110 835	55.2	68.6	77.2	85.6	1 126.2
336414	Guided missile & space vehicle mfg	15	9 492 504	91.6	99.6	100.0	N	D
336415	Guided missile & space vehicle propulsion unit & parts mfg	19	2 062 154	78.6	97.2	100.0	N	2 055.5
336419	Other guided missile & space vehicle parts & auxiliary equip mfg	48	575 822	71.6	85.7	97.1	100.0	2 327.4
3365	Railroad rolling stock mfg	173	3 345 283	52.9	71.3	89.3	97.3	1 219.9
33651	Railroad rolling stock mfg	173	3 345 283	52.9	71.3	89.3	97.3	1 219.9
336510	Railroad rolling stock mfg	173	3 345 283	52.9	71.3	89.3	97.3	1 219.9
3366	Ship & boat building	1 630	8 602 771	43.1	53.7	65.4	75.5	578.7
33661	Ship & boat building	1 630	8 602 771	43.1	53.7	65.4	75.5	578.7
336611	Ship building & repairing	649	6 202 797	56.1	66.1	77.2	86.9	1 020.2
336612	Boat building	984	2 399 974	38.9	47.2	58.3	72.4	620.1
3369	Other transportation equipment mfg	758	3 807 345	40.4	56.6	75.8	84.8	610.1
33699	Other transportation equipment mfg	758	3 807 345	40.4	56.6	75.8	84.8	610.1
336991	Motorcycle, bicycle, & parts mfg	373	1 605 782	63.9	74.7	84.2	91.5	2 104.3
336992	Military armored vehicle, tank, & tank component mfg	37	543 119	86.1	92.6	98.9	100.0	D
336999	All other transportation equipment mfg	349	1 658 444	50.3	71.7	81.6	90.4	807.3
337	Furniture & related product mfg	19 838	34 839 134	12.6	19.2	28.6	38.8	67.7
3371	Household & institutional furniture & kitchen cabinet mfg	14 732	19 152 783	14.3	19.6	29.5	40.9	77.4
33711	Wood kitchen cabinet & counter top mfg	7 872	5 155 365	19.2	27.0	37.3	45.5	129.2
337110	Wood kitchen cabinet & counter top mfg	7 872	5 155 365	19.2	27.0	37.3	45.5	129.2
33712	Household & institutional furniture mfg	6 867	13 997 418	18.9	25.1	35.7	48.3	129.7
337121	Upholstered household furniture mfg	1 566	3 978 674	34.0	41.7	55.8	69.4	356.1
337122	Nonupholstered wood household furniture mfg	3 677	5 905 184	26.2	36.9	51.8	65.3	256.8
337124	Metal household furniture mfg	389	1 235 159	24.7	37.8	62.8	82.3	270.9
337125	Household furniture (except wood & metal) mfg	211	271 862	47.8	64.3	81.0	93.2	745.1
337127	Institutional furniture mfg	977	2 456 703	19.4	28.3	42.1	58.8	159.0
337129	Wood television, radio, & sewing machine cabinet mfg	99	149 836	45.5	61.3	84.3	96.8	742.2
3372	Office furniture (including fixtures) mfg	4 086	12 559 656	30.8	38.2	45.0	53.3	315.8
33721	Office furniture (including fixtures) mfg	4 086	12 559 656	30.8	38.2	45.0	53.3	315.8
337211	Wood office furniture mfg	639	1 744 454	35.9	43.8	55.8	70.7	433.4
337212	Custom architectural woodwork & millwork mfg	1 094	1 352 631	8.6	12.8	21.5	36.2	39.3
337214	Office furniture (except wood) mfg	303	5 018 286	67.2	81.3	88.9	94.8	1 505.3
337215	Showcase, partition, shelving, & locker mfg	2 073	4 444 285	11.3	16.7	27.5	42.0	63.1
3379	Other furniture related product mfg	1 071	3 126 695	36.2	46.6	57.8	69.3	400.7
33791	Mattress mfg	628	1 977 231	41.6	48.6	58.9	71.9	658.1
337910	Mattress mfg	628	1 977 231	41.6	48.6	58.9	71.9	658.1
33792	Blind & shade mfg	443	1 149 464	55.2	66.6	76.9	87.3	1 029.3
337920	Blind & shade mfg	443	1 149 464	55.2	66.6	76.9	87.3	1 029.3

