



Research and Development in Industry: 2003

Detailed Statistical Tables | NSF 07-314 | February 2007

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General Notes

Introduction

This report is the second of two publications containing results from the 2003 Survey of Industrial Research and Development. The first publication, an InfoBrief (NSF 2005b) announcing the availability of survey results, contains analytical information and highlights the increase in expenditures for industrial research and development (R&D) funded from companies' own resources. This report contains the full set of statistics produced from the survey including statistics on R&D funding during the calendar year 2003 and on R&D personnel in January 2004. Among the tables are several that include statistics on trends in industrial R&D since 1953, statistics on employment by R&D-performing firms since 1993, and a table classified by state that contains statistics for selected years since 1989. This report also contains (in the technical notes in appendix A) information about the industry-coding classification system, company size classifications (NSF 2001a), survey methodology, comparability of the statistics over time, survey definitions, history of the survey, and other information designed to convey to the data user what the survey statistics represent and, in some cases more importantly, what they do not represent. Survey forms, instructions, and other documents are reproduced in appendix B.

This report provides national estimates of the expenditures on R&D performed within the United States by industrial firms, whether U.S. or foreign owned. Among the statistics are estimates of total R&D, the portion of the total financed by the Federal Government, and the portion financed by the companies themselves or by other nonfederal sources such as state and local governments or other industrial firms under contract or subcontract. Total R&D is also separated into the types of costs, including wages and fringe benefits of R&D staff, materials and supplies, depreciation, and other costs. Other statistics include R&D financed by domestic firms but performed outside the 50 U.S. states and DC, R&D performed by organizations outside the firm, R&D performed in collaboration with other organizations, and the funds spent to perform energy-related R&D. Also, this report provides information on R&D-performing firms including domestic net sales, number of employees, number of R&D-performing scientists and engineers, geographic location where the R&D was performed, and R&D funds spent per R&D-performing scientist and engineer.

The National Science Foundation Act of 1950, as amended, authorizes and directs the National Science Foundation (NSF) "to provide a central clearinghouse for the collection, interpretation, and analysis of data on scientific and engineering resources and to provide a source of information for policy formulation by other agencies of the Federal Government." The Survey of Industrial Research and Development is the

vehicle with which NSF carries out the industrial portion of this mandate and NSF's Division of Science Resources Statistics has sponsored and managed a survey of industrial R&D since 1953. The 1953–56 surveys were conducted by the Bureau of Labor Statistics (BLS) in the U.S. Department of Labor (NSF 1956, 1960). Since 1957, the Bureau of the Census in the U.S. Department of Commerce has conducted the survey. Data obtained in the earlier BLS surveys are not directly comparable with Census figures because of methodological and other differences. Census conducts the survey under Title 13 of the United States Code, which prohibits publication or release of data or statistics that may reveal information about individual companies. In some tables in this report, the symbol D is used to indicate that estimates are withheld to avoid possible disclosure of information about operations of individual companies.

The Survey of Industrial Research and Development is an annual sample survey that intends to include or represent all for-profit R&D-performing companies, either publicly or privately held. Respondents receive detailed definitions to help them determine which expenses to include or exclude from the R&D data that they provide. Nevertheless, the statistics presented in this report are subject to response and concept errors caused by differences in the way respondents interpret the definitions of R&D activities and by variations in company accounting procedures. The survey's primary focus is on U.S. industry as a performer of, rather than as a source of funds for, R&D. Thus, data on federal support of R&D activities performed by industry are collected, and the resulting statistics appear in several tables while only limited statistics on industrial funding of R&D undertaken at universities and colleges and other nonprofit organizations are collected. [1]

The result of collecting and publishing performer-reported statistics is that the federally funded R&D performance totals presented in this report differ from the totals reported by the federal agencies that provide the funds and the statistics published in NSF's *Federal Funds for Research and Development* report series. One reason for these differences is that performers of R&D often expend federal funds in a year other than the one in which the federal government provides authorization, obligations, or outlays. (See Comparisons to Other Statistical Series in appendix A for definitions of these terms.) During the past decade, the differences have widened between the federal R&D funding reported by performers and that reported by funding agencies. These differences are documented and analyzed in the latest editions of NSF's *Science & Engineering Indicators* (<http://www.nsf.gov/statistics/seind06/>) and *National Patterns of R&D Resources* (<http://www.nsf.gov/statistics/natlpatterns/>) reports series.

The content of the Survey of Industrial Research and Development has been expanded and refined over the years in response to an increasing need by policymakers for more detailed information on the nation's R&D effort. For example, questions on energy R&D were added in the early 1970s, following that decade's oil shortage crisis. And, more recently, questions that probe companies' collaborative R&D activities and funding of international performance of R&D have been added to keep up with the fast-changing environment of the conduct and organization of industrial R&D. On the other hand, collection of certain data items has been eliminated in an attempt to alleviate some of the burden on respondents. For large firms known to perform R&D, a detailed survey form (Form RD-1) is used to collect data. To limit the reporting burden on small R&D performers and on firms included in the sample for the first time, an abbreviated survey form (Form RD-1A), which collects only the most crucial data, is used.

Changes have been made to the survey throughout its history and some of the most recent are detailed in appendix A (see Comparability of Statistics). Specific changes are detailed in each of the annual reports resulting from the survey (<http://www.nsf.gov/statistics/industry/>).

Industry statistics in this report were developed from data collected from individual companies.[2] Since the survey is company based rather than establishment based, all data collected for the various components of each company (plants, divisions, subdivisions, etc.) were tabulated in the company's major industrial classification, which was based on payroll. (See Frame Creation in appendix A for more information about industry classification.) The resulting industry estimates were calculated by summing the data for companies classified within each major industry classification. National totals were then estimated by summing the industry estimates. The North American Industrial Classification System (NAICS) was used to determine a company's major industrial classification and the resulting statistics are published by NAICS code. For years prior to 1999, the Standard Industrial Classification (SIC) system was used. The development and ongoing refinement of NAICS has been a joint effort of statistical agencies in Canada, Mexico, and the United States. The system replaced the Standard Industrial Classification (1980) of Canada, the Mexican Classification of Activities and Products (1994), and SIC (1987) of the United States. (For a detailed comparison of NAICS to the SIC (1987) of the United States, visit <http://www.census.gov/epcd/www/naics.html>.) NAICS was designed to provide a production-oriented system under which economic units with similar production processes are classified in the same industry. NAICS was developed with special attention to classifications for new and emerging industries, service industries, and industries that produce advanced technologies. NAICS not only facilitates comparability of information about the economies of the three North American countries but potentially increases comparability with the two-digit level of the United Nations International Standard Industrial Classification (ISIC) system.

The change of industry classification system affects most of the statistical tables produced from the survey. Prior to the 1999 report, tables classified by industry contained the current survey's statistics plus statistics for 10 previous years. Because of the new classification system, these tables now contain statistics for the current year (2003) and four prior years (1999, 2000, 2001, and 2002).[3]

Availability of survey results: Detailed historical statistics for 1953–98 can be obtained from NSF's Industrial Research and Development Information System (IRIS) at <http://www.nsf.gov/statistics/iris/>, an online interface to the Survey of Industrial Research and Development Historical Database (SIRDHD) (NSF 2001b). The SIRDHD is a collection of more than 2,500 statistical tables containing all of the statistics produced and published from the 1953–98 cycles of the annual Survey of Industrial Research and Development. Statistics for 1991–2002 are available in separate reports at <http://www.nsf.gov/statistics/industry/>.

Table Notes

These notes pertain to the tables in this section and in appendix A, except as noted in footnotes and other explanatory information at the end of specific tables.

Company Size

Companies were categorized by total number of domestic employees. The following are the size classes used in this report (see Comparability of Statistics in appendix A for information on how this array of company size classes compares to size classes used previously):

- 5–24 employees
- 25–49 employees
- 50–99 employees
- 100–249 employees
- 250–499 employees
- 500–999 employees
- 1,000–4,999 employees
- 5,000–9,999 employees
- 10,000–24,999 employees
- 25,000 or more employees

The survey excludes companies with fewer than five employees to limit burden on small business enterprises in compliance with the Office of Management and Budget's (OMB) guidelines for Federal government data collection activities.

Current and Constant Dollars

Statistics in all tables are reported in current dollars. Constant dollars also are presented in the summary tables (1, 31, 32, and 33). Gross domestic product (GDP) implicit price deflators were used to convert current to constant dollars (see NSF 2002 for a detailed discussion of the application of the deflators).

Disclosure and Suppression of Statistics

Title 13 of the United States Code and a pledge of confidentiality to respondents prohibit publication or release of data or statistics that may reveal information about individual companies. Therefore, the data in some table cells have been deleted and replaced with D. This occurs when a small number of companies account for a large percentage of the estimate in a particular data cell. Although publication of certain cells may be withheld, the estimates in the cells are always included in totals. The tables most often affected by cell suppression are those that contain data on federal support for industrial R&D performance.

Geographic Statistics

The statistics in this report cover only those operations located in the 50 U.S. states and the District of Columbia (DC). Statistics on company-sponsored R&D performed outside the 50 U.S. states and DC by foreign subsidiaries of U.S. domestic companies are included in tables 17 and 18 but excluded from all other tables.

Beginning with 2001, the methodology to produce statistics by state was modified from previous years to address the recurring problem of large year-to-year variation in many state estimates. This variability was caused by many factors including the potential inefficiency of the sample at state levels, the rarity of R&D expenditures, and the large weights often associated with companies that report R&D in the survey for the first time. Under the new methodology, a portion of the amount of R&D reported by some companies not selected for the sample with certainty is allocated (or raked) among all the states in which there was industrial activity. The new methodology was also applied to statistics for 1998, 1999, and 2000. In tables 35, 36, and 37, statistics for 1998–2003 are flagged with an E if more than 50 percent of the estimate was imputed because of raking. Note that there was no change to the methodology for estimating the number of R&D performers in each state. This estimate continued to be calculated by summing the weights of the companies that actually reported R&D activity in a given state. For a more detailed explanation of the new methodology and the definition of a "certainty" company, see the technical notes.

Historical Statistics

Prior to the 1999 report, many tables classified by industry contained the current year's statistics plus statistics for 10 previous years. Because of the conversion to the North American Industrial Classification System (NAICS) (see below), post-1999 versions of the tables contain only statistics for the current year and prior years back through 1999. Selected historical tables not classified by industry still contain estimates for years prior to 1999.

Industry Classification

One North American Industrial Classification System (NAICS) code was assigned to each company. Multi-establishment companies were assigned single codes based on the most dominant aggregated activity for that firm in terms of total payroll. Statistics for the following industries and industry groupings are published in this report (NAICS codes are given on the right) (see Comparability of Statistics in appendix A for information on NAICS and how it compares with the Standard Industrial Classification (SIC) system used in reports prior to the 1999 edition. The 1997 version of NAICS was used for the 1999–2003 surveys):

Manufacturing industries	31, 32, 33
Food	311
Beverage and tobacco products	312
Textiles, apparel, and leather	313, 314, 315, 316
Wood products	321
Paper, printing and support activities	322, 323
Petroleum and coal products	324
Chemicals	325
Basic chemicals	3251
Resin, synthetic rubber, fibers, and filament	3252
Pharmaceuticals and medicines	3254
Other chemicals	325 (minus 3251, 3252, 3254)
Plastics and rubber products	326
Nonmetallic mineral products	327
Primary metals	331
Fabricated metal products	332
Machinery	333
Computer and electronic products	334
Computers and peripheral equipment	3341
Communications equipment	3342
Semiconductor and other electronic components	3344

Navigational, measuring, electromedical, and control instruments	3345
Other computer and electronic products	334 (minus 3341, 3342, 3344, 3345)
Electrical equipment, appliances, and components	335
Transportation equipment	336
Motor vehicles, trailers, and parts	3361, 3362, 3363
Aerospace products and parts	3364
Other transportation equipment	336 (minus 3361, 3362, 3363, 3364)
Furniture and related products	337
Miscellaneous manufacturing	339
Medical equipment and supplies	3391
Other miscellaneous manufacturing	339 (minus 3391)
Other manufacturing	31, 32, 33 (minus 311–316, 321–327, 331–337, 339)
Nonmanufacturing industries	21, 22, 23, 42, 44, 45, 48, 49, 51–56, 61, 62, 71, 72, 81
Mining, extraction, and support activities	21
Utilities	22
Construction	23
Trade	42, 44, 45
Transportation and warehousing	48, 49
Information	51
Publishing	511
Newspaper, periodical, book, and database	5111
Software	5112
Broadcasting and telecommunications	513
Radio and television broadcasting	5131
Telecommunications	5133
Other broadcasting and telecommunications	513 (minus 5131, 5133)
Other information	51 (minus 511, 513)
Finance, insurance, and real estate	52, 53
Professional, scientific, and technical services	54
Architectural, engineering, and related services	5413

Computer systems design and related services	5415
Scientific R&D services	5417
Other professional, scientific, and technical services	54 (minus 5413, 5415, 5417)
Management of companies and enterprises	55
Health care services	621, 622, 623
Other nonmanufacturing	56, 61, 624, 71, 72, 81

Since 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large-company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large-company partition. Companies in the respective sectors with employment below these values but with at least 5 employees were included in the small-company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Therefore, in the 1999 and 2000 reports detailed industry statistics were published only from the large-company partition; detailed industry statistics from the small-company partition were not. Statistics from the small-company partition were included in the manufacturing, nonmanufacturing, and all industries totals but were aggregated into "small-manufacturing" and "small-nonmanufacturing" classifications instead of being included in their respective industry classifications. Beginning with the 2001 report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above.

Large Year-to-Year Changes

Large year-to-year changes may occur because of the way industry classifications are assigned during statistical processing. A company's industry classification is a function of its primary activity based on payroll, which is not necessarily the primary source of its R&D activity. If the majority of a company's payroll shifts to an activity other than an R&D-related activity, for example trade, all of its R&D similarly shifts to the new activity. Further, the design of the statistical sample sometimes contributes to large year-to-year changes in industry estimates. Since relatively few companies perform R&D and there is no national register of industrial R&D performers, a large statistical "net" must be cast to capture new R&D performers. When these companies are sampled for the first time, they are often given weights much higher than they would be given if their size and the amount of R&D they perform were known at the time of sampling. After the size of the company and the amount of R&D performed are discovered via the first survey, the weight assigned for subsequent surveys is adjusted.

Nonresponse and Imputation

For various reasons, some firms did not choose to return the survey form or returned it with one or more blank items. (See Survey Nonresponse in appendix A for more information on the reasons for unit and item nonresponse.) Missing data for major data items were estimated using mathematical algorithms developed from industry comparisons, data from previous cycles of the survey, and other information.

Therefore, the statistics in some table cells may be accompanied by the notation S, which indicates that the imputation rate—the percentage of the statistic not reported by respondents and consequently estimated—exceeds 50 percent for that item. In such cases, the estimate may be statistically unreliable. (See table A-5 for imputation rates for specific items.)

Percentages

Percentages were calculated on the basis of thousands of dollars and may differ slightly from those calculated using the rounded figures shown.

Reporting Unit

The basic reporting unit was the company, firm, or enterprise that included all establishments under common ownership or control. All R&D expenditures and all information about scientists and engineers of each company were classified into a single NAICS code and size category.

Rounding

Because of rounding, detail items may not add to totals. Most money amounts are expressed in millions of dollars and are rounded down if less than \$500,000 or up if \$500,000 or more. Frequency estimates (e.g., number of companies) are accumulated from decimal weights assigned to company records (see Weighting and Maximum Weights in appendix A for information on how company records are weighted) and are rounded down if less than 0.5 and rounded up if 0.5 or greater. Most employment counts (e.g., number of scientists and engineers) are expressed in thousands and are rounded down if less than 500 or up if 500 or greater.

Zeroes

When numerical values are accumulated from the statistical file to estimate money amounts and the accumulated sum equals zero, the cell contains 0. When the sum rounds to zero, the cell is filled with *. When numerical values are accumulated from the statistical file to estimate numbers of companies (frequencies) and the accumulated sum equals zero, the cell contains 0.

Footnotes

[1] The survey collects data on the amount of R&D funded by companies but performed by outside entities including universities, colleges, and other nonprofit organizations. Resulting statistics are in tables 15 and 16. More comprehensive data on R&D performed at universities and colleges are collected in NSF's annual academic R&D expenditure survey, the Survey of Research and Development Expenditures at Universities and Colleges. More information about this survey is available from NSF's Division of Science Resources Statistics website at <http://www.nsf.gov/statistics/rdexpenditures/>.

[2] In the Survey of Industrial Research and Development and in the publications presenting statistics resulting from the survey, the terms *firm*, *company*, and *enterprise* are used interchangeably. *Industry* refers to the 2-, 3-, or 4-digit North American Industrial Classification System (NAICS) codes or group of NAICS codes used to publish statistics resulting from the survey.

[3] In *Research and Development in Industry: 2000* an effort was made to provide a bridge for users who wanted to make year-to-year comparisons below the aggregate level. In several tables, statistics from the 1997 and 1998 cycles of the survey, which

were previously classified and published using the Standard Industrial Classification (SIC) system, were reclassified using the new North American Industrial Classification System (NAICS) codes. These reclassified statistics were published using their new NAICS classifications and were shown alongside the 1999 and 2000 statistics, which were estimated using NAICS from the outset.

Data Tables

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5	by total R&D program size: 2003
	by industry
4	by company size: 2003
	Funds for R&D, sales, and employment
	by industry and company size
2	2002 and 2003
	Companies in manufacturing and nonmanufacturing industries
6	number and R&D funds by company size: 2003
	Distribution of R&D
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7	by type of cost
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	Company and other nonfederal funds for R&D
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12	total: 1999–2003
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	Company and other nonfederal funds for R&D and company count
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19	by type of organization: 2003
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17	by industry and company size: 1999–2003
18	by location: 2003

Federal funds for R&D

by industry and company size

20 total: 1999–2003

22 by federally funded R&D program size: 2003

by industry

21 by company size: 2003

by funding agency and industry

23 2002 and 2003

U.S. net sales of companies performing R&D

Total

24 by industry, by company size: 2003

with R&D funds by source

25 ranked by R&D program size, % distribution: 1993–2003

Funds for R&D as % of net sales

by industry and company size

26 total: 1999–2003

27 company and other nonfederal: 1999–2003

ranked by R&D program size: 2003

28 total: 2003

29 company and other nonfederally funded: 2003

30 federally funded: 2003

Funds for basic research, applied research, and development

31 total: 1953–2003

32 company and other nonfederal: 1953–2003

33 federal: 1953–2003

by industry and company size

34 number of companies and source of funds: 2003

Funds for R&D by state

35 selected years: 1989–2003

36 number of companies and source of funds: 2003

37 by industry and company size: 2003

Employment in R&D performing companies

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40 % distribution, ranked by R&D program size: 1993–2003

R&D funds spent per employee

all employees

39 by company size: 1999–2003

full-time equivalent R&D scientists and engineers

43 by industry, by company size: 2003

44 ranked by R&D program size: 1993–2003

Full-time equivalent R&D scientists and engineers

by industry and company size

- 41 January 2000–January 2004
- 42 by source of R&D funds: January 2004
- 45 per 1000 employees, by industry and company size: 1999–2003

TABLE 1. Industrial R&D performance in the United States, by source of funds: 1953–2003

(Millions of current and constant 2000 dollars)

Year	All sources		Federal		Company and other	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
1953	3,630	19,901	1,430	7,840	2,200	12,061
1954	4,070	22,096	1,750	9,501	2,320	12,595
1955	4,640	24,747	2,180	11,627	2,460	13,120
1956	6,605	34,064	3,328	17,163	3,277	16,900
1957	7,731	38,578	4,335	21,632	3,396	16,946
1958	8,389	40,922	4,759	23,215	3,630	17,707
1959	9,618	46,352	5,635	27,157	3,983	19,195
1960	10,509	49,948	6,081	28,902	4,428	21,046
1961	10,908	51,259	6,240	29,323	4,668	21,936
1962	11,464	53,148	6,434	29,828	5,029	23,315
1963	12,630	57,936	7,270	33,349	5,360	24,587
1964	13,512	61,057	7,720	34,885	5,792	26,173
1965	14,185	62,960	7,740	34,354	6,445	28,606
1966	15,548	67,075	8,332	35,945	7,216	31,130
1967	16,385	68,585	8,365	35,015	8,020	33,571
1968	17,429	69,968	8,560	34,364	8,869	35,604
1969	18,308	70,011	8,451	32,317	9,857	37,694
1970	18,067	65,627	7,779	28,256	10,288	37,370
1971	18,320	63,369	7,666	26,517	10,654	36,852
1972	19,552	64,806	8,017	26,573	11,535	38,233
1973	21,249	66,716	8,145	25,573	13,104	41,143
1974	22,887	65,900	8,220	23,668	14,667	42,232
1975	24,187	63,650	8,605	22,645	15,582	41,005
1976	26,997	67,157	9,561	23,784	17,436	43,373
1977	29,825	69,766	10,485	24,526	19,340	45,240
1978	33,304	72,780	11,189	24,451	22,115	48,328
1979	38,226	77,146	12,518	25,263	25,708	51,883
1980	44,505	82,356	14,029	25,960	30,476	56,395
1981	51,810	87,635	16,382	27,710	35,428	59,926
1982	58,650	93,496	18,545	29,563	40,105	63,933
1983	65,268	100,089	20,680	31,713	44,588	68,376
1984	74,800	110,553	23,396	34,579	51,404	75,974
1985	84,239	120,842	27,196	39,013	57,043	81,829
1986	87,823	123,260	27,891	39,145	59,932	84,115
1987	92,155	125,895	30,752	42,011	61,403	83,884
1988	97,015	128,174	30,343	40,089	66,672	88,086
1989	102,055	129,907	28,554	36,347	73,501	93,560
1990	109,727	134,486	28,125	34,471	81,602	100,015
1991	116,952	138,503	26,372	31,232	90,580	107,271
1992	119,110	137,891	24,722	28,620	94,388	109,271
1993	117,400	132,835	22,809	25,808	94,591	107,028
1994	119,595	132,501	22,463	24,887	97,131	107,612
1995	132,103	143,419	23,451	25,460	108,652	117,959
1996	144,667	154,147	23,653	25,203	121,015	128,945
1997	157,539	165,118	23,928	25,079	133,611	140,039
1998	169,180	175,371	24,164	25,048	145,016	150,322

TABLE 1. Industrial R&D performance in the United States, by source of funds: 1953–2003

(Millions of current and constant 2000 dollars)

Year	All sources		Federal		Company and other	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
1999	184,129	188,136	22,535	23,025	161,594	165,111
2000	201,962	201,962	19,118	19,118	182,844	182,844
2001	202,017	197,282	16,899	16,503	185,118	180,779
2002	193,868	186,250	16,401	15,757	177,467	170,494
2003	204,004	192,457	20,699	19,527	183,305	172,929

NOTES: Beginning with 2001, statistics for all and federally funded industrial R&D exclude data for federally funded research and development centers. Gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant (2000) dollars. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 2. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2002 and 2003

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		2002	2003	2002	2003	2002	2003
Millions of dollars							
All industries	21–23, 31–33, 42, 44–81	193,868	204,004	16,401	20,699	177,467	183,305
Manufacturing industries	31–33	112,089	123,384	10,745	15,305	101,344	108,079
Food	311	D	D	D	D	2,034	1,987
Beverage and tobacco products	312	170	173	0	0	170	173
Textiles, apparel, and leather	313–16	D	D	D	D	248	309
Wood products	321	D	D	D	D	132	138
Paper, printing, and support activities	322, 323	D	D	D	D	2,620	2,909
Petroleum and coal products	324	D	D	D	D	1,233	1,308
Chemicals	325	20,641	23,001	246	307	20,395	22,693
Basic chemicals	3251	1,782	2,061	72	70	1,710	1,991
Resin, synthetic rubber, fibers, and filament	3252	2,426	2,406	13	16	2,413	2,390
Pharmaceuticals and medicines	3254	D	D	D	D	14,186	15,949
Other chemicals	other 325	D	D	D	D	2,087	2,364
Plastics and rubber products	326	D	1,764	D	35	1,508	1,729
Nonmetallic mineral products	327	D	474	D	4	420	470
Primary metals	331	473	530	12	12	461	518
Fabricated metal products	332	1,355	1,374	104	45	1,251	1,329
Machinery	333	6,429	6,304	62	80	6,366	6,224
Computer and electronic products	334	38,881	39,001	5,470	6,506	33,411	32,495
Computers and peripheral equipment	3341	3,040	2,587	25	27 S	3,015	2,561
Communications equipment	3342	9,739	9,198	215	266	9,524	8,932
Semiconductor and other electronic components	3344	11,919	12,635	48	28	11,871	12,607
Navigational, measuring, electromedical, and control instruments	3345	13,729	14,014	5,180	6,180	8,549	7,834
Other computer and electronic products	other 334	453	566	1	6	452	560
Electrical equipment, appliances, and components	335	2,039	2,073	61 S	71	1,978	2,002
Transportation equipment	336	26,145	34,273	4,692	8,162	21,452	26,111
Motor vehicles, trailers, and parts	3361–63	D	D	D	D	15,199	16,874
Aerospace products and parts	3364	9,654	15,731	4,306	7,528	5,349	8,203
Other transportation equipment	other 336	D	D	D	D	905 S	1,034
Furniture and related products	337	258	D	7	D	251	275
Miscellaneous manufacturing	339	7,457	7,455	44	47	7,414	7,408
Medical equipment and supplies	3391	D	6,386	D	17	6,179	6,370
Other miscellaneous manufacturing	other 339	D	1,069	D	31	1,235	1,038

TABLE 2. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2002 and 2003

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		2002	2003	2002	2003	2002	2003
Millions of dollars							
Nonmanufacturing industries	21–23, 42, 44–81	81,779	80,620	5,656	5,394	76,123	75,226
Mining, extraction, and support activities	21	D	D	D	D	715	750
Utilities	22	D	D	D	D	117	128
Construction	23	164	333	*	79	164	254
Wholesale trade	42	D	25,092	D	122	24,037	24,970
Professional and commercial equipment and supplies, including computers	4214	D	D	D	D	11,771	9,679
Electrical goods	4216	D	D	D	D	3,935	3,701
Drugs and druggists' sundries	4222	D	D	D	D	6,811	9,494
Other wholesale trade	other 42	1,521	2,099	1	2	1,520	2,097
Retail trade	44, 45	932	1,488	0	26	932	1,462
Transportation and warehousing	48, 49	D	272	D	*	339	272
Information	51	17,870	D	106	D	17,764	19,811
Publishing	511	13,541	D	53	D	13,488	15,760
Newspaper, periodical, book, and database	5111	614	665	0	*	614	665
Software	5112	12,927	D	53	D	12,874	15,095
Broadcasting and telecommunications	513	D	1,663	0	0	D	1,663
Telecommunications	5133	D	1,625	D	0	1,608	1,625
Other broadcasting and telecommunications	other 513	NA	38	NA	0	NA	38
Other information	other 51	D	D	D	D	2,639	2,388
Finance, insurance, and real estate	52, 53	1,903	1,455	0	0	1,903	1,455
Professional, scientific, and technical services	54	30,358	28,721	5,412	4,966	24,946	23,755
Architectural, engineering, and related services	5413	4,159	5,159	1,337	1,898	2,822	3,261
Computer systems design and related services	5415	11,983	9,786	1,590	1,148	10,394	8,638
Scientific R&D services	5417	13,034	12,460	2,299	1,886	10,735	10,574
Other professional, scientific, and technical services	other 54	1,182	1,316	186	34	996	1,283
Management of companies and enterprises	55	148	67	0	0	148	67 S
Health care services	621–23	D	717	D	36	4,163	681
Other nonmanufacturing	56, 61, 624, 71, 72, 81	D	1,679	D	60 S	894	1,619

TABLE 2. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2002 and 2003

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		2002	2003	2002	2003	2002	2003
Millions of dollars							
Company size (employees)							
All companies	na	193,868	204,004	16,401	20,699	177,467	183,305
5-24	na	4,261	5,578	789	754	3,471	4,824
25-49	na	3,845	6,449	259	910	3,586	5,540
50-99	na	6,164	4,829	463	559	5,701	4,271
100-249	na	13,227	9,559	606	636	12,622	8,924
250-499	na	8,055	9,536	686	668	7,370	8,869
500-999	na	9,925	10,383	531	759	9,394	9,624
1,000-4,999	na	28,625	30,484	985	1,088	27,640	29,396
5,000-9,999	na	17,942	15,434	1,574	1,101	16,369	14,333
10,000-24,999	na	26,458	27,571	1,226	1,995	25,232	25,576
25,000 or more	na	75,365	84,180	9,282	12,231	66,083	71,949

TABLE 2. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2002 and 2003

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers ^a		Domestic employment (March)	
		2002	2003	2003	2004	2002	2003
		Millions of dollars		Thousands			
All industries	21–23, 31–33, 42, 44–81	4,909,047	5,748,522	1,075.3	1,156.0	15,435	15,337
Manufacturing industries	31–33	3,038,217	3,494,275	597.7	649.5	9,115	8,971
Food	311	314,176	316,218	12.9	D	991	945
Beverage and tobacco products	312	33,910	37,564	1.0	0.8	57	61
Textiles, apparel, and leather	313–16	29,308	30,875	2.5	D	186	187
Wood products	321	18,691	19,291	D	1.1	94	97
Paper, printing, and support activities	322, 323	204,814	264,258	17.9	D	585	595
Petroleum and coal products	324	304,747	403,789	4.3 S	3.9 S	179	197
Chemicals	325	343,723	406,230	86.9	91.3	837	864
Basic chemicals	3251	67,183	74,584	8.5	D	154	164
Resin, synthetic rubber, fibers, and filament	3252	61,452	65,821	12.8	D	122	122
Pharmaceuticals and medicines	3254	147,175	191,886	51.8	56.3	355	341
Other chemicals	other 325	67,913	73,939	13.9	13.9	207	237
Plastics and rubber products	326	84,089	83,148	11.0	11.9	468	448
Nonmetallic mineral products	327	33,945	48,935	D	6.1 S	145	198
Primary metals	331	70,718	74,237	4.0 S	4.1 S	260	267
Fabricated metal products	332	89,406	88,212	13.1	13.5	477	463
Machinery	333	147,148	149,563	56.5	55.3	740	686
Computer and electronic products	334	411,487	338,319	221.5	228.4 S	1,285	1,111
Computers and peripheral equipment	3341	40,409	44,483	15.1	13.8	83	73
Communications equipment	3342	65,508	61,208	52.8 S	56.0 S	201	169
Semiconductor and other electronic components	3344	138,596	114,062	73.3	76.0	404	367
Navigational, measuring, electromedical, and control instruments	3345	158,397	108,824	75.9	78.2 S	574	470
Other computer and electronic products	other 334	8,576	9,742	4.4	4.4	23	32
Electrical equipment, appliances, and components	335	72,859 S	92,258	14.0	16.4	324	311
Transportation equipment	336	753,734	974,163	123.1	144.5	1,907	1,939
Motor vehicles, trailers, and parts	3361–63	487,740	703,834	83.2	D	987	1,041
Aerospace products and parts	3364	234,840	232,326	32.5	40.6	785	751
Other transportation equipment	other 336	31,154	38,003	7.3 S	D	135	147
Furniture and related products	337	31,772	33,780	2.0	2.6	200	203
Miscellaneous manufacturing	339	93,692	133,435	22.6	24.6	379	399
Medical equipment and supplies	3391	63,537	101,199	14.4	16.1	227	242
Other miscellaneous manufacturing	other 339	30,155	32,236	8.2	8.5	152	157

TABLE 2. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2002 and 2003

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers ^a		Domestic employment (March)	
		2002	2003	2003	2004	2002	2003
		Millions of dollars		Thousands			
Nonmanufacturing industries	21–23, 42, 44–81	1,870,823	2,254,246	477.8	506.4	6,306	6,366
Mining, extraction, and support activities	21	22,181	22,724	D	D	85	88
Utilities	22	173,480	191,130	0.5	D	270	253
Construction	23	25,426	20,705	1.0	2.7 S	91	94
Wholesale trade	42	333,417	692,402	124.1	127.0	937	1,165
Professional and commercial equipment and supplies, including computers	4214	125,305	121,459	73.0	D	477	494
Electrical goods	4216	45,448	56,246	21.1	D	108	139
Drugs and druggists' sundries	4222	72,150	81,931	20.1	22.6	115	157
Other wholesale trade	other 42	90,515	432,765	9.8	19.5	237	375
Retail trade	44, 45	158,289	187,146	7.9	11.7	530	649
Transportation and warehousing	48, 49	71,288	69,421	D	D	707	591
Information	51	443,897	347,081	117.0	D	1,399	1,227
Publishing	511	82,487	88,105	85.1	112.2	450	374
Newspaper, periodical, book, and database	5111	22,307	23,592	4.3	5.9	140	139
Software	5112	60,180	64,514	80.8	106.4	311	235
Broadcasting and telecommunications	513	231,311 S	211,132	8.6 S	11.6 S	728 S	693
Telecommunications	5133	230,679 S	210,257	8.5 S	11.3 S	725 S	689
Other broadcasting and telecommunications	other 513	NA	874	NA	**	NA	4
Other information	other 51	130,099	47,844	23.3	D	220	160
Finance, insurance, and real estate	52, 53	343,709	424,438	18.9	19.2	711	747
Professional, scientific, and technical services	54	223,013	233,291	181.8	167.6	956	916
Architectural, engineering, and related services	5413	53,594	41,893	32.2	38.3	250	208
Computer systems design and related services	5415	72,495	88,093	90.8	64.8	333	301
Scientific R&D services	5417	61,103	64,592 S	50.0	46.9	159	175
Other professional, scientific, and technical services	other 54	35,822	38,713	8.9	17.6	213	233
Management of companies and enterprises	55	1,962	1,611	1.5	0.5 S	13	7
Health care services	621–23	27,603	31,054	9.1	14.1	158	133
Other nonmanufacturing	56, 61, 624, 71, 72, 81	46,563	33,243	10.8	13.1	450	495

TABLE 2. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2002 and 2003

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers ^a		Domestic employment (March)	
		2002	2003	2003	2004	2002	2003
		Millions of dollars		Thousands			
Company size (employees)							
All companies	na	4,909,047	5,748,522	1,075.3	1,156.0	15,435	15,337
5-24	na	48,993	215,378	60.0	51.4	144	193
25-49	na	40,091	189,295	26.6	57.2	162	295
50-99	na	79,880	108,435	38.4	38.0	280	296
100-249	na	140,438	511,737	61.4	80.2	535	603
250-499	na	185,592	134,553	46.4	74.1	546	541
500-999	na	136,776	164,830	61.3	64.1	690	649
1,000-4,999	na	682,463	708,787	165.5	167.5	2,326	2,255
5,000-9,999	na	485,019	542,406	101.5 S	102.2	1,492	1,472
10,000-24,999	na	872,414	900,981	158.3	171.1	2,414	2,599
25,000 or more	na	2,237,382	2,272,119	356.1	350.2	6,846	6,434

* = data less than \$500,000; ** = data less than 500; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

^a Data recorded each year in January represent employment figures for the previous year.

NOTES: Some statistics for 2002 have been revised since originally published. Excludes data for federally funded research and development centers. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 3. Funds for industrial R&D performance in the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
All industries	21–23, 31–33, 42, 44–81	184,129	201,962	202,017	193,868	204,004	5.2
Manufacturing industries	31–33	118,339	126,501	124,217	112,089	123,384	10.1
Food	311	1,132	D	1,819	D	D	na
Beverage and tobacco products	312	D	417	152	170	173	1.8
Textiles, apparel, and leather	313–16	334	D	D	D	D	na
Wood products	321	70	105	182	D	D	na
Paper, printing, and support activities	322, 323	D	D	D	D	D	na
Petroleum and coal products	324	615	D	D	D	D	na
Chemicals	325	20,246	20,918	17,892	20,641	23,001	11.4
Basic chemicals	3251	2,746	2,080	1,876	1,782	2,061	15.7
Resin, synthetic rubber, fibers, and filament	3252	D	2,852	D	2,426	2,406	-0.8
Pharmaceuticals and medicines	3254	D	D	10,137	D	D	na
Other chemicals	other 325	D	D	D	D	D	na
Plastics and rubber products	326	1,785	D	D	D	1,764	na
Nonmetallic mineral products	327	D	846	990	D	474	na
Primary metals	331	470	624	485	473	530	12.1
Fabricated metal products	332	1,655	1,672	1,599	1,355	1,374	1.4
Machinery	333	6,057	6,580	6,404	6,429	6,304	-1.9
Computer and electronic products	334	37,350	47,520	50,591	38,881	39,001	0.3
Computers and peripheral equipment	3341	D	5,162	D	3,040	2,587	-14.9
Communications equipment	3342	7,421	14,039	19,019	9,739	9,198	-5.6
Semiconductor and other electronic components	3344	10,701	12,894	14,358	11,919	12,635	6.0
Navigational, measuring, electromedical, and control instruments	3345	14,337	15,116	12,947	13,729	14,014	2.1
Other computer and electronic products	other 334	D	310	D	453	566	24.9
Electrical equipment, appliances, and components	335	D	D	4,980	2,039	2,073	1.7
Transportation equipment	336	33,965	30,085	25,965	26,145	34,273	31.1
Motor vehicles, trailers, and parts	3361–63	D	D	D	D	D	na
Aerospace products and parts	3364	14,425	10,319	7,868	9,654	15,731	62.9
Other transportation equipment	other 336	D	D	D	D	D	na
Furniture and related products	337	248	284	301	258	D	na
Miscellaneous manufacturing	339	3,851	4,206	6,606	7,457	7,455	0.0
Medical equipment and supplies	3391	D	D	D	D	6,386	na
Other miscellaneous manufacturing	other 339	D	D	D	D	1,069	na

TABLE 3. Funds for industrial R&D performance in the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Nonmanufacturing industries	21–23, 42, 44–81	65,790	75,461	77,799	81,779	80,620	-1.4
Mining, extraction, and support activities	21	D	823	D	D	D	na
Utilities	22	142	D	133	D	D	na
Construction	23	691	D	320	164	333	103.0
Wholesale trade	42	NA	NA	NA	D	25,092	na
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	D	D	na
Electrical goods	4216	NA	NA	NA	D	D	na
Drugs and druggists' sundries	4222	NA	NA	NA	D	D	na
Other wholesale trade	other 42	NA	NA	NA	1,521	2,099	38.0
Retail trade	44, 45	NA	NA	NA	932	1,488	59.7
Transportation and warehousing	48, 49	460	D	1,848	D	272	na
Information	51	15,389	16,830	D	17,870	D	na
Publishing	511	11,302	13,004	13,760	13,541	D	na
Newspaper, periodical, book, and database	5111	371	365	649	614	665	8.3
Software	5112	10,931	12,639	13,111	12,927	D	na
Broadcasting and telecommunications	513	D	1,407 S	D	D	1,663	na
Telecommunications	5133	D	D	D	D	1,625	na
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	38	na
Other information	other 51	D	2,420	D	D	D	na
Finance, insurance, and real estate	52, 53	D	4,025	D	1,903	1,455	-23.5
Professional, scientific, and technical services	54	18,994	22,577	27,704	30,358	28,721	-5.4
Architectural, engineering, and related services	5413	3,580	3,381	3,386	4,159	5,159	24.0
Computer systems design and related services	5415	D	5,169	9,154	11,983	9,786	-18.3
Scientific R&D services	5417	10,470	12,892	14,244	13,034	12,460	-4.4
Other professional, scientific, and technical services	other 54	D	1,135	920	1,182	1,316	11.3
Management of companies and enterprises	55	D	49	381	148	67 S	-54.7
Health care services	621–23	642	536	1,149	D	717	na
Other nonmanufacturing	56, 61, 624, 71, 72, 81	D	731	1,259	D	1,679	na

TABLE 3. Funds for industrial R&D performance in the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Company size (employees)							
All companies	na	184,129	201,962	202,017	193,868	204,004	5.2
5–24	na	7,004	6,862	4,828	4,261	5,578	30.9
25–49	na	4,750	5,008	3,750	3,845	6,449	67.7
50–99	na	7,225	7,259	8,202	6,164	4,829	-21.7
100–249	na	7,213	9,020	12,916	13,227	9,559	-27.7
250–499	na	7,892	7,479	8,702	8,055	9,536	18.4
500–999	na	7,032	9,074	10,564	9,925	10,383	4.6
1,000–4,999	na	24,840	30,636	26,748	28,625	30,484	6.5
5,000–9,999	na	16,339	16,768	17,438	17,942	15,434	-14.0
10,000–24,999	na	26,377	28,611	27,065	26,458	27,571	4.2
25,000 or more	na	75,457	81,244	81,804	75,365	84,180	11.7

D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. Beginning with 2001, excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government.

Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 4. Funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
All industries	21-23, 31-33, 42, 44-81	204,004	5,578	6,449	4,829	9,559	9,536
Manufacturing industries	31-33	123,384	943	2,057	1,680	D	D
Food	311	D	D	D	44	D	46
Beverage and tobacco products	312	173	D	D	D	D	D
Textiles, apparel, and leather	313-16	D	D	D	13	32	D
Wood products	321	D	D	1	D	4	D
Paper, printing, and support activities	322, 323	D	6	14	7	D	29
Petroleum and coal products	324	D	D	5	D	8	D
Chemicals	325	23,001	D	84	254	D	D
Basic chemicals	3251	2,061	D	6	12	D	68
Resin, synthetic rubber, fibers, and filament	3252	2,406	2	4	5	7	58
Pharmaceuticals and medicines	3254	D	D	17	D	D	192
Other chemicals	other 325	D	33	56	D	85	D
Plastics and rubber products	326	1,764	154	35	23	D	82
Nonmetallic mineral products	327	474	D	4	D	14	67
Primary metals	331	530	6	D	11	D	15
Fabricated metal products	332	1,374	41	22	63	D	D
Machinery	333	6,304	44	D	D	D	290
Computer and electronic products	334	39,001	316	387	622	1,249	1,594
Computers and peripheral equipment	3341	2,587	D	D	78	111	D
Communications equipment	3342	9,198	D	D	D	257	D
Semiconductor and other electronic components	3344	12,635	107	D	D	437	357
Navigational, measuring, electromedical, and control instruments	3345	14,014	D	120	187	394	428
Other computer and electronic products	other 334	566	D	D	44	50	8
Electrical equipment, appliances, and components	335	2,073	126	34	D	D	D
Transportation equipment	336	34,273	84	1,032	27	D	133
Motor vehicles, trailers, and parts	3361-63	D	64	1,004	D	81	63
Aerospace products and parts	3364	15,731	13	12	2	D	52
Other transportation equipment	other 336	D	7	17	D	D	18
Furniture and related products	337	D	*	10	7	D	13
Miscellaneous manufacturing	339	7,455	D	133	D	D	269
Medical equipment and supplies	3391	6,386	D	88	D	D	183
Other miscellaneous manufacturing	other 339	1,069	D	45	45	D	85

TABLE 4. Funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
Nonmanufacturing industries	21-23, 42, 44-81	80,620	4,635	4,393	3,150	D	D
Mining, extraction, and support activities	21	D	78	D	D	D	2
Utilities	22	D	D	0	0	0	D
Construction	23	333	98	83	1	D	1
Wholesale trade	42	25,092	302	829	249	D	824
Professional and commercial equipment and supplies, including computers	4214	D	65	342	13	176	384
Electrical goods	4216	D	9	38	D	102	270
Drugs and druggists' sundries	4222	D	11	128	D	D	52
Other wholesale trade	other 42	2,099	218	321	D	D	119
Retail trade	44, 45	1,488	378	45	4	219	33
Transportation and warehousing	48, 49	272	17	6	D	0	2
Information	51	D	298	496	D	D	D
Publishing	511	D	235	440	D	D	D
Newspaper, periodical, book, and database	5111	665	0	78	0	36	D
Software	5112	D	235	361	D	D	D
Broadcasting and telecommunications	513	1,663	0	D	0	82	D
Telecommunications	5133	1,625	0	0	0	D	D
Other broadcasting and telecommunications	other 513	38	0	D	0	D	D
Other information	other 51	D	62	D	72	186	D
Finance, insurance, and real estate	52, 53	1,455	D	D	D	D	66
Professional, scientific, and technical services	54	28,721	2,796	2,537	D	D	3,775
Architectural, engineering, and related services	5413	5,159	D	85	311	D	D
Computer systems design and related services	5415	9,786	D	D	534	D	D
Scientific R&D services	5417	12,460	D	1,624	1,490	D	D
Other professional, scientific, and technical services	other 54	1,316	D	D	D	D	D
Management of companies and enterprises	55	67	D	12 S	2	D	D
Health care services	621-23	717	19	D	D	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1,679	635	214	D	D	D

TABLE 4. Funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
All industries	21-23, 31-33, 42, 44-81	10,383	30,484	15,434	27,571	84,180
Manufacturing industries	31-33	D	16,771	D	D	62,054
Food	311	59	204	D	D	D
Beverage and tobacco products	312	D	D	D	D	0
Textiles, apparel, and leather	313-16	40	119	41	D	D
Wood products	321	D	D	D	D	0
Paper, printing, and support activities	322, 323	78	327	112	333	D
Petroleum and coal products	324	0	D	D	D	D
Chemicals	325	D	D	D	D	D
Basic chemicals	3251	334	D	D	D	0
Resin, synthetic rubber, fibers, and filament	3252	44	D	D	D	D
Pharmaceuticals and medicines	3254	D	D	D	D	D
Other chemicals	other 325	D	D	D	D	D
Plastics and rubber products	326	D	D	D	D	D
Nonmetallic mineral products	327	7	180	11	D	0
Primary metals	331	34	75	D	59	D
Fabricated metal products	332	D	238	D	D	D
Machinery	333	D	1,360	D	D	D
Computer and electronic products	334	1,976	6,888	D	D	D
Computers and peripheral equipment	3341	D	D	D	D	0
Communications equipment	3342	D	D	D	D	D
Semiconductor and other electronic components	3344	714	D	D	D	D
Navigational, measuring, electromedical, and control instruments	3345	D	1,792	D	D	D
Other computer and electronic products	other 334	51	D	0	D	0
Electrical equipment, appliances, and components	335	173	D	D	D	0
Transportation equipment	336	156	D	D	D	D
Motor vehicles, trailers, and parts	3361-63	D	D	D	856	13,528
Aerospace products and parts	3364	D	D	D	D	D
Other transportation equipment	other 336	11	D	D	D	D
Furniture and related products	337	8	39	133	D	D
Miscellaneous manufacturing	339	D	D	976	D	D
Medical equipment and supplies	3391	D	D	831	D	D
Other miscellaneous manufacturing	other 339	147	D	146	D	0

TABLE 4. Funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
Nonmanufacturing industries	21-23, 42, 44-81	D	13,712	D	D	22,126
Mining, extraction, and support activities	21	24	131	D	D	D
Utilities	22	D	30	D	D	D
Construction	23	46	23	D	D	0
Wholesale trade	42	D	D	1,743	D	D
Professional and commercial equipment and supplies, including computers	4214	321	D	664	D	D
Electrical goods	4216	391	D	D	D	0
Drugs and druggists' sundries	4222	149	D	D	D	D
Other wholesale trade	other 42	D	320	304	D	0
Retail trade	44, 45	242	437	20	58	52
Transportation and warehousing	48, 49	D	D	0	D	D
Information	51	1,221	D	959	1,897	D
Publishing	511	1,125	D	D	D	D
Newspaper, periodical, book, and database	5111	D	297	D	D	D
Software	5112	D	D	D	D	D
Broadcasting and telecommunications	513	D	35	D	D	D
Telecommunications	5133	D	D	D	D	D
Other broadcasting and telecommunications	other 513	D	D	0	0	0
Other information	other 51	D	166	D	D	D
Finance, insurance, and real estate	52, 53	214	331	100	334	318
Professional, scientific, and technical services	54	D	3,531	D	D	D
Architectural, engineering, and related services	5413	D	D	D	D	D
Computer systems design and related services	5415	D	980	D	D	D
Scientific R&D services	5417	1,718	D	D	0	D
Other professional, scientific, and technical services	other 54	60	202	D	D	D
Management of companies and enterprises	55	D	D	0	0	0
Health care services	621-23	D	D	D	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	122	D	D	D	D

* = data less than \$500,000.

D = data withheld to avoid disclosing operations of individual companies.