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339	Miscellaneous mfg	30 335	61 452 548	9.4	14.1	22.6	34.1	47.2
3391	Medical equipment & supplies mfg	12 123	30 613 184	18.6	27.0	40.4	57.2	166.6
33911	Medical equipment & supplies mfg	12 123	30 613 184	18.6	27.0	40.4	57.2	166.6
339111	Laboratory apparatus & furniture mfg	371	1 344 180	18.7	32.4	54.7	75.2	195.4
339112	Surgical & medical instrument mfg	1 456	13 148 075	35.0	48.1	65.2	78.8	435.5
339113	Surgical appliance & supplies mfg	1 511	9 863 213	18.5	30.7	52.9	70.5	180.3
339114	Dental equipment & supplies mfg	849	1 717 856	47.2	64.2	78.6	89.3	459.7
339115	Ophthalmic goods mfg	520	2 387 162	49.4	62.9	80.3	89.3	794.7
339116	Dental laboratories	7 490	2 152 698	5.6	7.3	10.1	15.1	10.4
3399	Other miscellaneous mfg	18 232	30 839 364	6.7	11.4	19.8	29.1	26.2
33991	Jewelry & silverware mfg	3 737	3 991 201	14.4	19.8	30.3	45.2	90.6
339911	Jewelry (except costume) mfg	2 278	2 376 932	13.5	20.2	33.1	48.0	84.7
339912	Silverware & plated ware mfg	158	529 984	68.0	76.9	87.5	95.6	2 780.9
339913	Jewelers' material & lapidary work mfg	391	275 984	26.7	39.7	60.4	77.4	293.2
339914	Costume jewelry & novelty mfg	917	808 301	26.9	41.3	55.8	69.5	279.7
33992	Sporting & athletic goods mfg	2 477	5 866 075	24.1	31.2	45.0	61.3	191.6
339920	Sporting & athletic goods mfg	2 477	5 866 075	24.1	31.2	45.0	61.3	191.6
33993	Doll, toy, & game mfg	995	2 816 422	41.6	51.7	63.4	77.7	555.4
339931	Doll & stuffed toy mfg	239	194 644	33.0	55.6	75.5	90.5	452.5
339932	Game, toy, & children's vehicle mfg	756	2 621 778	44.7	55.5	68.2	81.6	639.3
33994	Office supplies (except paper) mfg	999	2 590 428	32.8	43.6	58.3	74.3	379.4
339941	Pen & mechanical pencil mfg	106	916 161	64.0	77.6	89.4	97.9	1 297.2
339942	Lead pencil & art good mfg	171	810 183	59.1	71.0	84.5	94.9	1 352.6
339943	Marking device mfg	617	423 895	22.3	34.3	50.6	66.6	197.8
339944	Carbon paper & inked ribbon mfg	106	440 189	41.3	61.2	83.9	95.2	615.2
33995	Sign mfg	5 580	4 637 205	8.8	12.6	19.9	30.5	36.6
339950	Sign mfg	5 580	4 637 205	8.8	12.6	19.9	30.5	36.6
33999	All other miscellaneous mfg	4 475	10 938 033	11.3	17.9	29.2	43.6	66.6
339991	Gasket, packing, & sealing device mfg	561	3 132 922	25.0	37.7	56.1	74.1	248.8
339992	Musical instrument mfg	552	836 529	32.3	46.4	67.0	82.3	462.1
339993	Fastener, button, needle, & pin mfg	240	503 706	49.1	59.0	73.7	90.6	1 049.3
339994	Broom, brush, & mop mfg	306	1 157 593	25.9	39.5	63.1	81.2	296.3
339995	Burial casket mfg	161	857 988	80.1	84.2	91.0	96.0	D
339999	All other miscellaneous mfg	2 660	4 449 295	14.2	22.5	35.8	48.9	93.8

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

²Value added concentration ratios are presented as an alternative to the traditional value of shipments concentration ratios because value of shipments typically include an immeasurable amount of duplication. However, eliminating duplication can both raise and lower the concentration ratios. Also, use of value added results in more differences than those associated with eliminating duplication and frequently results in the inclusion of different companies in the company groups.

³The Herfindahl-Herschmann index is calculated by summing the squares of the individual company percentages for the 50 largest companies or the universe, whichever is lower.

Appendix A.

Explanation of Terms

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.

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 which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid

vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. 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

This item 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

This item 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.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

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.

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.

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).

PRODUCTION-WORKER HOURS

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

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

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.

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:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. 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:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. 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.

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.

Appendix B. NAICS Codes, Titles, and Descriptions

Not applicable for this report.

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were 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). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. 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 our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) 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 which 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 four-digit SIC industry and then erroneously re-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 SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a 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.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- 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-1000) 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 480 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 many 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 for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was 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 or 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 nsk categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G 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 1997, 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). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 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 1997, 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.

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 which 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 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 1997, 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 1997 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 annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 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 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures 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 1994-98 sample, there are approximately 650 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. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three 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 1992 Census of Manufactures.

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 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), 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 our 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) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. 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.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM 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 1992 (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 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 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 contains approximately 170,000 individual establishments in 1994, 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.

QUALIFICATIONS OF THE ASM DATA

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.

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.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

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 1997 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.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