S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 5. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by total R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	37,843	204,004	21,522	1,079	8,738	4,161
Manufacturing industries	31-33	16,362	123,384	9,239	503	4,024	1,906
Food	311	598	D	309	D	177	91
Beverage and tobacco products	312	38	173	21	1	6	3
Textiles, apparel, and leather	313-16	516	D	373	D	90	38
Wood products	321	217	D	187	D	20	9
Paper, printing, and support activities	322, 323	547	D	346	D	112	49
Petroleum and coal products	324	101	D	59	D	20	9
Chemicals	325	1,624	23,001	827	45	402	186
Basic chemicals	3251	206	2,061	84	D	33	15
Resin, synthetic rubber, fibers, and filament	3252	84	2,406	31	3	16	7
Pharmaceuticals and medicines	3254	299	D	63	D	89	40
Other chemicals	other 325	1,035	D	648	34	264	124
Plastics and rubber products	326	1,144	1,764	665	D	254	118
Nonmetallic mineral products	327	400	474	308	D	48	D
Primary metals	331	268	530	157	9	55	D
Fabricated metal products	332	1,707	1,374	1,252	D	336	140
Machinery	333	3,048	6,304	2,004	111	660	329
Computer and electronic products	334	2,434	39,001	746	55	838	414
Computers and peripheral equipment	3341	284	2,587	67	8	115	D
Communications equipment	3342	439	9,198	131	9	156	83
Semiconductor and other electronic components	3344	592	12,635	134	6	189	91
Navigational, measuring, electromedical, and control instruments	3345	973	14,014	332	28	357	177
Other computer and electronic products	other 334	146	566	82	4	21	D
Electrical equipment, appliances, and components	335	675	2,073	290	19	186	84
Transportation equipment	336	1,169	34,273	493	23	416	181
Motor vehicles, trailers, and parts	3361-63	751	D	289	D	277	127
Aerospace products and parts	3364	170	15,731	86	6	39	15
Other transportation equipment	other 336	248	D	117	D	100	39
Furniture and related products	337	424	D	322	D	72	30
Miscellaneous manufacturing	339	1,453	7,455	881	40	333	172
Medical equipment and supplies	3391	713	6,386	355	D	196	95
Other miscellaneous manufacturing	other 339	740	1,069	526	D	137	77

TABLE 5. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by total R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	21,481	80,620	12,283	576	4,713	2,255
Mining, extraction, and support activities	21	100	D	53	4	9	3
Utilities	22	136	D	108	D	8	5
Construction	23	1,001	333	888	24	12	6
Wholesale trade	42	6,088	25,092	3,972	210	1,593	767
Professional and commercial equipment and supplies, including computers	4214	898	D	422	D	231	121
Electrical goods	4216	745	D	603	D	59	39
Drugs and druggists' sundries	4222	190	D	76	D	47	17
Other wholesale trade	other 42	4,254	2,099	2,871	D	1,256	590
Retail trade	44, 45	1,886	1,488	1,308	D	214	89
Transportation and warehousing	48, 49	222	272	190	D	23	9
Information	51	2,272	D	625	D	937	418
Publishing	511	1,499	D	257	D	742	318
Newspaper, periodical, book, and database	5111	347	665	48	D	268	D
Software	5112	1,153	D	209	18	474	D
Broadcasting and telecommunications	513	137	1,663	14	D	5	4
Telecommunications	5133	122	1,625	11	1	1	D
Other broadcasting and telecommunications	other 513	14	38	3	D	4	D
Other information	other 51	636	D	355	17	190	96
Finance, insurance, and real estate	52, 53	667	1,455	560	D	44	21
Professional, scientific, and technical services	54	5,446	28,721	2,226	153	1,095	556
Architectural, engineering, and related services	5413	1,048	5,159	441	21	176	94
Computer systems design and related services	5415	2,079	9,786	760	39	570	254
Scientific R&D services	5417	1,387	12,460	207	19	340	202
Other professional, scientific, and technical services	other 54	933	1,316	818	74	9	6
Management of companies and enterprises	55	36	67	19	2	7	2
Health care services	621-23	1,506	717	1,286	D	106	57
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,120	1,679	1,048	D	665	321

TABLE 5. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by total R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	37,843	204,004	21,522	1,079	8,738	4,161
5-24	na	17,383	5,578	13,005	560	3,035	1,358
25-49	na	8,271	6,449	4,778	262	2,173	1,011
50-99	na	4,228	4,829	1,968	129	1,366	710
100-249	na	3,987	9,559	1,368	D	1,361	678
250-499	na	1,561	9,536	226	D	491	237
500-999	na	933	10,383	115	8	165	87
1,000-4,999	na	1,001	30,484	56	7	121	68
5,000-9,999	na	211	15,434	4	D	23	D
10,000-24,999	na	166	27,571	0	0	2	D
25,000 or more	na	100	84,180	1	D	0	0

TABLE 5. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by total R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	5,719	17,810	1,618	41,975	247	138,979
Manufacturing industries	31–33	2,204	6,966	744	20,225	150	93,784
Food	311	90	251	17	596	5	1,025
Beverage and tobacco products	312	4	15	7	154	0	0
Textiles, apparel, and leather	313–16	44	133	10	132	0	0
Wood products	321	5	11	5	D	0	0
Paper, printing, and support activities	322, 323	61	171	25	652	3	2,031
Petroleum and coal products	324	15	35	2	D	5	1,212
Chemicals	325	232	771	134	4,053	29	17,945
Basic chemicals	3251	47	D	38	1,301	4	D
Resin, synthetic rubber, fibers, and filament	3252	20	66	10	211	6	2,118
Pharmaceuticals and medicines	3254	80	288	50	1,492	17	14,141
Other chemicals	other 325	85	D	36	1,048	2	D
Plastics and rubber products	326	198	567	25	616	2	D
Nonmetallic mineral products	327	32	87	12	352	0	0
Primary metals	331	43	104	12	169	1	D
Fabricated metal products	332	97	299	21	579	1	D
Machinery	333	292	892	82	1,978	10	2,994
Computer and electronic products	334	589	2,013	210	5,942	51	30,576
Computers and peripheral equipment	3341	68	235	28	606	6	D
Communications equipment	3342	94	377	48	1,273	9	7,456
Semiconductor and other electronic components	3344	189	684	62	2,057	18	9,798
Navigational, measuring, electromedical, and control instruments	3345	201	612	66	1,845	16	11,351
Other computer and electronic products	other 334	36	106	5	162	2	D
Electrical equipment, appliances, and components	335	162	507	33	923	4	539
Transportation equipment	336	132	428	101	2,562	28	31,079
Motor vehicles, trailers, and parts	3361–63	84	267	89	2,167	13	14,423
Aerospace products and parts	3364	28	97	5	186	11	15,427
Other transportation equipment	other 336	20	63	7	210	4	1,229
Furniture and related products	337	23	59	7	174	0	0
Miscellaneous manufacturing	339	185	623	43	1,169	11	5,451
Medical equipment and supplies	3391	122	421	31	704	9	D
Other miscellaneous manufacturing	other 339	63	201	12	465	2	D

TABLE 5. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by total R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	3,514	10,844	873	21,750	97	45,195
Mining, extraction, and support activities	21	32	130	4	D	2	D
Utilities	22	17	60	4	85	0	0
Construction	23	98	190	4	113	0	0
Wholesale trade	42	391	1,180	100	3,274	32	19,662
Professional and commercial equipment and supplies, including computers	4214	201	450	31	956	13	8,154
Electrical goods	4216	54	228	23	960	6	D
Drugs and druggists' sundries	4222	41	194	15	619	11	8,753
Other wholesale trade	other 42	95	308	30	738	2	D
Retail trade	44, 45	351	784	11	409	1	D
Transportation and warehousing	48, 49	7	33	1	D	1	D
Information	51	550	1,907	134	3,687	26	13,844
Publishing	511	378	1,183	102	2,857	21	11,441
Newspaper, periodical, book, and database	5111	23	53	5	177	2	D
Software	5112	354	1,129	97	2,680	19	D
Broadcasting and telecommunications	513	104	458	12	D	2	D
Telecommunications	5133	99	447	10	D	2	D
Other broadcasting and telecommunications	other 513	5	11	2	D	0	0
Other information	other 51	69	266	20	D	3	D
Finance, insurance, and real estate	52, 53	33	199	29	914	2	D
Professional, scientific, and technical services	54	1,532	5,427	562	12,481	31	10,104
Architectural, engineering, and related services	5413	239	775	184	2,615	7	1,654
Computer systems design and related services	5415	638	2,074	102	2,496	9	4,922
Scientific R&D services	5417	567	2,323	261	7,045	12	2,871
Other professional, scientific, and technical services	other 54	88	255	15	325	3	656
Management of companies and enterprises	55	7	23	3	40	0	0
Health care services	621–23	107	191	6	134	1	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	390	721	16	452	1	D

TABLE 5. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by total R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	5,719	17,810	1,618	41,975	247	138,979
5–24	na	1,203	2,155	139	1,506	0	0
25–49	na	1,207	3,346	113	1,831	0	0
50–99	na	808	2,736	86	1,254	0	0
100–249	na	1,015	3,704	242	4,961	1	D
250–499	na	587	2,129	254	6,814	3	D
500–999	na	422	1,629	218	6,783	12	1,876
1,000–4,999	na	367	1,665	380	12,154	77	16,590
5,000–9,999	na	57	242	90	2,909	37	12,272
10,000–24,999	na	40	D	66	2,545	58	24,870
25,000 or more	na	11	D	29	1,217	59	82,914

D = data withheld to avoid disclosing operations of individual companies.

na = not applicable.

NOTES: Excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 6. Number of companies in manufacturing and nonmanufacturing industries that performed industrial R&D in the United States and funds for industrial R&D performance, by size of company: 2003

Company size	Companies performing R&D (number)			Funds for industrial R&D (\$ millions)		
	All industries	Manufacturing	Nonmanufacturing	All industries	Manufacturing	Nonmanufacturing
All companies	37,843	16,362	21,481	204,004	123,384	80,620
5-24	17,383	5,454	11,929	5,578 S	943 S	4,635
25-49	8,271	3,152	5,119	6,449	2,057	4,393
50-99	4,228	2,729	1,499	4,829	1,680	3,150
100-249	3,987	2,487	1,500	9,559	D	D
250-499	1,561	943	618	9,536	D	D
500-999	933	569	364	10,383	D	D
1,000-4,999	1,001	733	267	30,484	16,771	13,712
5,000-9,999	211	137	74	15,434	D	D
10,000-24,999	166	96	70	27,571	D	D
25,000 or more	100	60	40	84,180	62,054	22,126

D = data withheld to avoid disclosing operations of individual companies.

S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 7. Distribution of costs for industrial R&D in the United States, by industry and company size, by type of cost: 2003

(Percent)

Industry and company size	NAICS codes	Total R&D cost (millions of dollars)	Wages of R&D personnel	Employer's cost of fringe benefits for R&D personnel	Materials and supplies	R&D depreciation	Other costs
All industries	21–23, 31–33, 42, 44–81	204,004	45.0	8.8	11.2	5.0	30.0
Manufacturing industries	31–33	123,384	43.8	8.9	13.7	5.0	28.6
Food	311	D	41.3	12.2	8.9	4.5	33.1
Beverage and tobacco products	312	173	43.0	22.4	5.8	8.0	20.8
Textiles, apparel, and leather	313–16	D	45.9	8.4	18.3	3.0	24.4
Wood products	321	D	51.5 S	5.0 S	10.1 S	4.2 S	29.2 S
Paper, printing, and support activities	322, 323	D	46.4	3.0	13.7	3.9	33.0
Petroleum and coal products	324	D	40.4 S	21.1 S	10.5 S	2.0 S	26.0 S
Chemicals	325	23,001	38.7	10.0	10.8	6.9	33.6
Basic chemicals	3251	2,061	41.2	9.4	11.4	6.0	32.0
Resin, synthetic rubber, fibers, and filament	3252	2,406	47.6	6.0	9.2	9.5	27.8
Pharmaceuticals and medicines	3254	D	35.1	10.0	10.8	6.8	37.3
Other chemicals	other 325	D	52.4	14.7	12.3	5.5	15.1
Plastics and rubber products	326	1,764	50.9	9.5	18.6	3.7	17.3
Nonmetallic mineral products	327	474	39.2	12.0 S	12.5	4.3 S	32.0
Primary metals	331	530	71.7	5.1	8.2	4.2	10.9
Fabricated metal products	332	1,374	48.9	17.7	9.8	2.8	20.8
Machinery	333	6,304	43.6	6.7	19.7	5.9	24.1
Computer and electronic products	334	39,001	49.7	7.8	11.8	7.0	23.7
Computers and peripheral equipment	3341	2,587	55.3	6.7	9.2	7.6	21.2
Communications equipment	3342	9,198	51.6 S	8.0 S	7.9 S	6.9 S	25.5 S
Semiconductor and other electronic components	3344	12,635	48.1	5.4	11.7	11.0	23.7
Navigational, measuring, electromedical, and control instruments	3345	14,014	48.5	9.9	14.9	3.6	23.2
Other computer and electronic products	other 334	566	62.4	6.6 S	11.3 S	5.6 S	14.1
Electrical equipment, appliances, and components	335	2,073	48.6	10.5	12.9	3.3	24.7
Transportation equipment	336	34,273	43.2	10.2 S	18.7	2.5 S	25.4 S
Motor vehicles, trailers, and parts	3361–63	D	50.2	12.3 S	21.5	3.0 S	13.1 S
Aerospace products and parts	3364	15,731	37.2 S	8.4 S	15.4 S	1.5 S	37.5 S
Other transportation equipment	other 336	D	38.9	8.5	26.4	7.5	18.7
Furniture and related products	337	D	52.1 S	8.3 S	14.0	1.2	24.4
Miscellaneous manufacturing	339	7,455	26.3	4.7	7.8	1.3	59.8
Medical equipment and supplies	3391	6,386	21.7	3.7 S	7.5	1.2	65.8
Other miscellaneous manufacturing	other 339	1,069	57.3	11.8	9.8	1.9	19.2

TABLE 7. Distribution of costs for industrial R&D in the United States, by industry and company size, by type of cost: 2003

(Percent)

Industry and company size	NAICS codes	Total R&D cost (millions of dollars)	Wages of R&D personnel	Employer's cost of fringe benefits for R&D personnel	Materials and supplies	R&D depreciation	Other costs
Nonmanufacturing industries	21–23, 42, 44–81	80,620	47.0	8.6	6.8	5.1	32.6
Mining, extraction, and support activities	21	D	60.9	13.1 S	13.6	4.1	8.3
Utilities	22	D	30.0	12.6	17.6	1.9	38.0
Construction	23	333	48.6	7.4	28.2	1.0	14.9
Wholesale trade	42	25,092	35.5	5.9	4.8	4.9	48.9
Professional and commercial equipment and supplies, including computers	4214	D	48.7	7.2	6.1	6.7	31.4
Electrical goods	4216	D	46.8	4.7	5.4	4.9	38.2
Drugs and druggists' sundries	4222	D	16.8 S	4.4 S	3.0 S	3.4 S	72.4 S
Other wholesale trade	other 42	2,099	52.0	12.9	7.4	3.6	24.1
Retail trade	44, 45	1,488	59.2	5.9	4.6	6.2	24.1
Transportation and warehousing	48, 49	272	54.5	17.4	1.6	0.2	26.3
Information	51	D	62.1	11.4	3.3	4.8	18.5
Publishing	511	D	60.5	11.7	3.4	4.8	19.7
Newspaper, periodical, book, and database	5111	665	68.7	11.9	0.8	4.4	14.2
Software	5112	D	60.2	11.6	3.5	4.8	19.9
Broadcasting and telecommunications	513	1,663	52.5 S	20.1 S	5.8 S	11.5 S	10.1 S
Telecommunications	5133	1,625	52.5 S	20.2 S	5.8 S	11.5 S	10.1 S
Other broadcasting and telecommunications	other 513	38	53.0 S	17.6 S	4.5 S	10.8 S	14.1 S
Other information	other 51	D	78.5	4.5	1.3	0.9	14.9
Finance, insurance, and real estate	52, 53	1,455	73.4	8.5	6.0	2.6	9.6
Professional, scientific, and technical services	54	28,721	43.5	8.9	11.8	5.9	29.9
Architectural, engineering, and related services	5413	5,159	46.2	11.6	18.0	6.3	17.9
Computer systems design and related services	5415	9,786	51.7	8.5	5.4	5.7	28.7
Scientific R&D services	5417	12,460	35.9	8.3	15.4	6.0	34.4
Other professional, scientific, and technical services	other 54	1,316	45.9 S	9.9 S	7.2 S	2.8 S	34.2 S
Management of companies and enterprises	55	67	49.1 S	12.0 S	10.7 S	2.7 S	25.5 S
Health care services	621–23	717	44.3 S	11.2 S	4.8 S	2.2 S	37.6 S
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1,679	59.4	10.1	3.4	2.1 S	25.0

TABLE 7. Distribution of costs for industrial R&D in the United States, by industry and company size, by type of cost: 2003
(Percent)

Industry and company size	NAICS codes	Total R&D cost (millions of dollars)	Wages of R&D personnel	Employer's cost of fringe benefits for R&D personnel	Materials and supplies	R&D depreciation	Other costs
Company size (employees)							
All companies	na	204,004	45.0	8.8	11.2	5.0	30.0
5-24	na	5,578	50.0	7.0	14.8	7.6	20.6
25-49	na	6,449	41.9	8.7	10.6	4.9	33.9
50-99	na	4,829	43.7	8.4	11.6	5.2	31.0
100-249	na	9,559	45.5	8.8	12.3	6.3	27.1
250-499	na	9,536	47.3	8.8	10.1	5.8	28.1
500-999	na	10,383	47.5	8.3	10.4	4.8	29.0
1,000-4,999	na	30,484	47.7	9.5	10.6	5.9	26.3
5,000-9,999	na	15,434	49.5	8.7	11.5	5.7	24.7
10,000-24,999	na	27,571	43.5	8.0	9.7	3.8	35.1
25,000 or more	na	84,180	43.2	9.0	11.9	4.9	31.0

D = data withheld to avoid disclosing operations of individual companies.

na = not applicable.

S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). Data for R&D by type of expense are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies may not be represented by the statistics in this table. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 8. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by R&D area: 2003

(Millions of dollars)

Industry and company size	NAICS codes	All R&D		Biotechnology		Software development	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	37,843	204,004	2,196	14,232	10,019	27,132
Manufacturing industries	31-33	16,362	123,384	588	5,388	2,622	4,868
Food	311	598	D	31	67	32	D
Beverage and tobacco products	312	38	173	3	D	2	D
Textiles, apparel, and leather	313-16	516	D	1	D	6	D
Wood products	321	217	D	0	0	4	*
Paper, printing, and support activities	322, 323	547	D	4	D	249	225
Petroleum and coal products	324	101	D	1	D	1	D
Chemicals	325	1,624	23,001	291	4,742	163	219
Basic chemicals	3251	206	2,061	21	D	10	3
Resin, synthetic rubber, fibers, and filament	3252	84	2,406	1	D	0	0
Pharmaceuticals and medicines	3254	299	D	123	4,526	21	D
Other chemicals	other 325	1,035	D	145	D	133	D
Plastics and rubber products	326	1,144	1,764	3	D	16	D
Nonmetallic mineral products	327	400	474	2	D	14	D
Primary metals	331	268	530	2	D	31	D
Fabricated metal products	332	1,707	1,374	56	25	177	82
Machinery	333	3,048	6,304	29	23	615	279
Computer and electronic products	334	2,434	39,001	56	172	922	2,006
Computers and peripheral equipment	3341	284	2,587	0	0	169	328
Communications equipment	3342	439	9,198	5	D	166	730 S
Semiconductor and other electronic components	3344	592	12,635	20	52	113	305
Navigational, measuring, electromedical, and control instruments	3345	973	14,014	31	D	385	583
Other computer and electronic products	other 334	146	566	0	0	88	60
Electrical equipment, appliances, and components	335	675	2,073	12	6	166	139
Transportation equipment	336	1,169	34,273	2	D	37	1,620
Motor vehicles, trailers, and parts	3361-63	751	D	2	D	17	D
Aerospace products and parts	3364	170	15,731	0	0	11	D
Other transportation equipment	other 336	248	D	0	0	9	72
Furniture and related products	337	424	D	1	D	34	D
Miscellaneous manufacturing	339	1,453	7,455	95	292	151	238
Medical equipment and supplies	3391	713	6,386	71	271	98	52
Other miscellaneous manufacturing	other 339	740	1,069	24	21	53	186

TABLE 8. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by R&D area: 2003

(Millions of dollars)

Industry and company size	NAICS codes	All R&D		Biotechnology		Software development	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	21,481	80,620	1,609	8,843	7,397	22,264
Mining, extraction, and support activities	21	100	D	3	D	4	D
Utilities	22	136	D	1	D	5	7
Construction	23	1,001	333	14	*	279	12
Wholesale trade	42	6,088	25,092	461	3,134	1,154	4,328
Professional and commercial equipment and supplies, including computers	4214	898	D	145	D	579	2,976
Electrical goods	4216	745	D	8	D	341	1,119
Drugs and druggists' sundries	4222	190	D	30	2,767	3	16
Other wholesale trade	other 42	4,254	2,099	277	D	231	217
Retail trade	44, 45	1,886	1,488	1	D	388	345
Transportation and warehousing	48, 49	222	272	0	0	27	65
Information	51	2,272	D	4	28	1,742	9,216
Publishing	511	1,499	D	4	28	1,189	7,176
Newspaper, periodical, book, and database	5111	347	665	0	0	317	252
Software	5112	1,153	D	4	28	871	6,923
Broadcasting and telecommunications	513	137	1,663	0	0	109	491
Telecommunications	5133	122	1,625	0	0	102	484
Other broadcasting and telecommunications	other 513	14	38	0	0	7	7
Other information	other 51	636	D	0	0	445	1,550
Finance, insurance, and real estate	52, 53	667	1,455	1	D	327	856
Professional, scientific, and technical services	54	5,446	28,721	731	5,570	2,215	6,348
Architectural, engineering, and related services	5413	1,048	5,159	30	256	510	1,645
Computer systems design and related services	5415	2,079	9,786	1	D	1,337	3,659
Scientific R&D services	5417	1,387	12,460	439	5,111	203	454
Other professional, scientific, and technical services	other 54	933	1,316	262	D	166	590
Management of companies and enterprises	55	36	67	2	D	5	D
Health care services	621-23	1,506	717	383	66	275	22
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,120	1,679	7	D	976	985

TABLE 8. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by R&D area: 2003

(Millions of dollars)

Industry and company size	NAICS codes	All R&D		Biotechnology		Software development	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	37,843	204,004	2,196	14,232	10,019	27,132
5-24	na	17,383	5,578	826	389	5,390	2,611
25-49	na	8,271	6,449	694	935	1,791	1,290
50-99	na	4,228	4,829	234	819	1,204	1,292
100-249	na	3,987	9,559	214	1,471	762	2,229
250-499	na	1,561	9,536	93	1,876	436	2,228
500-999	na	933	10,383	43	1,167	170	1,905
1,000-4,999	na	1,001	30,484	58	3,491	173	4,985
5,000-9,999	na	211	15,434	11	347	25	1,412
10,000-24,999	na	166	27,571	14	755	40	3,285
25,000 or more	na	100	84,180	11	2,983	29	5,894

TABLE 8. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by R&D area: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Materials synthesis and processing		Other areas		Undistributed R&D	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	5,643	15,852	16,146	47,052	9,305	99,736
Manufacturing industries	31-33	3,634	12,170	8,930	34,014	3,485	66,944
Food	311	63	144	382	1,300	116	470
Beverage and tobacco products	312	18	D	13	116	5	18
Textiles, apparel, and leather	313-16	209	117	175	94	141	99
Wood products	321	36	D	64	D	120	97
Paper, printing, and support activities	322, 323	115	D	186	324	20	2,217
Petroleum and coal products	324	45	254	20	D	39	878
Chemicals	325	693	1,975	707	3,196	295	12,869
Basic chemicals	3251	116	D	85	761	31	523
Resin, synthetic rubber, fibers, and filament	3252	42	D	36	185	16	2,084
Pharmaceuticals and medicines	3254	48	D	104	1,492	66	9,750
Other chemicals	other 325	487	963	481	758	182	512
Plastics and rubber products	326	439	537	414	614	341	595
Nonmetallic mineral products	327	190	106	196	105	33	240
Primary metals	331	111	303	139	122	51	91
Fabricated metal products	332	296	160	1,129	758	289	349
Machinery	333	431	1,225	2,209	3,415	447	1,361
Computer and electronic products	334	442	5,640	1,318	10,739	491	20,443
Computers and peripheral equipment	3341	67	122	155	593	44	1,545
Communications equipment	3342	53	D	244	3,713 S	76	4,489
Semiconductor and other electronic components	3344	139	5,028	318	3,926	106	3,324
Navigational, measuring, electromedical, and control instruments	3345	166	D	499	2,249	251	10,850
Other computer and electronic products	other 334	17	12	103	259	13	235
Electrical equipment, appliances, and components	335	200	149	326	1,164	73	615
Transportation equipment	336	118	D	758	11,054	305	20,541
Motor vehicles, trailers, and parts	3361-63	91	D	459	7,203	211	8,785
Aerospace products and parts	3364	12	D	107	2,937	55	11,255
Other transportation equipment	other 336	16	D	192	915	39	502
Furniture and related products	337	36	33	197	102	180	136
Miscellaneous manufacturing	339	191	271	696	732	540	5,923
Medical equipment and supplies	3391	111	223	304	365	277	5,475
Other miscellaneous manufacturing	other 339	80	47	393	367	263	448

TABLE 8. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by R&D area: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Materials synthesis and processing		Other areas		Undistributed R&D	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	2,009	3,682	7,216	13,039	5,819	32,792
Mining, extraction, and support activities	21	9	D	57	333	39	315
Utilities	22	4	D	129	104	6	40
Construction	23	300	14	362	74	353	233
Wholesale trade	42	1,016	2,392	3,248	6,078	928	9,160
Professional and commercial equipment and supplies, including computers	4214	12	D	168	1,816	40	2,812
Electrical goods	4216	69	85	517	1,830	109	665
Drugs and druggists' sundries	4222	15	D	66	1,450	84	5,233
Other wholesale trade	other 42	920	D	2,498	982	695	450
Retail trade	44, 45	124	D	917	403	882	652
Transportation and warehousing	48, 49	1	D	8	D	187	196
Information	51	25	D	347	1,036	430	9,561
Publishing	511	22	D	21	D	274	8,221
Newspaper, periodical, book, and database	5111	0	0	6	364	24	49
Software	5112	22	D	15	D	249	8,172
Broadcasting and telecommunications	513	2	D	16	D	19	1,044
Telecommunications	5133	0	0	7	120	17	1,021
Other broadcasting and telecommunications	other 513	2	D	9	D	2	23
Other information	other 51	1	D	310	D	137	296
Finance, insurance, and real estate	52, 53	4	D	303	D	297	374
Professional, scientific, and technical services	54	378	897	1,254	4,616	1,326	11,290
Architectural, engineering, and related services	5413	90	30	311	1,163	238	2,065
Computer systems design and related services	5415	8	D	281	1,171	502	4,874
Scientific R&D services	5417	277	786	449	2,108	293	4,001
Other professional, scientific, and technical services	other 54	3	D	213	174	293	351
Management of companies and enterprises	55	2	D	28	D	2	21
Health care services	621-23	69	8	140	50	672	572
Other nonmanufacturing	56, 61, 624, 71, 72, 81	77	D	423	145	697	378

TABLE 8. Funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by R&D area: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Materials synthesis and processing		Other areas		Undistributed R&D	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	5,643	15,852	16,146	47,052	9,305	99,736
5-24	na	2,099	446	6,285	827	5,432	1,305
25-49	na	1,233	601	3,997	1,625	1,409	1,999
50-99	na	706	562	2,137	1,093	711	1,064
100-249	na	779	604	1,954	2,323	826	2,933
250-499	na	328	859	669	2,045	274	2,528
500-999	na	182	707	449	3,448	197	3,155
1,000-4,999	na	215	2,393	475	9,807	255	9,808
5,000-9,999	na	42	621	84	5,085	85	7,969
10,000-24,999	na	32	1,243	62	7,289	68	14,998
25,000 or more	na	26	7,816	35	13,510	48	53,976

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. Detail does not add to total because categories are not mutually exclusive. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 9. Number of companies that used nanotechnology to perform R&D, by industry and company size, by R&D area: 2003

Industry and company size	NAICS codes	Biotechnology	Software development	Materials and synthesis processing	Other areas
All industries	21-23, 31-33, 42, 44-81	135	339	441	804
Manufacturing industries	31-33	65	124	362	611
Food	311	7	1	9	31
Beverage and tobacco products	312	1	0	0	5
Textiles, apparel, and leather	313-16	0	0	18	24
Wood products	321	0	1	6	6
Paper, printing, and support activities	322, 323	1	4	4	13
Petroleum and coal products	324	0	0	9	2
Chemicals	325	25	3	78	62
Basic chemicals	3251	2	0	18	14
Resin, synthetic rubber, fibers, and filament	3252	0	0	9	5
Pharmaceuticals and medicines	3254	19	1	5	8
Other chemicals	other 325	4	2	46	35
Plastics and rubber products	326	3	2	38	43
Nonmetallic mineral products	327	0	1	11	17
Primary metals	331	2	4	11	9
Fabricated metal products	332	2	3	17	38
Machinery	333	2	10	33	85
Computer and electronic products	334	9	76	49	115
Computers and peripheral equipment	3341	0	16	6	16
Communications equipment	3342	1	19	8	19
Semiconductor and other electronic components	3344	1	3	17	27
Navigational, measuring, electromedical, and control instruments	3345	7	33	16	46
Other computer and electronic products	other 334	0	5	2	7
Electrical equipment, appliances, and components	335	1	4	21	42
Transportation equipment	336	0	3	19	49
Motor vehicles, trailers, and parts	3361-63	0	2	13	24
Aerospace products and parts	3364	0	0	2	12
Other transportation equipment	other 336	0	1	4	13
Furniture and related products	337	1	0	5	18
Miscellaneous manufacturing	339	11	12	34	52
Medical equipment and supplies	3391	9	8	21	23
Other miscellaneous manufacturing	other 339	2	4	13	29

TABLE 9. Number of companies that used nanotechnology to perform R&D, by industry and company size, by R&D area: 2003

Industry and company size	NAICS codes	Biotechnology	Software development	Materials and synthesis processing	Other areas
Nonmanufacturing industries	21-23, 42, 44-81	70	215	79	193
Mining, extraction, and support activities	21	1	0	2	4
Utilities	22	0	1	1	6
Construction	23	1	2	5	10
Wholesale trade	42	6	17	24	58
Professional and commercial equipment and supplies, including computers	4214	1	4	3	8
Electrical goods	4216	0	5	2	17
Drugs and druggists' sundries	4222	4	0	2	6
Other wholesale trade	other 42	1	8	17	27
Retail trade	44, 45	1	7	6	12
Transportation and warehousing	48, 49	0	0	0	3
Information	51	1	82	1	17
Publishing	511	1	69	1	9
Newspaper, periodical, book, and database	5111	0	2	0	0
Software	5112	1	67	1	9
Broadcasting and telecommunications	513	0	5	0	4
Telecommunications	5133	0	4	0	2
Other broadcasting and telecommunications	other 513	0	1	0	2
Other information	other 51	0	8	0	4
Finance, insurance, and real estate	52, 53	0	5	2	1
Professional, scientific, and technical services	54	51	92	29	71
Architectural, engineering, and related services	5413	3	10	3	18
Computer systems design and related services	5415	0	57	2	10
Scientific R&D services	5417	47	17	24	38
Other professional, scientific, and technical services	other 54	1	8	0	5
Management of companies and enterprises	55	0	0	2	2
Health care services	621-23	9	0	1	3
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0	9	6	6

TABLE 9. Number of companies that used nanotechnology to perform R&D, by industry and company size, by R&D area: 2003

Industry and company size	NAICS codes	Biotechnology	Software development	Materials and synthesis processing	Other areas
Company size (employees)					
All companies	na	135	339	441	804
5-24	na	13	34	37	71
25-49	na	14	44	30	71
50-99	na	16	59	62	112
100-249	na	37	80	92	170
250-499	na	19	46	71	122
500-999	na	12	26	60	95
1,000-4,999	na	15	37	63	122
5,000-9,999	na	1	2	11	21
10,000-24,999	na	6	8	9	15
25,000 or more	na	2	3	6	5

na = not applicable.

NOTES: Excludes data for federally funded research and development centers. The R&D represented in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 10. Funds for and number of companies that performed energy R&D in the United States, by selected industry and company size, by source of funds: 2003
(Millions of dollars)

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	96	2,004	31	157	86	1,847
Manufacturing	31–33	59	1,581	17	81	54	1,500
Petroleum and coal products	324	2	D	2	D	2	219
Chemicals	325	11	D	2	D	10	29
Machinery	333	7	D	1	D	6	214
Computer and electronic products	334	10	D	2	D	10	373
Electrical equipment, appliances, and components	335	6	D	2	D	5	16
Transportation equipment	336	9	639	4	27	9	612
All other manufacturing	–	14	45	4	8	12	37
Nonmanufacturing	21–23, 42, 44–81	37	423	14	76	32	347
Mining, extraction, and support activities	21	5	D	1	D	5	150
All other nonmanufacturing	–	32	D	13	D	27	197
Company size (employees)							
All companies	na	96	2,004	31	157	86	1,847
5–24	na	0	0	0	0	0	0
25–49	na	3	D	2	D	3	2
50–99	na	5	D	4	D	2	9
100–249	na	13	45	4	22	10	24
250–499	na	9	95	3	55	8	39
500–999	na	12	103	3	2	11	101
1,000–4,999	na	24	261	4	17	23	244
5,000–9,999	na	11	D	2	D	10	72
10,000–24,999	na	10	D	2	D	10	505
25,000 or more	na	9	888	7	38	9	851

– = all NAICS codes other than those specified.

D = data withheld to avoid disclosing operations of individual companies.

na = not applicable.

NOTES: All and federally funded industrial R&D exclude data for federally funded research and development centers. Detail does not add to total because categories are mutually exclusive. Energy R&D data are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies that performs energy R&D may not be represented by the statistics in this table. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 11. Funds for and number of companies that performed energy R&D in the United States, by primary energy source, by source of funds: 2003
(Millions of dollars)

Primary energy source	All R&D		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount
All energy	96	2,004	31	157	86	1,847
Fossil fuels	37	962	6	34	37	928
Nuclear	5	D	2	D	3	D
Total geothermal, solar, and conservation and utilization	17	D	7	D	15	D
All other energy	64	733	21	70	56	663

D = data withheld to avoid disclosing operations of individual companies.

NOTES: All and federally funded industrial R&D exclude data for federally funded research and development centers. Detail does not add to total because categories are not mutually exclusive. Energy R&D data are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies that performs energy R&D may not be represented by the statistics in this table. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 12. Company and other nonfederal funds for industrial R&D performance in the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
All industries	21–23, 31–33, 42, 44–81	161,594	182,844	185,118	177,467	183,305	3.3
Manufacturing industries	31–33	101,283	113,173	112,733	101,344	108,079	6.6
Food	311	1,132	1,145	1,818	2,034	1,987	-2.3
Beverage and tobacco products	312	D	417	152	170	173	1.8
Textiles, apparel, and leather	313–16	334	266	255	248	309	24.6
Wood products	321	70	105	181	132	138	4.5
Paper, printing, and support activities	322, 323	2,474	2,700	2,664	2,620	2,909	11.0
Petroleum and coal products	324	D	1,172	1,057	1,233	1,308	6.1
Chemicals	325	20,051	20,768	17,713	20,395	22,693	11.3
Basic chemicals	3251	2,648	2,050	1,835	1,710	1,991	16.4
Resin, synthetic rubber, fibers, and filament	3252	2,216	2,842	2,745	2,413	2,390	-1.0
Pharmaceuticals and medicines	3254	12,236	12,793	10,137	14,186	15,949	12.4
Other chemicals	other 325	2,951	3,084	2,996	2,087	2,364	13.3
Plastics and rubber products	326	1,785	1,675	2,245	1,508	1,729	14.7
Nonmetallic mineral products	327	595	845	978	420	470	11.9
Primary metals	331	457	598	479	461	518	12.4
Fabricated metal products	332	1,608	1,631	1,545	1,251	1,329	6.2
Machinery	333	5,658	6,539	6,337	6,366	6,224	-2.2
Computer and electronic products	334	31,357	44,526	44,744	33,411	32,495	-2.7
Computers and peripheral equipment	3341	4,126	5,162	3,165	3,015	2,561	-15.1
Communications equipment	3342	7,215	16,156	18,721	9,524	8,932	-6.2
Semiconductor and other electronic components	3344	10,624	12,787	14,210	11,871	12,607	6.2
Navigational, measuring, electromedical, and control instruments	3345	8,632	10,114	7,565	8,549	7,834	-8.4
Other computer and electronic products	other 334	760	307	1,083	452	560	23.9
Electrical equipment, appliances, and components	335	3,820	3,390	4,680	1,978	2,002	1.2
Transportation equipment	336	23,928	22,917	21,004	21,452	26,111	21.7
Motor vehicles, trailers, and parts	3361–63	17,987	18,306	16,089	15,199	16,874	11.0
Aerospace products and parts	3364	5,309	3,895	4,083	5,349	8,203	53.4
Other transportation equipment	other 336	632	716	832 S	905	1,034	14.3
Furniture and related products	337	248	284	301	251	275	9.6
Miscellaneous manufacturing	339	3,825	4,195	6,581	7,414	7,408	-0.1
Medical equipment and supplies	3391	3,251	3,741	5,903	6,179	6,370	3.1
Other miscellaneous manufacturing	other 339	574	453	678	1,235	1,038	-16.0

TABLE 12. Company and other nonfederal funds for industrial R&D performance in the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Nonmanufacturing industries	21–23, 42, 44–81	60,311	69,671	72,384	76,123	75,226	-1.2
Mining, extraction, and support activities	21	2,352	822	846	715	750	4.9
Utilities	22	126	136	114	117	128	9.4
Construction	23	690	222	320	164	254	54.9
Wholesale trade	42	NA	NA	NA	24,037	24,970	3.9
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	11,771	9,679	-17.8
Electrical goods	4216	NA	NA	NA	3,935	3,701	-5.9
Drugs and druggists' sundries	4222	NA	NA	NA	6,811	9,494	39.4
Other wholesale trade	other 42	NA	NA	NA	1,520	2,097	38.0
Retail trade	44, 45	NA	NA	NA	932	1,462	56.9
Transportation and warehousing	48, 49	460	277	1,776	339	272	-19.8
Information	51	14,892	16,290	17,259	17,764	19,811	11.5
Publishing	511	11,253	12,926	13,716	13,488	15,760	16.8
Newspaper, periodical, book, and database	5111	371	365	649	614	665	8.3
Software	5112	10,882	12,561	13,067	12,874	15,095	17.3
Broadcasting and telecommunications	513	1,393	1,025	1,270	1,637	1,663	1.6
Telecommunications	5133	D	D	1,101	1,608	1,625	1.1
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	38	na
Other information	other 51	2,246	2,339	2,273	2,639	2,388	-9.5
Finance, insurance, and real estate	52, 53	1,570	4,024	2,424	1,903	1,455	-23.5
Professional, scientific, and technical services	54	14,379	17,949	22,640	24,946	23,755	-4.8
Architectural, engineering, and related services	5413	2,402	2,232	2,365	2,822	3,261	15.6
Computer systems design and related services	5415	3,989	4,943	8,656	10,394	8,638	-16.9
Scientific R&D services	5417	7,413	9,715	10,893	10,735	10,574	-1.5
Other professional, scientific, and technical services	other 54	575	1,059	726	996	1,283	28.8
Management of companies and enterprises	55	72	49	381	148	67 S	-54.7
Health care services	621–23	631	477	1,120	4,163	681	-83.6
Other nonmanufacturing	56, 61, 624, 71, 72, 81	640	713	1,221	894	1,619	81.1

TABLE 12. Company and other nonfederal funds for industrial R&D performance in the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Company size (employees)							
All companies	na	161,594	182,844	185,118	177,467	183,305	3.3
5–24	na	6,393	5,940	4,175	3,471	4,824	39.0
25–49	na	4,382	4,786	3,548	3,586	5,540	54.5
50–99	na	6,623	6,745	7,654	5,701	4,271	-25.1
100–249	na	6,540	8,351	12,012	12,622	8,924	-29.3
250–499	na	7,407	6,819	8,143	7,370	8,869	20.3
500–999	na	6,441	8,580	9,936	9,394	9,624	2.4
1,000–4,999	na	23,944	29,860	26,140	27,640	29,396	6.4
5,000–9,999	na	14,145	15,143	15,787	16,369	14,333	-12.4
10,000–24,999	na	25,980	27,934	26,161	25,232	25,576	1.4
25,000 or more	na	59,740	68,686	71,561	66,083	71,949	8.9

D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the federal government. The funds are predominantly the company's own but also include funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D performed by other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 13. Company and other nonfederal funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
All industries	21-23, 31-33, 42, 44-81	183,305	4,824	5,540	4,271	8,924	8,869
Manufacturing industries	31-33	108,079	822	2,012	1,646	2,917	3,202
Food	311	1,987	D	D	44	D	46
Beverage and tobacco products	312	173	D	D	D	D	D
Textiles, apparel, and leather	313-16	309	D	D	13	32	27
Wood products	321	138	D	1	1	4	D
Paper, printing, and support activities	322, 323	2,909	6	14	7	D	29
Petroleum and coal products	324	1,308	D	5	D	8	D
Chemicals	325	22,693	71	82	252	461	387
Basic chemicals	3251	1,991	2	6	12	71	68
Resin, synthetic rubber, fibers, and filament	3252	2,390	2	4	5	7	58
Pharmaceuticals and medicines	3254	15,949	34	15	D	298	192
Other chemicals	other 325	2,364	33	56	D	85	70
Plastics and rubber products	326	1,729	122	35	23	D	82
Nonmetallic mineral products	327	470	11	4	14	14	67
Primary metals	331	518	6	13	11	D	15
Fabricated metal products	332	1,329	41	22	63	D	84
Machinery	333	6,224	44	D	D	D	290
Computer and electronic products	334	32,495	294	362	602	1,239	1,567
Computers and peripheral equipment	3341	2,561	D	D	78	111	316
Communications equipment	3342	8,932	D	D	125	257	481
Semiconductor and other electronic components	3344	12,607	105	D	187	436	351
Navigational, measuring, electromedical, and control instruments	3345	7,834	89	99	169	385	411
Other computer and electronic products	other 334	560	D	D	44	50	8
Electrical equipment, appliances, and components	335	2,002	117	D	91	97	181
Transportation equipment	336	26,111	34	1,031	22	118	133
Motor vehicles, trailers, and parts	3361-63	16,874	16	1,004	D	81	63
Aerospace products and parts	3364	8,203	11	11	2	D	52
Other transportation equipment	other 336	1,034	7	17	D	D	18
Furniture and related products	337	275	*	10	7	15	13
Miscellaneous manufacturing	339	7,408	D	127	116	D	269
Medical equipment and supplies	3391	6,370	D	82	71	D	183
Other miscellaneous manufacturing	other 339	1,038	6	45	45	D	85

TABLE 13. Company and other nonfederal funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
Nonmanufacturing industries	21-23, 42, 44-81	75,226	4,002	3,528	2,625	6,007	5,667
Mining, extraction, and support activities	21	750	78	D	D	D	D
Utilities	22	128	D	0	0	0	D
Construction	23	254	20	83	1	D	1
Wholesale trade	42	24,970	302	783	249	731	823
Professional and commercial equipment and supplies, including computers	4214	9,679	65	342	13	176	383
Electrical goods	4216	3,701	9	38	D	102	270
Drugs and druggists' sundries	4222	9,494	11	82	D	84	52
Other wholesale trade	other 42	2,097	218	321	D	370	118
Retail trade	44, 45	1,462	352	45	4	219	33
Transportation and warehousing	48, 49	272	17	6	D	0	2
Information	51	19,811	268	490	433	942	1,419
Publishing	511	15,760	205	434	361	675	D
Newspaper, periodical, book, and database	5111	665	0	78	0	36	D
Software	5112	15,095	205	356	361	639	D
Broadcasting and telecommunications	513	1,663	0	D	0	82	D
Telecommunications	5133	1,625	0	0	0	D	D
Other broadcasting and telecommunications	other 513	38	0	D	0	D	D
Other information	other 51	2,388	62	D	72	186	D
Finance, insurance, and real estate	52, 53	1,455	D	D	D	D	66
Professional, scientific, and technical services	54	23,755	2,297	1,723	1,887	3,942	3,213
Architectural, engineering, and related services	5413	3,261	1,442	52	93	240	D
Computer systems design and related services	5415	8,638	D	373	484	D	943
Scientific R&D services	5417	10,574	D	1,157	1,258	2,457	2,040
Other professional, scientific, and technical services	other 54	1,283	D	141	53	D	D
Management of companies and enterprises	55	67	D	12 S	2	D	D
Health care services	621-23	681	19	D	31	D	4
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1,619	635	214	16	D	97

TABLE 13. Company and other nonfederal funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
All industries	21-23, 31-33, 42, 44-81	9,624	29,396	14,333	25,576	71,949
Manufacturing industries	31-33	4,385	16,400	10,285	16,508	49,902
Food	311	59	204	115	661	D
Beverage and tobacco products	312	D	D	D	D	0
Textiles, apparel, and leather	313-16	40	119	41	D	D
Wood products	321	D	D	39	D	0
Paper, printing, and support activities	322, 323	78	327	112	333	D
Petroleum and coal products	324	0	D	D	D	D
Chemicals	325	799	3,896	2,996	5,792	7,957
Basic chemicals	3251	334	922	D	D	0
Resin, synthetic rubber, fibers, and filament	3252	44	D	D	D	D
Pharmaceuticals and medicines	3254	314	1,942	D	D	D
Other chemicals	other 325	107	D	D	D	D
Plastics and rubber products	326	335	367	D	D	D
Nonmetallic mineral products	327	7	179	11	165	0
Primary metals	331	34	75	68	59	D
Fabricated metal products	332	116	238	115	D	D
Machinery	333	D	1,359	1,247	D	1,223
Computer and electronic products	334	1,884	6,788	3,097	4,758	11,902
Computers and peripheral equipment	3341	225	639	D	D	0
Communications equipment	3342	425	1,013	D	D	D
Semiconductor and other electronic components	3344	714	3,177	D	D	D
Navigational, measuring, electromedical, and control instruments	3345	469	1,714	954	1,677	1,868
Other computer and electronic products	other 334	51	245	0	D	0
Electrical equipment, appliances, and components	335	173	494	D	578	0
Transportation equipment	336	145	1,027	802	1,615	21,185
Motor vehicles, trailers, and parts	3361-63	110	D	D	856	D
Aerospace products and parts	3364	24	151	81	D	7,589
Other transportation equipment	other 336	11	D	D	D	D
Furniture and related products	337	8	39	133	D	D
Miscellaneous manufacturing	339	255	1,186	976	1,191	D
Medical equipment and supplies	3391	107	950	831	D	D
Other miscellaneous manufacturing	other 339	147	236	146	D	0

TABLE 13. Company and other nonfederal funds for industrial R&D performance in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
Nonmanufacturing industries	21-23, 42, 44-81	5,239	12,996	4,048	9,068	22,047
Mining, extraction, and support activities	21	24	131	D	D	D
Utilities	22	D	30	29	D	D
Construction	23	46	23	D	D	0
Wholesale trade	42	1,011	4,907	1,743	4,462	9,958
Professional and commercial equipment and supplies, including computers	4214	321	D	664	D	D
Electrical goods	4216	391	831	D	D	0
Drugs and druggists' sundries	4222	149	D	D	D	D
Other wholesale trade	other 42	150	320	304	D	0
Retail trade	44, 45	242	437	20	58	52
Transportation and warehousing	48, 49	D	3	0	D	224
Information	51	1,221	3,967	959	1,897	8,214
Publishing	511	1,125	3,766	D	D	D
Newspaper, periodical, book, and database	5111	D	297	D	D	D
Software	5112	D	3,469	D	D	D
Broadcasting and telecommunications	513	D	35	D	D	D
Telecommunications	5133	D	D	D	D	D
Other broadcasting and telecommunications	other 513	D	D	0	0	0
Other information	other 51	D	166	D	D	D
Finance, insurance, and real estate	52, 53	214	331	100	334	318
Professional, scientific, and technical services	54	2,281	2,911	D	D	2,980
Architectural, engineering, and related services	5413	116	995	D	D	D
Computer systems design and related services	5415	702	980	D	D	D
Scientific R&D services	5417	1,403	734	D	0	D
Other professional, scientific, and technical services	other 54	60	202	D	D	D
Management of companies and enterprises	55	D	D	0	0	0
Health care services	621-23	54	D	D	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	122	225	D	D	D

* = data less than \$500,000.

D = data withheld to avoid disclosing operations of individual companies.

S = more than 50 percent of the cell value is imputed.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the federal government. The funds are predominantly the company's own but also include funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded are company-funded R&D not performed within the company (e.g., R&D performed by other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 14. Company and other nonfederal funds for and number of companies that performed R&D in the United States, by industry and size of company, by nonfederally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	36,958	183,305	21,351	1,063	8,568	4,047
Manufacturing industries	31-33	16,157	108,079	9,220	491	3,885	1,835
Food	311	598	1,987	309	25	177	91
Beverage and tobacco products	312	38	173	21	1	6	3
Textiles, apparel, and leather	313-16	516	309	373	9	90	38
Wood products	321	207	138	177	D	20	9
Paper, printing, and support activities	322, 323	547	2,909	346	24	112	49
Petroleum and coal products	324	101	1,308	59	D	20	9
Chemicals	325	1,621	22,693	827	44	401	186
Basic chemicals	3251	205	1,991	84	4	33	15
Resin, synthetic rubber, fibers, and filament	3252	84	2,390	31	3	16	7
Pharmaceuticals and medicines	3254	299	15,949	63	4	89	40
Other chemicals	other 325	1,033	2,364	648	33	263	124
Plastics and rubber products	326	1,143	1,729	665	D	253	117
Nonmetallic mineral products	327	378	470	286	D	48	D
Primary metals	331	268	518	157	9	56	D
Fabricated metal products	332	1,707	1,329	1,253	D	336	140
Machinery	333	3,047	6,224	2,004	111	660	328
Computer and electronic products	334	2,405	32,495	766	56	815	400
Computers and peripheral equipment	3341	283	2,561	79	8	103	D
Communications equipment	3342	436	8,932	135	9	154	83
Semiconductor and other electronic components	3344	580	12,607	134	6	176	85
Navigational, measuring, electromedical, and control instruments	3345	961	7,834	337	29	356	175
Other computer and electronic products	other 334	146	560	82	4	26	D
Electrical equipment, appliances, and components	335	674	2,002	290	19	200	88
Transportation equipment	336	1,031	26,111	467	17	305	130
Motor vehicles, trailers, and parts	3361-63	615	16,874	257	7	173	79
Aerospace products and parts	3364	169	8,203	92	6	33	13
Other transportation equipment	other 336	248	1,034	118	5	99	38
Furniture and related products	337	424	275	322	12	72	30
Miscellaneous manufacturing	339	1,453	7,408	898	38	316	164
Medical equipment and supplies	3391	713	6,370	373	D	178	87
Other miscellaneous manufacturing	other 339	740	1,038	526	D	137	77

TABLE 14. Company and other nonfederal funds for and number of companies that performed R&D in the United States, by industry and size of company, by nonfederally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	20,801	75,226	12,131	572	4,683	2,212
Mining, extraction, and support activities	21	99	750	53	4	8	3
Utilities	22	136	128	108	1	8	4
Construction	23	960	254	888	24	12	6
Wholesale trade	42	6,088	24,970	3,972	210	1,593	767
Professional and commercial equipment and supplies, including computers	4214	898	9,679	422	26	231	121
Electrical goods	4216	745	3,701	603	D	59	39
Drugs and druggists' sundries	4222	190	9,494	76	2	47	17
Other wholesale trade	other 42	4,254	2,097	2,871	D	1,256	590
Retail trade	44, 45	1,619	1,462	1,049	D	214	89
Transportation and warehousing	48, 49	222	272	190	16	23	D
Information	51	2,262	19,811	648	42	905	391
Publishing	511	1,489	15,760	280	24	710	290
Newspaper, periodical, book, and database	5111	339	665	40	1	268	D
Software	5112	1,150	15,095	240	24	442	D
Broadcasting and telecommunications	513	137	1,663	14	1	5	4
Telecommunications	5133	122	1,625	11	1	1	D
Other broadcasting and telecommunications	other 513	14	38	3	*	4	D
Other information	other 51	636	2,388	355	17	190	96
Finance, insurance, and real estate	52, 53	667	1,455	560	D	44	D
Professional, scientific, and technical services	54	5,088	23,755	2,273	155	1,137	573
Architectural, engineering, and related services	5413	884	3,261	455	22	196	104
Computer systems design and related services	5415	2,071	8,638	783	42	601	263
Scientific R&D services	5417	1,203	10,574	215	17	332	201
Other professional, scientific, and technical services	other 54	930	1,283	819	74	8	5
Management of companies and enterprises	55	36	67 S	19	2	7	2
Health care services	621-23	1,505	681	1,325	43	66	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,119	1,619	1,048	D	665	321

TABLE 14. Company and other nonfederal funds for and number of companies that performed R&D in the United States, by industry and size of company, by nonfederally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	36,958	183,305	21,351	1,063	8,568	4,047
5-24	na	16,683	4,824 S	12,776	544	2,834	1,248
25-49	na	8,215	5,540	4,827	265	2,230	1,035
50-99	na	4,144	4,271	1,933	123	1,372	714
100-249	na	3,971	8,924	1,415	D	1,324	645
250-499	na	1,545	8,869	224	D	496	240
500-999	na	925	9,624	116	8	165	86
1,000-4,999	na	999	29,396	56	7	121	67
5,000-9,999	na	210	14,333	4	D	23	D
10,000-24,999	na	166	25,576	0	0	2	D
25,000 or more	na	100	71,949	1	D	0	0

TABLE 14. Company and other nonfederal funds for and number of companies that performed R&D in the United States, by industry and size of company, by nonfederally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	5,284	16,177	1,519	39,544	237	122,474
Manufacturing industries	31–33	2,171	6,845	738	20,015	143	78,893
Food	311	90	251	17	595	5	1,025
Beverage and tobacco products	312	4	15	7	154	0	0
Textiles, apparel, and leather	313–16	44	133	10	130	0	0
Wood products	321	5	11	5	D	0	0
Paper, printing, and support activities	322, 323	61	171	25	652	3	2,013
Petroleum and coal products	324	15	35	2	D	5	1,208
Chemicals	325	231	757	133	3,991	29	17,715
Basic chemicals	3251	47	D	37	1,247	4	D
Resin, synthetic rubber, fibers, and filament	3252	20	66	10	211	6	2,102
Pharmaceuticals and medicines	3254	80	282	50	1,486	17	14,137
Other chemicals	other 325	84	D	36	1,047	2	D
Plastics and rubber products	326	198	533	25	616	2	D
Nonmetallic mineral products	327	32	86	12	351	0	0
Primary metals	331	43	112	11	152	1	D
Fabricated metal products	332	97	295	20	538	1	D
Machinery	333	293	900	80	1,937	10	2,948
Computer and electronic products	334	567	1,954	209	5,886	48	24,199
Computers and peripheral equipment	3341	68	235	28	590	6	D
Communications equipment	3342	91	371	48	1,252	8	7,217
Semiconductor and other electronic components	3344	189	675	62	2,048	18	9,793
Navigational, measuring, electromedical, and control instruments	3345	188	573	65	1,835	14	5,221
Other computer and electronic products	other 334	30	100	5	160	2	D
Electrical equipment, appliances, and components	335	148	483	33	885	4	527
Transportation equipment	336	132	416	103	2,642	24	22,906
Motor vehicles, trailers, and parts	3361–63	84	266	88	2,153	13	14,370
Aerospace products and parts	3364	28	87	8	279	7	7,819
Other transportation equipment	other 336	20	63	7	210	4	718
Furniture and related products	337	23	59	7	174	0	0
Miscellaneous manufacturing	339	187	634	41	1,147	11	5,425
Medical equipment and supplies	3391	124	432	29	683	9	D
Other miscellaneous manufacturing	other 339	63	201	12	464	2	D

TABLE 14. Company and other nonfederal funds for and number of companies that performed R&D in the United States, by industry and size of company, by nonfederally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	3,113	9,332	780	19,528	94	43,581
Mining, extraction, and support activities	21	32	130	4	D	2	D
Utilities	22	17	60	4	61	0	0
Construction	23	56	111	4	113	0	0
Wholesale trade	42	391	1,133	100	3,226	32	19,635
Professional and commercial equipment and supplies, including computers	4214	201	450	31	955	13	8,128
Electrical goods	4216	54	228	23	959	6	D
Drugs and druggists' sundries	4222	41	148	15	575	11	8,752
Other wholesale trade	other 42	95	307	30	738	2	D
Retail trade	44, 45	344	771	11	409	1	D
Transportation and warehousing	48, 49	7	32	1	D	1	D
Information	51	550	1,892	133	3,667	26	13,819
Publishing	511	378	1,168	101	2,837	21	11,441
Newspaper, periodical, book, and database	5111	23	53	5	177	2	D
Software	5112	354	1,115	96	2,660	19	D
Broadcasting and telecommunications	513	104	458	12	D	2	D
Telecommunications	5133	99	447	10	D	2	D
Other broadcasting and telecommunications	other 513	5	11	2	D	0	0
Other information	other 51	69	266	20	D	3	D
Finance, insurance, and real estate	52, 53	33	199	29	914	2	D
Professional, scientific, and technical services	54	1,177	4,048	474	10,437	28	8,542
Architectural, engineering, and related services	5413	64	247	164	2,058	4	830
Computer systems design and related services	5415	582	1,738	96	2,411	9	4,185
Scientific R&D services	5417	444	1,809	201	5,675	12	2,871
Other professional, scientific, and technical services	other 54	87	254	13	293	3	656
Management of companies and enterprises	55	7	23	3	40 S	0	0
Health care services	621–23	108	198	5	121	1	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	392	735	13	379	1	D

TABLE 14. Company and other nonfederal funds for and number of companies that performed R&D in the United States, by industry and size of company, by nonfederally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	5,284	16,177	1,519	39,544	237	122,474
5–24	na	934	1,528	139	1,503	0	0
25–49	na	1,058	2,558	100	1,681	0	0
50–99	na	781	2,541	58	892	0	0
100–249	na	1,014	3,647	217	4,415	1	D
250–499	na	589	2,108	233	6,165	3	D
500–999	na	423	1,641	210	6,270	10	1,620
1,000–4,999	na	372	1,677	375	11,841	75	15,804
5,000–9,999	na	61	274	89	2,955	33	11,093
10,000–24,999	na	40	D	68	2,628	56	22,793
25,000 or more	na	11	D	29	1,193	59	70,707

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; S = more than 50 percent of the cell value is imputed.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the federal government. The funds are predominantly the company's own but also include funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded are company-funded R&D not performed within the company (e.g., R&D performed by other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 15. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size: 2001–2003

(Millions of dollars)

Industry and company size	NAICS codes	2001		2002		2003		% change, 2002–03
		Companies	Amount	Companies	Amount	Companies	Amount	
All industries	21–23, 31–33, 42, 44–81	2,939	8,723	3,097	7,846	6,102	10,236	30.5
Manufacturing industries	31–33	1,363	3,957	1,676	4,428	2,461	5,212	17.7
Food	311	53	59	61	105	75	178	69.5
Beverage and tobacco products	312	2	D	2	D	4	7	na
Textiles, apparel, and leather	313–16	6	2	42	9	70	11	22.2
Wood products	321	2		16	12	15	7 S	-41.7
Paper, printing, and support activities	322, 323	2	D	26	248	51	D	na
Petroleum and coal products	324	3	107	3	D	24	61 S	na
Chemicals	325	325	2,065	188	2,485	278	2,838	14.2
Basic chemicals	3251	124	D	26	30	27	31	3.3
Resin, synthetic rubber, fibers, and filament	3252	4	D	14	38	26	24	-36.8
Pharmaceuticals and medicines	3254	162	1,899	79	2,368	79	2,716	14.7
Other chemicals	other 325	35	99	70	49	147	67	36.7
Plastics and rubber products	326	23	22	142	28	226	20	-28.6
Nonmetallic mineral products	327	10	2	16	2	34	D	na
Primary metals	331	19	4	44	4	68	6	50.0
Fabricated metal products	332	46	10	145	12	222	28	133.3
Machinery	333	51	115	146	134	455	213	59.0
Computer and electronic products	334	530	565	433	411	462	409	-0.5
Computers and peripheral equipment	3341	119	118	58	83	48	76	-8.4
Communications equipment	3342	87	80	136	19	52	72	278.9
Semiconductor and other electronic components	3344	108	86	82	41	111	123	200.0
Navigational, measuring, electromedical, and control instruments	3345	210	278	140	264	227	130	-50.8
Other computer and electronic products	other 334	5	2	17	5	24	8	60.0
Electrical equipment, appliances, and components	335	81	60 S	125	35	148	39	11.4
Transportation equipment	336	62	708	114	799	125	1,135	42.1
Motor vehicles, trailers, and parts	3361–63	10	657	68	617	70	946	53.3
Aerospace products and parts	3364	50	D	18	178	30	182	2.2
Other transportation equipment	other 336	2	D	29	5	26	6	20.0
Furniture and related products	337	4	2	11	3	27	3	0.0
Miscellaneous manufacturing	339	145	54	162	79	177	103	30.4
Medical equipment and supplies	3391	110	50	96	70	99	72	2.9
Other miscellaneous manufacturing	other 339	34	4	66	8	78	31	287.5

TABLE 15. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size: 2001–2003

(Millions of dollars)

Industry and company size	NAICS codes	2001		2002		2003		% change, 2002–03
		Companies	Amount	Companies	Amount	Companies	Amount	
Nonmanufacturing industries	21–23, 42, 44–81	1,576	4,766	1,422	3,418	3,641	5,024	47.0
Mining, extraction, and support activities	21	4	11	5	71	8	114	60.6
Utilities	22	26	93	24	110	22	88	-20.0
Construction	23	63	D	3	D	77	8	na
Wholesale trade	42	NA	NA	NA	NA	1,037	1,586	na
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	NA	298	94	na
Electrical goods	4216	NA	NA	NA	NA	447	124	na
Drugs and druggists' sundries	4222	NA	NA	NA	NA	52	1,301	na
Other wholesale trade	other 42	NA	NA	NA	NA	240	66	na
Retail trade	44, 45	NA	NA	NA	NA	334	68	na
Transportation and warehousing	48, 49	3	D	4	32	191	10	-68.8
Information	51	237	577	275	363	539	813	124.0
Publishing	511	153	187	146	113	224	410	262.8
Newspaper, periodical, book, and database	5111	4	10	37	11	46	16	45.5
Software	5112	149	177	109	102	177	395	287.3
Broadcasting and telecommunications	513	4	171	64	122 S	14	278 S	127.9
Telecommunications	5133	4	171	63	D	13	D	na
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	1	D	na
Other information	other 51	81	218	65	129	301	124	-3.9
Finance, insurance, and real estate	52, 53	27	241	15	400	41	233	-41.8
Professional, scientific, and technical services	54	655	1,676	611	1,113	1,016	1,828	64.2
Architectural, engineering, and related services	5413	92	86	131	69	112	46	-33.3
Computer systems design and related services	5415	114	233	143	86	392	153	77.9
Scientific R&D services	5417	441	1,310	328	890	385	1,533	72.2
Other professional, scientific, and technical services	other 54	8	46	10	68	128	96	41.2
Management of companies and enterprises	55	18	22	2	D	7	5	na
Health care services	621–23	6	8	6	11	43	10	-9.1
Other nonmanufacturing	56, 61, 624, 71, 72, 81	107	245	302	17	325	263	1,447.1

TABLE 15. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size: 2001–2003

(Millions of dollars)

Industry and company size	NAICS codes	2001		2002		2003		% change, 2002–03
		Companies	Amount	Companies	Amount	Companies	Amount	
Company size (employees)								
All companies	na	2,939	8,723	3,097	7,846	6,102	10,236	30.5
5–24	na	735	311	675	133	2,682	355	166.9
25–49	na	562	265	469	130	1,078	417	220.8
50–99	na	551	489	719	326	630	344	5.5
100–249	na	532	1,080	540	555	793	450	-18.9
250–499	na	131	260	234	229	327	702	206.6
500–999	na	158	248	139	262	205	870	232.1
1,000–4,999	na	150	1,104	165	1,212	229	1,364	12.5
5,000–9,999	na	47	1,021	59	832	58	1,141	37.1
10,000–24,999	na	34	1,702	50	1,539	51	1,314	-14.6
25,000 or more	na	39	2,242	47	2,626	49	3,280	24.9

D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 2001–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. The R&D in this table is the industrial R&D performed outside company facilities funded from all sources except the federal government. The funds predominantly are the company's own but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded is company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 16. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size, by type of organization: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Companies	Company-funded R&D performed by outside organizations	For-profit companies		Universities and colleges	
				Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	6,102	10,236	495	6,786	161	349
Manufacturing industries	31–33	2,461	5,212	257	3,922	93	269
Food	311	75	178	10	D	6	D
Beverage and tobacco products	312	4	7	3	D	2	D
Textiles, apparel, and leather	313–16	70	11	6	D	1	D
Wood products	321	15	7 S	2	D	1	D
Paper, printing, and support activities	322, 323	51	D	7	D	3	D
Petroleum and coal products	324	24	61 S	4	53	5	7
Chemicals	325	278	2,838	52	2,154	33	194
Basic chemicals	3251	27	31	9	15	8	1
Resin, synthetic rubber, fibers, and filament	3252	26	24	7	14	7	9
Pharmaceuticals and medicines	3254	79	2,716	25	2,114	15	D
Other chemicals	other 325	147	67	11	10	3	D
Plastics and rubber products	326	226	20	7	D	2	D
Nonmetallic mineral products	327	34	D	2	D	1	D
Primary metals	331	68	6	1	D	1	D
Fabricated metal products	332	222	28	11	D	2	D
Machinery	333	455	213	20	127	6	D
Computer and electronic products	334	462	409	64	239	11	D
Computers and peripheral equipment	3341	48	76	8	42	0	0
Communications equipment	3342	52	72	15	D	0	0
Semiconductor and other electronic components	3344	111	123	17	D	5	D
Navigational, measuring, electromedical, and control instruments	3345	227	130	19	D	4	D
Other computer and electronic products	other 334	24	8	5	D	2	D
Electrical equipment, appliances, and components	335	148	39	14	D	1	D
Transportation equipment	336	125	1,135	33	1,103	8	D
Motor vehicles, trailers, and parts	3361–63	70	946	18	935	5	1
Aerospace products and parts	3364	30	182	11	D	2	D
Other transportation equipment	other 336	26	6	4	D	1	D
Furniture and related products	337	27	3	1	D	0	0
Miscellaneous manufacturing	339	177	103	20	63	10	D
Medical equipment and supplies	3391	99	72	16	D	9	D
Other miscellaneous manufacturing	other 339	78	31	4	D	1	D

TABLE 16. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size, by type of organization: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Companies	Company-funded R&D performed by outside organizations	For-profit companies		Universities and colleges	
				Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	3,641	5,024	238	2,864	68	80
Mining, extraction, and support activities	21	8	114	7	D	2	D
Utilities	22	22	88	3	D	2	D
Construction	23	77	8	1	D	0	0
Wholesale trade	42	1,037	1,586	23	1,057	11	D
Professional and commercial equipment and supplies, including computers	4214	298	94	7	D	3	D
Electrical goods	4216	447	124	5	D	1	D
Drugs and druggists' sundries	4222	52	1,301	7	922	4	D
Other wholesale trade	other 42	240	66	4	D	3	D
Retail trade	44, 45	334	68	6	D	1	D
Transportation and warehousing	48, 49	191	10	2	D	1	D
Information	51	539	813	45	D	4	D
Publishing	511	224	410	33	D	2	D
Newspaper, periodical, book, and database	5111	46	16	3	10	0	0
Software	5112	177	395	30	D	2	D
Broadcasting and telecommunications	513	14	278 S	3	D	1	D
Telecommunications	5133	13	D	2	D	1	D
Other broadcasting and telecommunications	other 513	1	D	1	D	0	0
Other information	other 51	301	124	9	D	1	D
Finance, insurance, and real estate	52, 53	41	233	13	227	0	0
Professional, scientific, and technical services	54	1,016	1,828	130	958	45	44
Architectural, engineering, and related services	5413	112	46	13	D	3	D
Computer systems design and related services	5415	392	153	26	49	0	0
Scientific R&D services	5417	385	1,533	86	823	40	D
Other professional, scientific, and technical services	other 54	128	96	5	D	2	D
Management of companies and enterprises	55	7	5	0	0	0	0
Health care services	621–23	43	10	3	D	2	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	325	263	5	6	0	0

TABLE 16. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size, by type of organization: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Companies	Company-funded R&D performed by outside organizations	For-profit companies		Universities and colleges	
				Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	6,102	10,236	495	6,786	161	349
5-24	na	2,682	355	2	D	0	0
25-49	na	1,078	417	26	D	10	4
50-99	na	630	344	36	D	11	4
100-249	na	793	450	65	D	22	13
250-499	na	327	702	84	D	14	15
500-999	na	205	870	65	660	15	6
1,000-4,999	na	229	1,364	112	1,095	38	44
5,000-9,999	na	58	1,141	30	999	15	57
10,000-24,999	na	51	1,314	37	897	14	77
25,000 or more	na	49	3,280	38	2,391	22	128

TABLE 16. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size, by type of organization: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Undistributed R&D	
		Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	43	93	5,581	3,007
Manufacturing industries	31-33	22	41	2,189	980
Food	311	2	D	64	8
Beverage and tobacco products	312	1	D	1	*
Textiles, apparel, and leather	313-16	0	0	64	10
Wood products	321	0	0	13	1
Paper, printing, and support activities	322, 323	2	D	43	144
Petroleum and coal products	324	0	0	19	1
Chemicals	325	8	38	221	453
Basic chemicals	3251	0	0	16	14
Resin, synthetic rubber, fibers, and filament	3252	0	0	16	1
Pharmaceuticals and medicines	3254	6	D	54	386
Other chemicals	other 325	2	D	136	52
Plastics and rubber products	326	0	0	219	18
Nonmetallic mineral products	327	0	0	32	D
Primary metals	331	1	D	66	5
Fabricated metal products	332	0	0	210	14
Machinery	333	2	D	433	82
Computer and electronic products	334	2	D	395	152
Computers and peripheral equipment	3341	0	0	40	33
Communications equipment	3342	1	D	36	9
Semiconductor and other electronic components	3344	1	D	93	22
Navigational, measuring, electromedical, and control instruments	3345	0	0	207	84
Other computer and electronic products	other 334	0	0	19	3
Electrical equipment, appliances, and components	335	0	0	134	25
Transportation equipment	336	2	D	92	29
Motor vehicles, trailers, and parts	3361-63	0	0	52	10
Aerospace products and parts	3364	2	D	19	17
Other transportation equipment	other 336	0	0	22	2
Furniture and related products	337	0	0	26	D
Miscellaneous manufacturing	339	2	D	157	34
Medical equipment and supplies	3391	1	D	83	26
Other miscellaneous manufacturing	other 339	1	D	74	9

TABLE 16. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size, by type of organization: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Undistributed R&D	
		Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	21	53	3,392	2,027
Mining, extraction, and support activities	21	0	0	1	*
Utilities	22	4	34	18	50
Construction	23	0	0	76	D
Wholesale trade	42	4	D	1,009	498
Professional and commercial equipment and supplies, including computers	4214	1	D	290	40
Electrical goods	4216	0	0	441	64
Drugs and druggists' sundries	4222	2	D	44	362
Other wholesale trade	other 42	1	D	234	32
Retail trade	44, 45	1	D	328	35
Transportation and warehousing	48, 49	1	D	189	2
Information	51	1	D	494	347
Publishing	511	1	D	191	53
Newspaper, periodical, book, and database	5111	0	0	43	5
Software	5112	1	D	147	48
Broadcasting and telecommunications	513	0	0	11	275
Telecommunications	5133	0	0	11	275
Other broadcasting and telecommunications	other 513	0	0	0	0
Other information	other 51	0	0	292	19
Finance, insurance, and real estate	52, 53	0	0	28	6
Professional, scientific, and technical services	54	10	8	881	819
Architectural, engineering, and related services	5413	1	D	99	14
Computer systems design and related services	5415	0	0	366	104
Scientific R&D services	5417	8	D	295	667
Other professional, scientific, and technical services	other 54	1	D	122	34
Management of companies and enterprises	55	0	0	7	5
Health care services	621-23	0	0	40	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0	0	320	257

TABLE 16. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of company facilities by outside organizations in the United States, by industry and company size, by type of organization: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Undistributed R&D	
		Companies	Amount	Companies	Amount
Company size (employees)					
All companies	na	43	93	5,581	3,007
5-24	na	1	D	2,680	351
25-49	na	2	D	1,051	344
50-99	na	2	D	593	198
100-249	na	2	D	727	264
250-499	na	2	D	241	324
500-999	na	5	6	136	199
1,000-4,999	na	9	6	107	219
5,000-9,999	na	5	8	25	77
10,000-24,999	na	8	43	10	296
25,000 or more	na	7	24	11	737

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; S = more than 50 percent of the cell value is imputed.

NOTES: Detail for number of companies may not add to total because a company may fund R&D performed by more than one type of outside organization. The R&D in this table is the industrial R&D performed outside company facilities funded from all sources except the federal government. The funds predominantly are the company's own but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded is company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). Data for company-funded R&D performed by other organizations by type of performer are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies may not be represented by the statistics in this table. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 17. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999		2000		2001	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	1,262	16,904	1,719	17,698	2,408	18,209
Manufacturing industries	31–33	748	12,493	573	12,487	594	11,338
Food	311	9	87	16	95 S	21	210
Beverage and tobacco products	312	1	D	1	D	0	0
Textiles, apparel, and leather	313–16	7	D	15	D	8	26
Wood products	321	1	D	0	0	2	D
Paper, printing, and support activities	322, 323	11	D	9	D	8	D
Petroleum and coal products	324	3	D	3	9	2	D
Chemicals	325	105	3,243	94	3,578	60	2,328
Basic chemicals	3251	15	D	40	256	15	152
Resin, synthetic rubber, fibers, and filament	3252	7	D	4	D	6	D
Pharmaceuticals and medicines	3254	64	2,832	20	3,030	19	1,720
Other chemicals	other 325	18	95	30	D	20	D
Plastics and rubber products	326	42	172	23	168	37	181
Nonmetallic mineral products	327	5	40	14	40	8	15
Primary metals	331	5	7	3	D	15	12
Fabricated metal products	332	42	75	32	65	20	61
Machinery	333	70	707	86	736	66	527
Computer and electronic products	334	178	2,041	179	1,940	220	2,902
Computers and peripheral equipment	3341	12	289	25	D	16	478 S
Communications equipment	3342	23	D	34	612	56	973
Semiconductor and other electronic components	3344	98	302	34	327	86	852
Navigational, measuring, electromedical, and control instruments	3345	42	1,112	85	679	59	586
Other computer and electronic products	other 334	2	D	1	D	3	12
Electrical equipment, appliances, and components	335	33	433	20	455	23	418 S
Transportation equipment	336	90	3,933	27	3,640	22	2,832
Motor vehicles, trailers, and parts	3361–63	64	D	21	D	15	D
Aerospace products and parts	3364	6	D	3	D	4	138
Other transportation equipment	other 336	20	17	3	D	3	D
Furniture and related products	337	2	D	5	D	1	D
Miscellaneous manufacturing	339	47	963	47	942	83	1,226
Medical equipment and supplies	3391	38	D	26	D	67	1,150
Other miscellaneous manufacturing	other 339	8	D	21	D	16	76

TABLE 17. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999		2000		2001	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	513	4,411	1,146	5,211	1,814	6,871
Mining, extraction, and support activities	21	52	48	6	43	7	37
Utilities	22	0	0	0	0	0	0
Construction	23	1	D	1	D	2	D
Wholesale trade	42	NA	NA	NA	NA	NA	NA
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	NA	NA	NA
Electrical goods	4216	NA	NA	NA	NA	NA	NA
Drugs and druggists' sundries	4222	NA	NA	NA	NA	NA	NA
Other wholesale trade	other 42	NA	NA	NA	NA	NA	NA
Retail trade	44, 45	NA	NA	NA	NA	NA	NA
Transportation and warehousing	48, 49	0	0	0	0	0	0
Information	51	108	1,379	135	1,564	345	1,672
Publishing	511	101	637	118	940	336	983
Newspaper, periodical, book, and database	5111	0	0	2	D	5	8
Software	5112	101	637	116	D	331	975
Broadcasting and telecommunications	513	1	D	1	D	1	D
Telecommunications	5133	1	D	1	D	1	D
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	NA	NA
Other information	other 51	6	D	16	D	8	D
Finance, insurance, and real estate	52, 53	3	D	4	D	6	24
Professional, scientific, and technical services	54	196	523	236	904	943	881
Architectural, engineering, and related services	5413	47	D	54	371	193	78
Computer systems design and related services	5415	67	146	101	D	149	302
Scientific R&D services	5417	81	287	80	292	592	488
Other professional, scientific, and technical services	other 54	1	D	1	D	9	12
Management of companies and enterprises	55	2	D	5	D	2	D
Health care services	621–23	2	D	1	D	2	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	55	14	7	75 S	60	43

TABLE 17. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999		2000		2001	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	1,262	16,904	1,719	17,698	2,408	18,209
5–24	na	46	1	484	352	1,050	96
25–49	na	51	14	86	37	269	21
50–99	na	231	117	188	455	301	228
100–249	na	264	140	246	421	149	223
250–499	na	144	243	132	162	93	207
500–999	na	156	860	188	532	134	647
1,000–4,999	na	204	2,099	228	2,238	251	2,104
5,000–9,999	na	81	1,188	74	1,352	74	2,073
10,000–24,999	na	49	3,104	49	3,626	44	3,329
25,000 or more	na	35	9,138	43	8,523	44	9,280

TABLE 17. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	2002		2003		% change in amount, 2002–03
		Companies	Amount	Companies	Amount	
All industries	21–23, 31–33, 42, 44–81	1,405	25,164	1,713	29,171	15.9
Manufacturing industries	31–33	829	17,389	908	17,773	2.2
Food	311	53	300	23	278	-7.3
Beverage and tobacco products	312	1	D	1	D	na
Textiles, apparel, and leather	313–16	6	25	11	31	24.0
Wood products	321	4	D	3	7	na
Paper, printing, and support activities	322, 323	15	544	21	694	27.6
Petroleum and coal products	324	3	16	13	20	25.0
Chemicals	325	116	3,989	120	4,494	12.7
Basic chemicals	3251	24	249	24	230	-7.6
Resin, synthetic rubber, fibers, and filament	3252	20	366	12	385	5.2
Pharmaceuticals and medicines	3254	39	3,268	41	3,753	14.8
Other chemicals	other 325	33	107	43	126	17.8
Plastics and rubber products	326	28	218	42	234	7.3
Nonmetallic mineral products	327	16	32	8	27	-15.6
Primary metals	331	19	23	9	19	-17.4
Fabricated metal products	332	44	371	84	311	-16.2
Machinery	333	111	788	158	772	-2.0
Computer and electronic products	334	260	4,059	239	3,197	-21.2
Computers and peripheral equipment	3341	31	383 S	27	172	-55.1
Communications equipment	3342	42	1,265	46	1,253	-0.9
Semiconductor and other electronic components	3344	75	1,647	66	1,006	-38.9
Navigational, measuring, electromedical, and control instruments	3345	102	756	94	758	0.3
Other computer and electronic products	other 334	10	7	5	9	28.6
Electrical equipment, appliances, and components	335	33	279	56	297	6.5
Transportation equipment	336	49	5,160	46	5,314	3.0
Motor vehicles, trailers, and parts	3361–63	33	4,598	33	4,680	1.8
Aerospace products and parts	3364	8	552	8	624	13.0
Other transportation equipment	other 336	8	10	5	9	-10.0
Furniture and related products	337	7	*	8	D	na
Miscellaneous manufacturing	339	65	1,578	66	2,077	31.6
Medical equipment and supplies	3391	48	1,472	35	1,964	33.4
Other miscellaneous manufacturing	other 339	16	106	31	113	6.6

TABLE 17. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	2002		2003		% change in amount, 2002–03
		Companies	Amount	Companies	Amount	
Nonmanufacturing industries	21–23, 42, 44–81	575	7,775	805	11,398	46.6
Mining, extraction, and support activities	21	5	48	6	46	-4.2
Utilities	22	2	D	1	D	na
Construction	23	1	D	2	D	na
Wholesale trade	42	NA	NA	159	7,553	na
Professional and commercial equipment and supplies, including computers	4214	NA	NA	57	4,007	na
Electrical goods	4216	NA	NA	21	173	na
Drugs and druggists' sundries	4222	NA	NA	16	2,976	na
Other wholesale trade	other 42	NA	NA	66	397	na
Retail trade	44, 45	NA	NA	106	299	na
Transportation and warehousing	48, 49	0	0	1	D	na
Information	51	165	1,806	193	2,075	14.9
Publishing	511	146	D	154	1,361	na
Newspaper, periodical, book, and database	5111	6	D	7	24	na
Software	5112	140	1,058	147	1,337	26.4
Broadcasting and telecommunications	513	1	D	4	D	na
Telecommunications	5133	1	D	4	D	na
Other broadcasting and telecommunications	other 513	NA	NA	0	0	na
Other information	other 51	18	D	35	D	na
Finance, insurance, and real estate	52, 53	13	113	9	75	-33.6
Professional, scientific, and technical services	54	270	964	283	1,247	29.4
Architectural, engineering, and related services	5413	14	D	38	D	na
Computer systems design and related services	5415	144	600	107	592	-1.3
Scientific R&D services	5417	110	297	133	449	51.2
Other professional, scientific, and technical services	other 54	3	D	5	D	na
Management of companies and enterprises	55	2	D	2	D	na
Health care services	621–23	1	D	17	3	na
Other nonmanufacturing	56, 61, 624, 71, 72, 81	7	65	26	76	16.9

TABLE 17. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of the United States, by industry and company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	2002		2003		% change in amount, 2002–03
		Companies	Amount	Companies	Amount	
Company size (employees)						
All companies	na	1,405	25,164	1,713	29,171	15.9
5–24	na	156	35	213	39	11.4
25–49	na	120	60	215	120	100.0
50–99	na	203	267	204	210	-21.3
100–249	na	152	262	276	404	54.2
250–499	na	143	289	171	395	36.7
500–999	na	152	484	186	754	55.8
1,000–4,999	na	292	2,955	268	3,331	12.7
5,000–9,999	na	71	2,652	68	1,366	-48.5
10,000–24,999	na	59	4,168	63	4,031	-3.3
25,000 or more	na	56	13,992	49	18,519	32.4

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na= not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. The R&D in this table is the industrial R&D performed outside the 50 U.S. states and D.C. funded from all sources except the federal government. The funds predominantly are the company's own but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded from this table is company-funded R&D performed within the 50 U.S. states or D.C. (e.g., R&D performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 18. Company and other nonfederal funds for and number of companies that funded industrial R&D performed outside of the United States, by majority-owned foreign affiliates and other organizations, by location of R&D performance: 2003

(Millions of current U.S. dollars)

Location of R&D performance	Companies	Amount
All locations	1,042	24,077
Canada	202	1,787
Germany	180	3,415
France	149	1,860
Japan	117	837
United Kingdom	270	2,813
Puerto Rico	21	32
Other locations outside of the 50 United States and D.C.	388	10,330
Undistributed ^a	458	3,004

^a Includes R&D reported on Form RD-1 that was not allocated to specific locations outside of the 50 United States and D.C. Also includes total R&D performed in locations outside of the 50 United States and D.C. reported on Form RD-1A, because Form RD-1A does not collect data by location.

NOTES: Detail does not add to total because categories are not mutually exclusive. The R&D in this table is the industrial R&D performed outside the 50 U.S. states and D.C. by a company's foreign subsidiaries, foreign affiliates, or other foreign organizations funded from all sources except the federal government. The company must own more than 50% of the voting stock or equivalent interest in the subsidiary, affiliate, or other type of organization. The funds predominantly are the company's own but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded is company-funded R&D performed within the 50 U.S. states or D.C. (e.g., R&D performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 19. Company and other nonfederal funds for industrial R&D performed in the United States in collaboration with other organizations, by industry and company size, by type of organization: 2003
(Millions of dollars)

Industry and company size	NAICS codes	All company-funded R&D		Total company-funded collaborative R&D		For-profit companies		Federal laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	36,958	183,305	281	8,727	238	8,587	17	42
Manufacturing industries	31-33	16,157	108,079	134	5,963	110	5,886	13	40
Food	311	598	1,987	5	110	4	D	0	0
Beverage and tobacco products	312	38	173	1	D	1	D	0	0
Textiles, apparel, and leather	313-16	516	309	2	D	1	D	0	0
Wood products	321	207	138	1	D	1	D	0	0
Paper, printing, and support activities	322, 323	547	2,909	4	16	3	D	0	0
Petroleum and coal products	324	101	1,308	4	29	3	D	0	0
Chemicals	325	1,621	22,693	26	114	18	93	4	D
Basic chemicals	3251	205	1,991	5	7	3	D	1	D
Resin, synthetic rubber, fibers, and filament	3252	84	2,390	6	26	4	D	0	0
Pharmaceuticals and medicines	3254	299	15,949	8	67	7	60	3	D
Other chemicals	other 325	1,033	2,364	7	14	4	12	0	0
Plastics and rubber products	326	1,143	1,729	4	61	4	61	0	0
Nonmetallic mineral products	327	378	470	2	D	1	D	0	0
Primary metals	331	268	518	3	12	3	D	0	0
Fabricated metal products	332	1,707	1,329	8	98	7	D	0	0
Machinery	333	3,047	6,224	11	126	9	D	2	D
Computer and electronic products	334	2,405	32,495	27	1,440	25	1,421	2	D
Computers and peripheral equipment	3341	283	2,561	3	D	3	D	0	0
Communications equipment	3342	436	8,932	5	D	5	D	0	0
Semiconductor and other electronic components	3344	580	12,607	11	365	9	D	1	D
Navigational, measuring, electromedical, and control instruments	3345	961	7,834	7	329	7	D	1	D
Other computer and electronic products	other 334	146	560	1	D	1	D	0	0
Electrical equipment, appliances, and components	335	674	2,002	7	86	4	D	2	D
Transportation equipment	336	1,031	26,111	17	3,783	15	3,774	3	8
Motor vehicles, trailers, and parts	3361-63	615	16,874	10	D	9	D	1	D
Aerospace products and parts	3364	169	8,203	5	D	5	D	1	D
Other transportation equipment	other 336	248	1,034	2	D	1	D	1	D
Furniture and related products	337	424	275	1	D	1	D	0	0
Miscellaneous manufacturing	339	1,453	7,408	11	40	10	37	0	0
Medical equipment and supplies	3391	713	6,370	10	D	9	D	0	0
Other miscellaneous manufacturing	other 339	740	1,038	1	D	1	D	0	0

TABLE 19. Company and other nonfederal funds for industrial R&D performed in the United States in collaboration with other organizations, by industry and company size, by type of organization: 2003
(Millions of dollars)

Industry and company size	NAICS codes	All company-funded R&D		Total company-funded collaborative R&D		For-profit companies		Federal laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	20,801	75,226	147	2,764	128	2,701	4	2
Mining, extraction, and support activities	21	99	750	2	D	1	D	0	0
Utilities	22	136	128	4	D	4	8	1	D
Construction	23	960	254	0	0	0	0	0	0
Wholesale trade	42	6,088	24,970	17	1,019	14	1,014	0	0
Professional and commercial equipment and supplies, including computers	4214	898	9,679	4	D	4	D	0	0
Electrical goods	4216	745	3,701	3	D	1	D	0	0
Drugs and druggists' sundries	4222	190	9,494	4	73	4	D	0	0
Other wholesale trade	other 42	4,254	2,097	6	26	5	D	0	0
Retail trade	44, 45	1,619	1,462	1	D	1	D	0	0
Transportation and warehousing	48, 49	222	272	0	0	0	0	0	0
Information	51	2,262	19,811	16	D	14	D	0	0
Publishing	511	1,489	15,760	13	422	11	D	0	0
Newspaper, periodical, book, and database	5111	339	665	0	0	0	0	0	0
Software	5112	1,150	15,095	13	422	11	D	0	0
Broadcasting and telecommunications	513	137	1,663	2	D	2	D	0	0
Telecommunications	5133	122	1,625	1	D	1	D	0	0
Other broadcasting and telecommunications	other 513	14	38	1	D	1	D	0	0
Other information	other 51	636	2,388	1	D	1	D	0	0
Finance, insurance, and real estate	52, 53	667	1,455	3	D	3	D	0	0
Professional, scientific, and technical services	54	5,088	23,755	98	1,074	85	1,055	3	D
Architectural, engineering, and related services	5413	884	3,261	9	D	8	D	0	0
Computer systems design and related services	5415	2,071	8,638	16	136	13	D	0	0
Scientific R&D services	5417	1,203	10,574	71	895	62	877	3	D
Other professional, scientific, and technical services	other 54	930	1,283	2	D	2	D	0	0
Management of companies and enterprises	55	36	67 S	1	D	1	D	0	0
Health care services	621–23	1,505	681	1	D	1	D	0	0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,119	1,619	4	7	4	7	0	0

TABLE 19. Company and other nonfederal funds for industrial R&D performed in the United States in collaboration with other organizations, by industry and company size, by type of organization: 2003
(Millions of dollars)

Industry and company size	NAICS codes	All company-funded R&D		Total company-funded collaborative R&D		For-profit companies		Federal laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)									
All companies	na	36,958	183,305	281	8,727	238	8,587	17	42
5-24	na	16,683	4,824	6	107	6	107	0	0
25-49	na	8,215	5,540	17	69	15	66	1	D
50-99	na	4,144	4,271	34	131	27	130	0	0
100-249	na	3,971	8,924	50	503	46	484	2	D
250-499	na	1,545	8,869	29	439	22	420	3	D
500-999	na	925	9,624	29	232	24	223	0	0
1,000-4,999	na	999	29,396	58	1,210	46	1,201	5	2
5,000-9,999	na	210	14,333	17	1,062	16	1,048	1	D
10,000-24,999	na	166	25,576	24	545	20	540	2	D
25,000 or more	na	100	71,949	17	4,429	16	4,369	3	23

TABLE 19. Company and other nonfederal funds for industrial R&D performed in the United States in collaboration with other organizations, by industry and company size, by type of organization: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Universities or colleges		Nonprofit organizations other than universities and colleges	
		Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	70	53	22	39
Manufacturing industries	31-33	39	25	11	5
Food	311	3	D	0	0
Beverage and tobacco products	312	0	0	0	0
Textiles, apparel, and leather	313-16	1	D	0	0
Wood products	321	0	0	0	0
Paper, printing, and support activities	322, 323	1	D	0	0
Petroleum and coal products	324	4	D	1	D
Chemicals	325	12	D	3	D
Basic chemicals	3251	5	D	2	D
Resin, synthetic rubber, fibers, and filament	3252	2	D	0	0
Pharmaceuticals and medicines	3254	1	D	1	D
Other chemicals	other 325	4	2	0	0
Plastics and rubber products	326	0	0	0	0
Nonmetallic mineral products	327	1	D	0	0
Primary metals	331	1	D	0	0
Fabricated metal products	332	1	D	0	0
Machinery	333	5	1	1	D
Computer and electronic products	334	4	D	1	D
Computers and peripheral equipment	3341	0	0	0	0
Communications equipment	3342	0	0	0	0
Semiconductor and other electronic components	3344	2	D	0	0
Navigational, measuring, electromedical, and control instruments	3345	2	D	1	D
Other computer and electronic products	other 334	0	0	0	0
Electrical equipment, appliances, and components	335	0	0	2	D
Transportation equipment	336	3	D	1	D
Motor vehicles, trailers, and parts	3361-63	2	D	0	0
Aerospace products and parts	3364	0	0	0	0
Other transportation equipment	other 336	1	D	1	D
Furniture and related products	337	0	0	0	0
Miscellaneous manufacturing	339	3	D	2	D
Medical equipment and supplies	3391	3	D	2	D
Other miscellaneous manufacturing	other 339	0	0	0	0

TABLE 19. Company and other nonfederal funds for industrial R&D performed in the United States in collaboration with other organizations, by industry and company size, by type of organization: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Universities or colleges		Nonprofit organizations other than universities and colleges	
		Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	31	27	11	34
Mining, extraction, and support activities	21	2	D	0	0
Utilities	22	1	D	4	18
Construction	23	0	0	0	0
Wholesale trade	42	4	D	2	D
Professional and commercial equipment and supplies, including computers	4214	0	0	1	D
Electrical goods	4216	2	D	0	0
Drugs and druggists' sundries	4222	1	D	1	D
Other wholesale trade	other 42	1	D	0	0
Retail trade	44, 45	1	D	1	D
Transportation and warehousing	48, 49	0	0	0	0
Information	51	2	D	1	D
Publishing	511	1	D	1	D
Newspaper, periodical, book, and database	5111	0	0	0	0
Software	5112	1	D	1	D
Broadcasting and telecommunications	513	0	0	0	0
Telecommunications	5133	0	0	0	0
Other broadcasting and telecommunications	other 513	0	0	0	0
Other information	other 51	1	D	0	0
Finance, insurance, and real estate	52, 53	0	0	0	0
Professional, scientific, and technical services	54	20	D	3	D
Architectural, engineering, and related services	5413	2	D	0	0
Computer systems design and related services	5415	3	D	0	0
Scientific R&D services	5417	15	D	3	D
Other professional, scientific, and technical services	other 54	0	0	0	0
Management of companies and enterprises	55	0	0	0	0
Health care services	621–23	1	D	0	0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0	0	0	0

TABLE 19. Company and other nonfederal funds for industrial R&D performed in the United States in collaboration with other organizations, by industry and company size, by type of organization: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Universities or colleges		Nonprofit organizations other than universities and colleges	
		Companies	Amount	Companies	Amount
Company size (employees)					
All companies	na	70	53	22	39
5-24	na	0	0	0	0
25-49	na	6	3	1	D
50-99	na	9	2	0	0
100-249	na	7	6	3	D
250-499	na	5	D	3	D
500-999	na	5	D	1	D
1,000-4,999	na	16	5	5	1
5,000-9,999	na	5	11	2	D
10,000-24,999	na	9	3	2	D
25,000 or more	na	8	17	5	20

D = data withheld to avoid disclosing operations of individual companies.

na = not applicable.

S = more than 50 percent of the cell value is imputed.

NOTES: Detail for companies does not add to total because categories are not mutually exclusive. The R&D in this table is the industrial R&D performed within company facilities in collaboration with another organization funded from all sources except the federal government. The funds predominantly are the company's own but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). Data for company-funded R&D performed in collaboration with other organizations by type of partner are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies may not be represented by the statistics in this table. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 20. Federal funds for industrial R&D performance in the United States, by industry and by company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
All industries	21–23, 31–33, 42, 44–81	22,535	19,118	16,899	16,401	20,699	26.2
Manufacturing industries	31–33	17,055	13,328	11,484	10,745	15,305	42.4
Food	311	0	D	0	D	D	na
Beverage and tobacco products	312	0	0	0	0	0	na
Textiles, apparel, and leather	313–16	0	D	D	D	D	na
Wood products	321	0	0	0	D	D	na
Paper, printing, and support activities	322, 323	D	D	D	D	D	na
Petroleum and coal products	324	D	D	D	D	D	na
Chemicals	325	194	150	180	246	307	24.8
Basic chemicals	3251	98	31	42	72	70	-2.8
Resin, synthetic rubber, fibers, and filament	3252	D	11	D	13	16	23.1
Pharmaceuticals and medicines	3254	D	D	0	D	D	na
Other chemicals	other 325	D	D	D	D	D	na
Plastics and rubber products	326	0	D	D	D	35	na
Nonmetallic mineral products	327	D	1	11	D	4	na
Primary metals	331	12	26 S	6	12	12	0.0
Fabricated metal products	332	46	41	54	104	45	-56.7
Machinery	333	399 S	41	67	62	80	29.0
Computer and electronic products	334	5,993	5,544	5,848	5,470	6,506	18.9
Computers and peripheral equipment	3341	D	0	D	25	27 S	8.0
Communications equipment	3342	206	432	298	215	266	23.7
Semiconductor and other electronic components	3344	77	107	148	48	28	-41.7
Navigational, measuring, electromedical, and control instruments	3345	5,705	5,002	5,382	5,180	6,180	19.3
Other computer and electronic products	other 334	D	3	D	1	6	500.0
Electrical equipment, appliances, and components	335	D	D	301 S	61	71	16.4
Transportation equipment	336	10,037	7,168	4,961	4,692	8,162	74.0
Motor vehicles, trailers, and parts	3361–63	D	D	D	D	D	na
Aerospace products and parts	3364	9,117	6,424	3,785	4,306	7,528	74.8
Other transportation equipment	other 336	D	D	D	D	D	na
Furniture and related products	337	0	0	0	7	D	na
Miscellaneous manufacturing	339	26	12	25	44	47	6.8
Medical equipment and supplies	3391	D	D	D	D	17	na
Other miscellaneous manufacturing	other 339	D	D	D	D	31	na

TABLE 20. Federal funds for industrial R&D performance in the United States, by industry and by company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Nonmanufacturing industries	21–23, 42, 44–81	5,479	5,790	5,415	5,656	5,394	-4.6
Mining, extraction, and support activities	21	D	1	D	D	D	na
Utilities	22	17	D	19	D	D	na
Construction	23	2	D	1	*	79	na
Wholesale trade	42	NA	NA	NA	D	122	na
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	D	D	na
Electrical goods	4216	NA	NA	NA	D	D	na
Drugs and druggists' sundries	4222	NA	NA	NA	D	D	na
Other wholesale trade	other 42	NA	NA	NA	1	2	100.0
Retail trade	44, 45	NA	NA	NA	0	26	na
Transportation and warehousing	48, 49	0	D	72	D	*	na
Information	51	497	540 S	D	106	D	na
Publishing	511	49	78	44	53	D	na
Newspaper, periodical, book, and database	5111	0	0	0	0	*	na
Software	5112	49	78	44	53	D	na
Broadcasting and telecommunications	513	D	382 S	D	D	0	na
Telecommunications	5133	D	D	D	D	0	na
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	0	na
Other information	other 51	D	81	D	D	D	na
Finance, insurance, and real estate	52, 53	D	0	D	0	0	na
Professional, scientific, and technical services	54	4,615	4,628	5,065	5,412	4,966	-8.2
Architectural, engineering, and related services	5413	1,177	1,149	1,021	1,337	1,898	42.0
Computer systems design and related services	5415	D	226	498	1,590	1,148	-27.8
Scientific R&D services	5417	3,057	3,177	3,352	2,299	1,886	-18.0
Other professional, scientific, and technical services	other 54	D	77	194	186	34	-81.7
Management of companies and enterprises	55	D	0	0	0	0	na
Health care services	621–23	10	59	29	D	36	na
Other nonmanufacturing	56, 61, 624, 71, 72, 81	D	18	38	D	60 S	na

TABLE 20. Federal funds for industrial R&D performance in the United States, by industry and by company size: 1999–2003

(Millions of dollars)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Company size (employees)							
All companies	na	22,535	19,118	16,899	16,401	20,699	26.2
5–24	na	611	922	653	789	754	-4.4
25–49	na	368	222	201	259	910	251.4
50–99	na	603	514	548	463	559	20.7
100–249	na	674	669	903	606	636	5.0
250–499	na	485	660	560	686	668	-2.6
500–999	na	591	495	627	531	759	42.9
1,000–4,999	na	896	775	608	985	1,088	10.5
5,000–9,999	na	2,194	1,625	1,651	1,574	1,101	-30.1
10,000–24,999	na	397	678	904	1,226	1,995	62.7
25,000 or more	na	15,717	12,559	10,243	9,282	12,231	31.8

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. Beginning with 2001, excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded by the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 21. Federal funds for industrial R&D performance in the United States, by industry, by size of company: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
All industries	21-23, 31-33, 42, 44-81	20,699	754	910	559	636	668
Manufacturing industries	31-33	15,305	121	45	34	D	D
Food	311	D	0	0	0	0	0
Beverage and tobacco products	312	0	0	0	0	0	0
Textiles, apparel, and leather	313-16	D	0	0	0	0	D
Wood products	321	D	0	0	D	0	0
Paper, printing, and support activities	322, 323	D	0	0	0	0	0
Petroleum and coal products	324	D	0	0	0	0	0
Chemicals	325	307	D	3	2	D	D
Basic chemicals	3251	70	D	0	0	D	0
Resin, synthetic rubber, fibers, and filament	3252	16	0	0	0	0	0
Pharmaceuticals and medicines	3254	D	D	3	D	D	0
Other chemicals	other 325	D	1	0	D	0	D
Plastics and rubber products	326	35	32	0	0	D	0
Nonmetallic mineral products	327	4	D	0	D	0	0
Primary metals	331	12	*	D	0	0	0
Fabricated metal products	332	45	0	0	0	D	D
Machinery	333	80	0	9	D	D	0
Computer and electronic products	334	6,506	22	25	20	10	26
Computers and peripheral equipment	3341	27	8	*	0	*	D
Communications equipment	3342	266	7	*	D	0	D
Semiconductor and other electronic components	3344	28	2	4	D	1	6
Navigational, measuring, electromedical, and control instruments	3345	6,180	D	20	17	9	17
Other computer and electronic products	other 334	6	D	0	0	0	0
Electrical equipment, appliances, and components	335	71	8	D	D	D	D
Transportation equipment	336	8,162	50	1	6	D	0
Motor vehicles, trailers, and parts	3361-63	D	48	0	6	0	0
Aerospace products and parts	3364	7,528	2	1	0	D	0
Other transportation equipment	other 336	D	0	0	0	D	0
Furniture and related products	337	D	0	0	0	D	0
Miscellaneous manufacturing	339	47	D	6	D	6	0
Medical equipment and supplies	3391	17	0	6	D	6	0
Other miscellaneous manufacturing	other 339	31	D	0	0	0	0

TABLE 21. Federal funds for industrial R&D performance in the United States, by industry, by size of company: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
Nonmanufacturing industries	21-23, 42, 44-81	5,394	633	865	525	D	D
Mining, extraction, and support activities	21	D	0	0	0	0	D
Utilities	22	D	0	0	0	0	0
Construction	23	79	79	0	0	0	0
Wholesale trade	42	122	0	46	0	D	1
Professional and commercial equipment and supplies, including computers	4214	D	0	0	0	0	*
Electrical goods	4216	D	0	0	0	0	0
Drugs and druggists' sundries	4222	D	0	46	0	D	0
Other wholesale trade	other 42	2	0	0	0	D	1
Retail trade	44, 45	26	26	*	0	0	0
Transportation and warehousing	48, 49	*	0	0	0	0	0
Information	51	D	30	6	D	D	D
Publishing	511	D	30	6	D	D	D
Newspaper, periodical, book, and database	5111	*	0	0	0	0	*
Software	5112	D	30	6	D	D	D
Broadcasting and telecommunications	513	0	0	0	0	0	0
Telecommunications	5133	0	0	0	0	0	0
Other broadcasting and telecommunications	other 513	0	0	0	0	0	0
Other information	other 51	D	0	0	0	0	0
Finance, insurance, and real estate	52, 53	0	0	0	0	0	0
Professional, scientific, and technical services	54	4,966	499	813	D	D	562
Architectural, engineering, and related services	5413	1,898	D	33	219	D	294
Computer systems design and related services	5415	1,148	D	D	50	23	D
Scientific R&D services	5417	1,886	D	467	233	D	D
Other professional, scientific, and technical services	other 54	34	D	D	D	0	0
Management of companies and enterprises	55	0	0	0	0	0	0
Health care services	621-23	36	0	0	D	30	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	60 S	0	0	D	0	D

TABLE 21. Federal funds for industrial R&D performance in the United States, by industry, by size of company: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
All industries	21-23, 31-33, 42, 44-81	759	1,088	1,101	1,995	12,231
Manufacturing industries	31-33	D	372	D	D	12,152
Food	311	0	0	D	D	0
Beverage and tobacco products	312	0	0	0	0	0
Textiles, apparel, and leather	313-16	0	0	0	0	0
Wood products	321	0	0	D	0	0
Paper, printing, and support activities	322, 323	0	0	0	0	D
Petroleum and coal products	324	0	0	0	0	D
Chemicals	325	D	D	D	D	D
Basic chemicals	3251	0	D	D	0	0
Resin, synthetic rubber, fibers, and filament	3252	0	D	0	D	D
Pharmaceuticals and medicines	3254	D	D	0	0	D
Other chemicals	other 325	D	0	0	D	D
Plastics and rubber products	326	D	D	0	0	0
Nonmetallic mineral products	327	0	1	0	D	0
Primary metals	331	0	*	D	0	D
Fabricated metal products	332	D	0	D	0	0
Machinery	333	17	1	D	D	D
Computer and electronic products	334	91	100	D	D	D
Computers and peripheral equipment	3341	D	D	0	0	0
Communications equipment	3342	D	D	0	D	D
Semiconductor and other electronic components	3344	0	D	0	D	D
Navigational, measuring, electromedical, and control instruments	3345	D	78	D	D	D
Other computer and electronic products	other 334	0	D	0	0	0
Electrical equipment, appliances, and components	335	0	D	0	D	0
Transportation equipment	336	11	D	D	D	D
Motor vehicles, trailers, and parts	3361-63	D	D	D	0	D
Aerospace products and parts	3364	D	D	D	D	D
Other transportation equipment	other 336	0	0	0	0	D
Furniture and related products	337	0	0	0	0	0
Miscellaneous manufacturing	339	D	D	0	D	0
Medical equipment and supplies	3391	D	D	0	D	0
Other miscellaneous manufacturing	other 339	0	D	0	D	0

TABLE 21. Federal funds for industrial R&D performance in the United States, by industry, by size of company: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
Nonmanufacturing industries	21-23, 42, 44-81	D	717	D	D	79
Mining, extraction, and support activities	21	0	0	0	0	D
Utilities	22	D	0	D	0	D
Construction	23	0	0	0	0	0
Wholesale trade	42	D	D	0	D	D
Professional and commercial equipment and supplies, including computers	4214	0	D	0	D	D
Electrical goods	4216	0	D	0	0	0
Drugs and druggists' sundries	4222	0	D	0	D	0
Other wholesale trade	other 42	D	0	0	0	0
Retail trade	44, 45	0	0	0	0	0
Transportation and warehousing	48, 49	0	D	0	0	D
Information	51	0	D	0	0	D
Publishing	511	0	D	0	0	0
Newspaper, periodical, book, and database	5111	0	0	0	0	0
Software	5112	0	D	0	0	0
Broadcasting and telecommunications	513	0	0	0	0	0
Telecommunications	5133	0	0	0	0	0
Other broadcasting and telecommunications	other 513	0	0	0	0	0
Other information	other 51	0	0	0	0	D
Finance, insurance, and real estate	52, 53	0	0	0	0	0
Professional, scientific, and technical services	54	D	619	D	D	D
Architectural, engineering, and related services	5413	D	D	D	D	0
Computer systems design and related services	5415	D	0	0	D	D
Scientific R&D services	5417	315	D	0	0	0
Other professional, scientific, and technical services	other 54	0	0	0	0	0
Management of companies and enterprises	55	0	0	0	0	0
Health care services	621-23	D	D	0	0	0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0	D	0	0	0

* = data less than half the unit shown.

D = data withheld to avoid disclosing operations of individual companies.

NOTES: Excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded by the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 22. Federal funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Federally funded R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	2,028	20,699	663	49	587	290
Manufacturing industries	31-33	684	15,305	215	18	338	160
Food	311	2	D	0	0	2	D
Beverage and tobacco products	312	0	0	0	0	0	0
Textiles, apparel, and leather	313-16	2	D	0	0	1	D
Wood products	321	11	D	10	D	0	0
Paper, printing, and support activities	322, 323	1	D	0	0	0	0
Petroleum and coal products	324	2	D	0	0	0	0
Chemicals	325	63	307	29	D	17	D
Basic chemicals	3251	23	70	14	D	3	1
Resin, synthetic rubber, fibers, and filament	3252	3	16	0	0	0	0
Pharmaceuticals and medicines	3254	18	D	2	D	11	5
Other chemicals	other 325	19	D	13	D	3	D
Plastics and rubber products	326	57	35	2	D	54	D
Nonmetallic mineral products	327	27	4	23	2	4	2
Primary metals	331	21	12	18	*	1	D
Fabricated metal products	332	9	45	4	*	2	D
Machinery	333	31	80	3	*	21	D
Computer and electronic products	334	182	6,506	35	2	87	D
Computers and peripheral equipment	3341	52	27 S	14	1	36	8
Communications equipment	3342	23	266	11	D	4	1
Semiconductor and other electronic components	3344	32	28	2	D	22	D
Navigational, measuring, electromedical, and control instruments	3345	68	6,180	9	1	21	D
Other computer and electronic products	other 334	6	6	0	0	5	D
Electrical equipment, appliances, and components	335	28	71	3	*	17	D
Transportation equipment	336	175	8,162	39	7	112	D
Motor vehicles, trailers, and parts	3361-63	145	D	32	6	105	D
Aerospace products and parts	3364	29	7,528	7	1	6	2
Other transportation equipment	other 336	2	D	0	0	1	D
Furniture and related products	337	1	D	1	D	0	0
Miscellaneous manufacturing	339	72	47	47	D	20	D
Medical equipment and supplies	3391	33	17	11	1	19	7
Other miscellaneous manufacturing	other 339	39	31	37	D	1	D

TABLE 22. Federal funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Federally funded R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	1,345	5,394	448	30	250	130
Mining, extraction, and support activities	21	2	D	1	D	1	D
Utilities	22	3	D	1	D	1	D
Construction	23	41	79	0	0	0	0
Wholesale trade	42	39	122	15	D	4	2
Professional and commercial equipment and supplies, including computers	4214	8	D	5	D	1	D
Electrical goods	4216	1	D	0	0	0	0
Drugs and druggists' sundries	4222	20	D	1	D	2	D
Other wholesale trade	other 42	9	2	8	1	1	*
Retail trade	44, 45	272	26	265	12	0	0
Transportation and warehousing	48, 49	3	*	2	D	1	D
Information	51	77	D	12	*	61	36
Publishing	511	76	D	12	*	61	36
Newspaper, periodical, book, and database	5111	8	*	8	*	0	0
Software	5112	68	D	4	*	61	36
Broadcasting and telecommunications	513	0	0	0	0	0	0
Telecommunications	5133	0	0	0	0	0	0
Other broadcasting and telecommunications	other 513	0	0	0	0	0	0
Other information	other 51	1	D	0	0	0	0
Finance, insurance, and real estate	52, 53	0	0	0	0	0	0
Professional, scientific, and technical services	54	858	4,966	151	15	138	59
Architectural, engineering, and related services	5413	221	1,898	4	*	6	4
Computer systems design and related services	5415	95	1,148	17	2	6	D
Scientific R&D services	5417	536	1,886	130	13	124	52
Other professional, scientific, and technical services	other 54	5	34	0	0	2	D
Management of companies and enterprises	55	0	0	0	0	0	0
Health care services	621-23	45	36	0	0	43	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	5	60 S	1	D	1	D

TABLE 22. Federal funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Federally funded R&D program size					
		All companies		Less than \$200,000		\$200,000-\$999,999	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	2,028	20,699	663	49	587	290
5-24	na	1,077	754	458	30	360	172
25-49	na	396	910	82	D	92	42
50-99	na	164	559	52	7	28	11
100-249	na	153	636	21	2	72	47
250-499	na	84	668	33	D	11	D
500-999	na	36	759	4	D	5	2
1,000-4,999	na	51	1,088	8	*	10	5
5,000-9,999	na	17	1,101	2	D	3	D
10,000-24,999	na	18	1,995	2	D	5	D
25,000 or more	na	32	12,231	1	D	1	D

TABLE 22. Federal funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Federally funded R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	665	2,208	92	2,464	21	15,688
Manufacturing industries	31–33	91	274	23	649	17	14,204
Food	311	0	0	0	0	0	0
Beverage and tobacco products	312	0	0	0	0	0	0
Textiles, apparel, and leather	313–16	1	D	0	0	0	0
Wood products	321	0	0	1	D	0	0
Paper, printing, and support activities	322, 323	0	0	1	D	0	0
Petroleum and coal products	324	2	D	0	0	0	0
Chemicals	325	14	D	2	D	1	D
Basic chemicals	3251	4	D	2	D	0	0
Resin, synthetic rubber, fibers, and filament	3252	3	16	0	0	0	0
Pharmaceuticals and medicines	3254	5	D	0	0	0	0
Other chemicals	other 325	2	D	0	0	1	D
Plastics and rubber products	326	1	D	0	0	0	0
Nonmetallic mineral products	327	0	0	0	0	0	0
Primary metals	331	2	D	0	0	0	0
Fabricated metal products	332	2	D	1	D	0	0
Machinery	333	5	22	2	D	0	0
Computer and electronic products	334	47	D	7	190	6	D
Computers and peripheral equipment	3341	2	D	1	D	0	0
Communications equipment	3342	6	D	2	D	1	D
Semiconductor and other electronic components	3344	8	20	0	0	0	0
Navigational, measuring, electromedical, and control instruments	3345	29	68	4	D	5	D
Other computer and electronic products	other 334	1	D	0	0	0	0
Electrical equipment, appliances, and components	335	5	17	2	D	0	0
Transportation equipment	336	8	39	6	224	10	D
Motor vehicles, trailers, and parts	3361–63	4	20	3	47	0	0
Aerospace products and parts	3364	4	18	3	177	9	7,329
Other transportation equipment	other 336	0	0	0	0	1	D
Furniture and related products	337	0	0	0	0	0	0
Miscellaneous manufacturing	339	4	9	1	D	0	0
Medical equipment and supplies	3391	4	9	0	0	0	0
Other miscellaneous manufacturing	other 339	0	0	1	D	0	0

TABLE 22. Federal funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Federally funded R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	574	1,934	69	1,816	4	1,483
Mining, extraction, and support activities	21	0	0	0	0	0	0
Utilities	22	0	0	1	D	0	0
Construction	23	41	79	0	0	0	0
Wholesale trade	42	18	D	2	D	0	0
Professional and commercial equipment and supplies, including computers	4214	1	D	1	D	0	0
Electrical goods	4216	1	D	0	0	0	0
Drugs and druggists' sundries	4222	16	D	1	D	0	0
Other wholesale trade	other 42	0	0	0	0	0	0
Retail trade	44, 45	8	13	0	0	0	0
Transportation and warehousing	48, 49	0	0	0	0	0	0
Information	51	3	D	1	D	0	0
Publishing	511	3	D	0	0	0	0
Newspaper, periodical, book, and database	5111	0	0	0	0	0	0
Software	5112	3	D	0	0	0	0
Broadcasting and telecommunications	513	0	0	0	0	0	0
Telecommunications	5133	0	0	0	0	0	0
Other broadcasting and telecommunications	other 513	0	0	0	0	0	0
Other information	other 51	0	0	1	D	0	0
Finance, insurance, and real estate	52, 53	0	0	0	0	0	0
Professional, scientific, and technical services	54	501	1,766	63	1,642	4	1,483
Architectural, engineering, and related services	5413	186	D	22	587	3	D
Computer systems design and related services	5415	69	D	3	D	1	D
Scientific R&D services	5417	246	847	36	975	0	0
Other professional, scientific, and technical services	other 54	1	D	2	D	0	0
Management of companies and enterprises	55	0	0	0	0	0	0
Health care services	621–23	2	D	0	0	0	0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1	D	2	D	0	0

TABLE 22. Federal funds for and number of companies that performed industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Federally funded R&D program size					
		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	na	665	2,208	92	2,464	21	15,688
5–24	na	260	552	0	0	0	0
25–49	na	220	841	1	D	0	0
50–99	na	72	373	12	167	0	0
100–249	na	39	170	21	417	0	0
250–499	na	21	88	19	571	0	0
500–999	na	16	D	9	463	2	D
1,000–4,999	na	19	D	12	349	2	D
5,000–9,999	na	3	16	6	183	3	901
10,000–24,999	na	3	8	4	D	4	1,879
25,000 or more	na	12	D	8	191	10	11,993

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; S = more than 50 percent of cell value is imputed.

NOTES: Statistics exclude data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded by the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 23. Federal funds for industrial R&D performance in the United States, by selected federal agency and selected industry: 2002 and 2003

(Millions of dollars)

Federal agency and industry	NAICS codes	2002	2003	% change, 2002-03
All federal agencies				
All industries	21-23, 31-33, 42, 44-81	16,401	20,699	26.2
Manufacturing	31-33	10,745	15,310	42.5
Chemicals	325	246	307	24.8
Machinery	333	62	80	29.0
Computer and electronic products	334	5,470	6,506	18.9
Electrical equipment, appliances, and components	335	61	71	16.4
Transportation equipment	336	4,692	8,162	74.0
Other manufacturing	other 31-33	213	179	-16.0
Nonmanufacturing	21-23, 42, 44-81	5,656	5,394	-4.6
DOD and agencies other than DOE and NASA ^a				
All industries	21-23, 31-33, 42, 44-81	14,634	18,763	28.2
Manufacturing	31-33	9,973	13,841	38.8
Chemicals	325	D	D	na
Machinery	333	D	41	na
Computer and electronic products	334	5,309	6,294	18.6
Electrical equipment, appliances, and components	335	37	D	na
Transportation equipment	336	4,190	7,078	68.9
Other manufacturing	other 31-33	186	158	-15.1
Nonmanufacturing	21-23, 42, 44-81	4,661	4,927	5.7
DOE				
All industries	21-23, 31-33, 42, 44-81	969	932 S	-3.8
Manufacturing	31-33	381 S	783 S	105.5
Chemicals	325	23	67	191.3
Machinery	333	D	39	na
Computer and electronic products	334	12	30	150.0
Electrical equipment, appliances, and components	335	D	40	na
Transportation equipment	336	264 S	587 S	122.3
Other manufacturing	other 31-33	27	21	-22.2
Nonmanufacturing	21-23, 42, 44-81	588	149	-74.7
NASA				
All industries	21-23, 31-33, 42, 44-81	798	1,004 S	25.8
Manufacturing	31-33	391	686 S	75.4
Chemicals	325	D	D	na
Machinery	333	0	0	na
Computer and electronic products	334	149 S	182	22.1
Electrical equipment, appliances, and components	335	D	D	na
Transportation equipment	336	238	497 S	108.8
Other manufacturing	other 31-33	* S	0	na
Nonmanufacturing	21-23, 42, 44-81	407	318	-21.9

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable;

S = more than 50 percent of cell value is imputed; DOD = Department of Defense; DOE = Department of Energy;

NASA = National Aeronautics and Space Administration.

^a Data for federal R&D allocated by agency are only collected on the Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, this group of statistics represents federal R&D allocated to DOD and agencies other than DOE and NASA on the Form RD-1 and all federal R&D reported on the Form RD-1A, the questionnaire sent to smaller R&D-performing companies and companies in the survey for the first time.

NOTES: Some statistics for 2002 have been revised since originally published. Excludes data for federally funded research and development centers. During data collection, if exact figures were not available, respondents were asked to estimate or apportion R&D costs according to the number of scientists and engineers working on federal projects and/or the costs of federal programs. Consequently, statistics in this table may be based on such estimates. Data for federally funded R&D by funding agency are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies may not be represented by the statistics in this table. For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 24. Domestic net sales of companies that performed industrial R&D in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
All industries	21-23, 31-33, 42, 44-81	5,748,522	215,378	189,295	108,435	511,737	134,553
Manufacturing industries	31-33	3,494,275	185,240	152,799	63,774	72,255	73,791
Food	311	316,218	D	847	3,700	D	6,252
Beverage and tobacco products	312	37,564	D	D	D	D	D
Textiles, apparel, and leather	313-16	30,875	574	D	499	1,680	4,500
Wood products	321	19,291	334	136	241	876	500
Paper, printing, and support activities	322, 323	264,258	85,456	448	686	4,330	3,687
Petroleum and coal products	324	403,789	210	208	211	812	D
Chemicals	325	406,230	60,665	2,359	4,387	8,355	11,241
Basic chemicals	3251	74,584	142	350	531	1,649	1,786
Resin, synthetic rubber, fibers, and filament	3252	65,821	75	120	192	188	2,952
Pharmaceuticals and medicines	3254	191,886	59,719	82	794	2,204	3,063
Other chemicals	other 325	73,939	729	1,808	2,869	4,315	3,441
Plastics and rubber products	326	83,148	436	1,121	D	7,305	4,873
Nonmetallic mineral products	327	48,935	267	158	520	1,061	714
Primary metals	331	74,237	373	195	431	2,323	2,002
Fabricated metal products	332	88,212	909	1,342	3,891	3,804	5,109
Machinery	333	149,563	1,942	3,745	8,020	10,294	7,398
Computer and electronic products	334	338,319	5,565	2,915	5,167	10,081	11,727
Computers and peripheral equipment	3341	44,483	3,974	440	D	D	2,183
Communications equipment	3342	61,208	259	444	D	2,101	3,206
Semiconductor and other electronic components	3344	114,062	564 S	591	D	D	2,815
Navigational, measuring, electromedical, and control instruments	3345	108,824	648	1,195	D	3,180	3,321
Other computer and electronic products	other 334	9,742	119	245	D	653	202
Electrical equipment, appliances, and components	335	92,258	19,041	451	1,123	2,705	3,566
Transportation equipment	336	974,163	6,704	136,284	2,254	4,099	4,523
Motor vehicles, trailers, and parts	3361-63	703,834	1,603	135,559	1,804	D	3,689
Aerospace products and parts	3364	232,326	126	325	79	D	240
Other transportation equipment	other 336	38,003	4,975	399	371	D	594
Furniture and related products	337	33,780	2	956	536	919	1,209
Miscellaneous manufacturing	339	133,435	1,149	1,090	30,247	4,490	5,649
Medical equipment and supplies	3391	101,199	629	493	D	2,284	3,523
Other miscellaneous manufacturing	other 339	32,236	520	598	D	2,206	2,126

TABLE 24. Domestic net sales of companies that performed industrial R&D in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
Nonmanufacturing industries	21-23, 42, 44-81	2,254,246	30,138	36,495	44,661	439,482	60,761
Mining, extraction, and support activities	21	22,724	224	69	D	194	262
Utilities	22	191,130	1 S	0	0	0	D
Construction	23	20,705	1,359	D	D	D	D
Wholesale trade	42	692,402	10,189	23,041	6,113	309,176	32,105
Professional and commercial equipment and supplies, including computers	4214	121,459	1,039	1,248	360	1,178	2,251
Electrical goods	4216	56,246	520	284	1,812	2,903	5,053
Drugs and druggists' sundries	4222	81,931	133	1,723 S	1,096	360	895
Other wholesale trade	other 42	432,765	8,497	19,786	2,845	304,734	23,906
Retail trade	44, 45	187,146	1,607	1,069	45	D	5,289
Transportation and warehousing	48, 49	69,421	475	21	D	0	164
Information	51	347,081	1,507	2,786	2,410	5,549	7,669
Publishing	511	88,105	1,193	2,332	1,615	3,308	4,020
Newspaper, periodical, book, and database	5111	23,592	0	779	0	435	320
Software	5112	64,514	1,193	1,553	1,615	2,873	3,700
Broadcasting and telecommunications	513	211,132	0	D	0	911	1,070
Telecommunications	5133	210,257	0	0	0	D	D
Other broadcasting and telecommunications	other 513	874	0	D	0	D	D
Other information	other 51	47,844	315	D	795	1,329	2,579
Finance, insurance, and real estate	52, 53	424,438	200	D	D	D	1,062
Professional, scientific, and technical services	54	233,291	8,277	5,601	33,517	43,856 S	10,016
Architectural, engineering, and related services	5413	41,893	1,390	1,024	786	1,640	D
Computer systems design and related services	5415	88,093	D	2,357	29,646	4,413	4,428
Scientific R&D services	5417	64,592 S	D	2,016	2,062	37,599 S	3,580
Other professional, scientific, and technical services	other 54	38,713	1,005	205	1,023	203 S	D
Management of companies and enterprises	55	1,611	25	7	136	D	D
Health care services	621-23	31,054	5,310	2,202	821	4,240	249
Other nonmanufacturing	56, 61, 624, 71, 72, 81	33,243	965	830	738	1,801	2,242

TABLE 24. Domestic net sales of companies that performed industrial R&D in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
All industries	21-23, 31-33, 42, 44-81	164,830	708,787	542,406	900,981	2,272,119
Manufacturing industries	31-33	96,323	451,376	382,337	541,057	1,475,323
Food	311	8,695	D	22,564	64,717	161,790
Beverage and tobacco products	312	D	D	D	D	0
Textiles, apparel, and leather	313-16	D	D	4,429	D	D
Wood products	321	635	2,787	7,151	6,630	0
Paper, printing, and support activities	322, 323	3,280	22,390	10,442	28,901	104,638
Petroleum and coal products	324	0	D	D	D	306,096
Chemicals	325	15,875	95,349	54,740	80,404	72,855
Basic chemicals	3251	3,927	D	18,947	D	0
Resin, synthetic rubber, fibers, and filament	3252	4,611	D	D	D	D
Pharmaceuticals and medicines	3254	3,573	17,699	D	D	D
Other chemicals	other 325	3,763	28,529	11,323	D	D
Plastics and rubber products	326	8,255	D	D	D	D
Nonmetallic mineral products	327	646	12,708	5,313	27,548	0
Primary metals	331	2,441	14,333	D	18,501	D
Fabricated metal products	332	6,008	21,191	D	15,411	D
Machinery	333	10,484	33,634	19,767	25,553	28,727
Computer and electronic products	334	16,341	64,776	20,510	72,995	128,242
Computers and peripheral equipment	3341	2,383	5,427	D	D	0
Communications equipment	3342	3,163	12,568	D	D	D
Semiconductor and other electronic components	3344	5,660	29,703	D	D	D
Navigational, measuring, electromedical, and control instruments	3345	3,837	14,431	9,864	23,425	D
Other computer and electronic products	other 334	1,297	2,647	0	D	0
Electrical equipment, appliances, and components	335	5,660	17,502	14,729	27,481	0
Transportation equipment	336	7,669	43,681	105,770	72,007	591,171
Motor vehicles, trailers, and parts	3361-63	6,152	31,842	D	55,531	D
Aerospace products and parts	3364	716	3,928	5,560	D	214,840
Other transportation equipment	other 336	801	7,911	D	D	D
Furniture and related products	337	1,739	D	9,171	D	D
Miscellaneous manufacturing	339	5,469	27,230	15,341	D	D
Medical equipment and supplies	3391	2,260	17,263	9,987	D	D
Other miscellaneous manufacturing	other 339	3,209	9,968	5,353	D	0

TABLE 24. Domestic net sales of companies that performed industrial R&D in the United States, by industry, by company size: 2003

(Millions of dollars)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
Nonmanufacturing industries	21-23, 42, 44-81	68,507	257,411	160,069	359,924	796,797
Mining, extraction, and support activities	21	2,533	4,838	D	D	D
Utilities	22	D	29,434	65,281	D	D
Construction	23	2,269	D	D	D	0
Wholesale trade	42	22,549	73,050	35,375	77,799	103,005
Professional and commercial equipment and supplies, including computers	4214	2,113	D	6,552	12,642	D
Electrical goods	4216	3,512	D	D	22,920	0
Drugs and druggists' sundries	4222	3,092	D	D	23,732	D
Other wholesale trade	other 42	13,832	19,541	21,119	18,505	0
Retail trade	44, 45	9,158	9,725	6,018	D	D
Transportation and warehousing	48, 49	D	3,000	0	D	D
Information	51	7,593	29,459	9,821	46,013	234,274
Publishing	511	D	22,107	D	16,930	D
Newspaper, periodical, book, and database	5111	D	4,647	D	D	D
Software	5112	D	17,460	D	D	D
Broadcasting and telecommunications	513	D	4,019	D	D	D
Telecommunications	5133	D	D	D	D	D
Other broadcasting and telecommunications	other 513	D	D	0	0	0
Other information	other 51	D	3,333	D	D	D
Finance, insurance, and real estate	52, 53	5,647	65,650	11,695	32,712	237,933
Professional, scientific, and technical services	54	13,887	26,207	14,631	28,839	48,459
Architectural, engineering, and related services	5413	2,232	12,312	D	D	D
Computer systems design and related services	5415	7,390	7,610	6,859	D	D
Scientific R&D services	5417	3,580	2,986	D	0	D
Other professional, scientific, and technical services	other 54	686	3,299	5,062	D	D
Management of companies and enterprises	55	D	D	0	0	0
Health care services	621-23	859	1,344	D	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,803	9,597	4,612	2,586	7,068

D = data withheld to avoid disclosing operations of individual companies.

S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 25. Concentration of all, federal, and company and other industrial R&D funds and net sales of companies that performed industrial R&D in the United States, ranked by R&D program size: 1993–2003
(Percent distribution)

Companies ranked by R&D program size	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All R&D funds											
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	17	15	16	15	14	12	11	10	10	10	11
Next 4 (5–8)	7	8	8	8	8	8	8	7	7	7	8
Next 12 (9–20)	13	14	13	13	13	13	13	13	13	13	12
Next 20 (21–40)	12	13	12	12	11	11	11	11	11	12	12
Next 60 (41–100)	16	15	14	14	14	13	13	14	14	15	15
Next 100 (101–200)	8	9	8	9	9	9	9	9	10	10	10
Next 200 (201–400)	7	7	7	7	8	8	7	10	8	10	10
All others	20	19	22	22	23	26	28	26	27	23	22
Federal R&D funds											
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	23	26	35	37	40	46	47	43	41	42	51
Next 4 (5–8)	17	19	19	20	23	17	14	16 S	17	15	11
Next 12 (9–20)	32	32	27	23	18	14	15	15	17	19	14
Next 20 (21–40)	16	13	8	7	7	7	8	7	6	9	9
Next 60 (41–100)	5	7	5	5	5	7	7	6	8	9	8
Next 100 (101–200)	5	2	3	4	3	5	4	5	5	5	5
Next 200 (201–400)	2	1	3	4	4	4	5	7	6	2	2
All others	0	0	0	0	0	0	0	1	0	0	0
Company and other R&D funds											
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	17	16	16	15	13	12	11	10	11	10	11
Next 4 (5–8)	7	7	7	7	7	7	8	7	8	7	7
Next 12 (9–20)	12	12	11	11	11	12	12	13	12	13	12
Next 20 (21–40)	11	11	11	10	11	10	10	11	10	11	11
Next 60 (41–100)	14	14	14	14	13	13	13	13	14	15	15
Next 100 (101–200)	9	9	9	10	10	10	9	9	10	11	10
Next 200 (201–400)	8	8	8	8	9	8	8	11	8	10	10
All others	22	23	24	25	26	28	29	26	27	23	24

TABLE 25. Concentration of all, federal, and company and other industrial R&D funds and net sales of companies that performed industrial R&D in the United States, ranked by R&D program size: 1993–2003 (Percent distribution)

Companies ranked by R&D program size	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Net sales										
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	8	8	8	6	6	5	6 S	2	8	8	12
Next 4 (5–8)	3	2	2	3	2	3	4	D	6	6	6
Next 12 (9–20)	4	5	6	6	5	5	7	10	11	12	11
Next 20 (21–40)	4	5	4	4	5	5	8	D	12	12	12
Next 60 (41–100)	11	10	9	8	7	8	14	15	18	17	17
Next 100 (101–200)	8	8	8	11	8	8	10	12	14	12	12
Next 200 (201–400)	10	10	10	11	13	11	11	14	11	11	10
All others	52	52	53	51	54	55	40	31	20	22	20

D = data withheld to avoid disclosing operations of individual companies.

S = more than 50 percent of the cell value is imputed.

NOTES: This table shows the percentage of total, company, and federal R&D and net sales of the top R&D-performing companies. The companies are grouped for analysis. For example, to determine the percentage of total R&D accounted for by the top 20 R&D-performing companies in 1999, add the percentages shown for the categories "first 4," "next 4," and "next 12." The result is 32%. Companies are ranked by size of their total R&D program in the first and fourth banks of estimates. In the second bank of estimates they are ranked by the size of their federal R&D program and in the third bank by the size of their nonfederally funded R&D program. Companies were ranked individually for each year; therefore, particular companies comprising the size groups may have changed from year to year. Some percentages for 1999–2002 have been revised since originally published. Beginning with 2001, statistics for total and federally funded industrial R&D exclude data for federally funded research and development centers. For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 26. Funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

(Percent)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003
All industries	21–23, 31–33, 42, 44–81	3.1	3.8	4.2	3.9	3.5
Manufacturing industries	31–33	3.8	3.6	4.1	3.7	3.5
Food	311	0.4	D	0.5	D	D
Beverage and tobacco products	312	D	0.7	0.4	0.5	0.5
Textiles, apparel, and leather	313–16	0.7	D	D	D	D
Wood products	321	0.5	0.8	1.1	D	D
Paper, printing, and support activities	322, 323	D	D	D	D	D
Petroleum and coal products	324	0.4	D	D	D	D
Chemicals	325	5.2	5.9	4.9	6.0	5.7
Basic chemicals	3251	2.1	2.4	2.2	2.7	2.8
Resin, synthetic rubber, fibers, and filament	3252	D	5.6	D	3.9	3.7
Pharmaceuticals and medicines	3254	D	D	7.8	D	D
Other chemicals	other 325	D	D	D	D	D
Plastics and rubber products	326	1.9	D	D	D	2.1
Nonmetallic mineral products	327	D	1.8	2.4	D	1.0
Primary metals	331	0.4	0.5	0.7	0.7	0.7
Fabricated metal products	332	1.5	1.4	1.7	1.5	1.6
Machinery	333	3.5	3.9	4.3	4.4	4.2
Computer and electronic products	334	10.8	9.4	13.1	9.4	11.5
Computers and peripheral equipment	3341	D	6.5	D	7.5	5.8
Communications equipment	3342	15.7	11.7	19.1	14.9	15.0
Semiconductor and other electronic components	3344	8.3	7.5	10.6	8.6	11.1
Navigational, measuring, electromedical, and control instruments	3345	15.2	12.0	12.6	8.7	12.9
Other computer and electronic products	other 334	D	4.3	D	5.3	5.8
Electrical equipment, appliances, and components	335	D	D	3.1 S	2.8	2.2
Transportation equipment	336	4.2	4.0	4.2	3.5	3.5
Motor vehicles, trailers, and parts	3361–63	D	D	D	D	D
Aerospace products and parts	3364	8.8	7.3	5.7	4.1	6.8
Other transportation equipment	other 336	D	D	D	D	D
Furniture and related products	337	0.7	0.8	0.9	0.8	D
Miscellaneous manufacturing	339	5.7	8.7	6.6	8.0	5.6
Medical equipment and supplies	3391	D	D	D	D	6.3
Other miscellaneous manufacturing	other 339	D	D	D	D	3.3

TABLE 26. Funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

(Percent)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003
Nonmanufacturing industries	21–23, 42, 44–81	3.7	4.1	4.3	4.4	3.6
Mining, extraction, and support activities	21	D	1.0	D	D	D
Utilities	22	0.1	D	0.0	D	D
Construction	23	3.1	D	1.4	0.6	1.6
Wholesale trade	42	NA	NA	NA	NA	3.6
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	NA	D
Electrical goods	4216	NA	NA	NA	NA	D
Drugs and druggists' sundries	4222	NA	NA	NA	NA	D
Other wholesale trade	other 42	NA	NA	NA	NA	0.5
Retail trade	44, 45	NA	NA	NA	NA	0.8
Transportation and warehousing	48, 49	0.5	D	2.5	D	0.4
Information	51	3.6	4.1	D	4.0	D
Publishing	511	13.4	16.3	15.1	16.4	D
Newspaper, periodical, book, and database	5111	2.0	2.0	2.7	2.8	2.8
Software	5112	16.8	20.5	19.4	21.5	D
Broadcasting and telecommunications	513	D	0.5 S	D	D	0.8
Telecommunications	5133	D	D	D	D	0.8
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	4.3
Other information	other 51	D	5.1	D	D	D
Finance, insurance, and real estate	52, 53	D	1.2	D	0.6	0.3
Professional, scientific, and technical services	54	15.3	18.7	16.8	13.6	12.3
Architectural, engineering, and related services	5413	10.1	10.8	7.5	7.8	12.3
Computer systems design and related services	5415	D	12.3	17.4	16.5	11.1
Scientific R&D services	5417	45.3	42.9	47.7	21.3	19.4 S
Other professional, scientific, and technical services	other 54	D	6.6	2.4	3.3	3.4
Management of companies and enterprises	55	D	4.4	7.8	7.6	4.1
Health care services	621–23	6.5	3.2	4.2	D	2.3
Other nonmanufacturing	56, 61, 624, 71, 72, 81	D	1.0	1.5	D	5.1

TABLE 26. Funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

(Percent)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003
Company size (employees)						
All companies	na	3.1	3.8	4.2	3.9	3.5
5–24	na	18.2	19.9	15.0	8.7	2.6
25–49	na	11.5	14.0	11.2	9.6	3.4
50–99	na	14.2	12.1	11.2	7.7	4.5
100–249	na	7.6	8.7	11.6	9.4	1.9
250–499	na	6.3	6.7	8.6	4.3	7.1
500–999	na	4.4	5.0	6.0	7.3	6.3
1,000–4,999	na	3.2	3.6	4.3	4.2	4.3
5,000–9,999	na	2.6	2.4	2.8	3.7	2.8
10,000–24,999	na	2.9	3.2	3.6	3.0	3.1
25,000 or more	na	3.6	3.5	3.5	3.4	3.7

D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. Beginning with 2001, excludes data for federally funded research and development centers. The R&D represented in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 27. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

(Percent)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003
All industries	21–23, 31–33, 42, 44–81	2.8	3.4	3.8	3.6	3.2
Manufacturing industries	31–33	3.2	3.2	3.7	3.3	3.1
Food	311	0.4	0.4	0.5	0.6	0.6
Beverage and tobacco products	312	D	0.7	0.4	0.5	0.5
Textiles, apparel, and leather	313–16	0.7	0.8	0.8	0.8	1.0
Wood products	321	0.5	0.8	1.1	0.7	0.7
Paper, printing, and support activities	322, 323	1.4	1.6	2.1	1.3	1.1
Petroleum and coal products	324	D	0.3	0.3	0.4	0.3
Chemicals	325	5.1	5.9	4.8	5.9	5.6
Basic chemicals	3251	2.0	2.3	2.2	2.5	2.7
Resin, synthetic rubber, fibers, and filament	3252	4.2	5.6	4.5	3.9	3.6
Pharmaceuticals and medicines	3254	10.5	9.8	7.8	9.6	8.3
Other chemicals	other 325	3.2	3.6	3.2	3.1	3.2
Plastics and rubber products	326	1.9	1.8	2.9	1.8	2.1
Nonmetallic mineral products	327	1.5	1.8	2.3	1.2	1.0
Primary metals	331	0.4	0.5	0.7	0.7	0.7
Fabricated metal products	332	1.4	1.4	1.6	1.4	1.5
Machinery	333	3.3	3.8	4.2	4.3	4.2
Computer and electronic products	334	9.0	8.1	11.3	8.1	9.6
Computers and peripheral equipment	3341	6.4	6.5	7.6	7.5	5.8
Communications equipment	3342	15.3	11.3	17.7	14.5	14.6
Semiconductor and other electronic components	3344	8.3	7.4	10.5	8.6	11.1
Navigational, measuring, electromedical, and control instruments	3345	9.1	8.0	7.3	5.4	7.2
Other computer and electronic products	other 334	5.8	4.3	13.5	5.3	5.8
Electrical equipment, appliances, and components	335	2.3	2.1	2.9 S	2.7	2.2
Transportation equipment	336	2.9	3.1	3.4	2.8	2.7
Motor vehicles, trailers, and parts	3361–63	2.9	3.2	3.5	3.1	2.4
Aerospace products and parts	3364	3.2	2.8	3.0	2.3	3.5
Other transportation equipment	other 336	1.6	1.8	2.5 S	2.9	2.7
Furniture and related products	337	0.7	0.8	0.9	0.8	0.8
Miscellaneous manufacturing	339	5.7	8.7	6.6	7.9	5.6
Medical equipment and supplies	3391	7.7	13.1	9.0	9.7	6.3
Other miscellaneous manufacturing	other 339	2.3	2.3	2.0	4.1	3.2

TABLE 27. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

(Percent)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003
Nonmanufacturing industries	21–23, 42, 44–81	3.4	3.8	4.0	4.1	3.3
Mining, extraction, and support activities	21	1.9	1.0	1.3	3.2	3.3
Utilities	22	0.1	0.1	0.0	0.1	0.1
Construction	23	3.1	1.9	1.4	0.6	1.2
Wholesale trade	42	NA	NA	NA	NA	3.6
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	NA	8.0
Electrical goods	4216	NA	NA	NA	NA	6.6
Drugs and druggists' sundries	4222	NA	NA	NA	NA	11.6
Other wholesale trade	other 42	NA	NA	NA	NA	0.5
Retail trade	44, 45	NA	NA	NA	NA	0.8
Transportation and warehousing	48, 49	0.5	0.3	2.4	0.5	0.4
Information	51	3.4	4.0	4.4	4.0	5.7
Publishing	511	13.4	16.3	15.0	16.4	17.9
Newspaper, periodical, book, and database	5111	2.0	2.0	2.7	2.8	2.8
Software	5112	16.7	20.4	19.3	21.4	23.4
Broadcasting and telecommunications	513	0.4	0.4	0.5	0.7 S	0.8
Telecommunications	5133	D	D	0.5	0.7 S	0.8
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	4.3
Other information	other 51	8.6	4.9	4.7	2.0	5.0
Finance, insurance, and real estate	52, 53	0.5	1.2	0.7	0.6	0.3
Professional, scientific, and technical services	54	11.6	14.9	13.7	11.2	10.2
Architectural, engineering, and related services	5413	6.8	7.1	5.2	5.3	7.8
Computer systems design and related services	5415	11.0	11.8	16.5	14.3	9.8
Scientific R&D services	5417	32.1	32.3	36.5	17.6	16.5 S
Other professional, scientific, and technical services	other 54	1.9	6.1	1.9	2.8	3.3
Management of companies and enterprises	55	5.7	4.4	7.8	7.6	4.1 S
Health care services	621–23	6.4	2.8	4.1	15.1	2.2
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0.9	1.0	1.4	1.9	4.9

TABLE 27. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

(Percent)

Industry and company size	NAICS codes	1999	2000	2001	2002	2003
Company size (employees)						
All companies	na	2.8	3.4	3.8	3.6	3.2
5–24	na	16.6	17.2	12.9	7.1	2.2
25–49	na	10.6	13.4	10.6	8.9	2.9
50–99	na	13.0	11.2	10.4	7.1	3.9
100–249	na	6.9	8.0	10.8	9.0	1.7
250–499	na	5.9	6.1	8.0	4.0	6.6
500–999	na	4.0	4.7	5.7	6.9	5.8
1,000–4,999	na	3.1	3.5	4.2	4.0	4.1
5,000–9,999	na	2.3	2.2	2.5	3.4	2.6
10,000–24,999	na	2.9	3.2	3.5	2.9	2.8
25,000 or more	na	2.8	3.0	3.1	2.9	3.2

D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. The R&D represented in this table is the industrial R&D performed within company facilities funded from all sources except the federal government. The funds are predominantly the company's own, but also include funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D performed by other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 28. Funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by R&D program size: 2003

Industry and company size	NAICS codes	All R&D funds (millions of dollars)			All R&D funds as a percent of net sales		
		First 4	Next 4	Next 12	First 4	Next 4	Next 12
		companies	companies	companies	companies	companies	companies
All industries	21–23, 31–33, 42, 44–81	22,798	15,344	25,272	15.5	12.5	5.3
Manufacturing industries	31–33	20,444	11,981	20,149	13.1	13.5	4.5
Food	311	917	320	360	1.3	0.5	0.5
Beverage and tobacco products	312	117	45	11	0.4	0.8	0.2
Textiles, apparel, and leather	313–16	65	46	84	1.0	1.8	1.5
Wood products	321	113	20	9	1.4	0.4	0.3
Paper, printing, and support activities	322, 323	2,097	147	197	3.5	0.6	1.8
Petroleum and coal products	324	1,083	185	19	0.4	0.1	0.6
Chemicals	325	6,325	4,708	5,794	14.9	10.8	9.4
Basic chemicals	3251	569	301	533	2.8	4.5	3.4
Resin, synthetic rubber, fibers, and filament	3252	1,896	323	138	4.9	3.1	1.0
Pharmaceuticals and medicines	3254	6,325	4,529	3,552	14.9	11.5	12.6
Other chemicals	other 325	1,283	271	363	6.4	3.4	2.3
Plastics and rubber products	326	558	157	248	3.3	2.5	2.0
Nonmetallic mineral products	327	204	92	103	1.7	2.0	1.1
Primary metals	331	273	56	100	1.2	0.4	0.6
Fabricated metal products	332	473	166	200	2.6	2.9	1.3
Machinery	333	1,988	716	974	8.7	4.8	3.6
Computer and electronic products	334	14,180	4,559	6,482	19.0	14.3	6.7
Computers and peripheral equipment	3341	1,438	352	320	4.6	20.5	11.7
Communications equipment	3342	6,724	624	720	17.7	17.3	21.6
Semiconductor and other electronic components	3344	6,839	1,399	1,744	15.1	5.0	29.7
Navigational, measuring, electromedical, and control instruments	3345	7,342	2,270	2,055	19.9	7.1	13.2
Other computer and electronic products	other 334	386	70	52	5.6	11.2	5.7
Electrical equipment, appliances, and components	335	539	274	409	2.1	4.3	3.3
Transportation equipment	336	17,876	6,855	5,147	6.5	2.8	4.5
Motor vehicles, trailers, and parts	3361–63	12,056	1,485	1,401	3.7	2.4	2.1
Aerospace products and parts	3364	12,268	2,613	765	6.4	8.7	10.9
Other transportation equipment	other 336	1,229	161	100	7.8	2.1	1.5
Furniture and related products	337	128	53	39	0.9	0.9	0.6
Miscellaneous manufacturing	339	4,390	702	909	12.0	6.4	6.6
Medical equipment and supplies	3391	4,390	639	532	12.0	8.8	6.3
Other miscellaneous manufacturing	other 339	472	201	151	4.5	8.1	2.7

TABLE 28. Funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by R&D program size: 2003

Industry and company size	NAICS codes	All R&D funds (millions of dollars)			All R&D funds as a percent of net sales		
		First 4	Next 4	Next 12	First 4	Next 4	Next 12
		companies	companies	companies	companies	companies	companies
Nonmanufacturing industries	21–23, 42, 44–81	16,270	5,288	8,542	18.6	13.8	7.8
Mining, extraction, and support activities	21	584	47	44	5.1	1.2	0.8
Utilities	22	85	31	29	0.2	0.1	-
Construction	23	113	21	16	1.1	1.1	0.8
Wholesale trade	42	11,214	2,969	3,664	14.2	5.7	15.0
Professional and commercial equipment and supplies, including computers	4214	6,235	1,227	1,038	7.8	12.4	9.9
Electrical goods	4216	1,988	650	634	14.4	5.6	5.4
Drugs and druggists' sundries	4222	7,477	817	961	15.9	11.6	5.0
Other wholesale trade	other 42	434	179	269	4.5	1.9	0.7
Retail trade	44, 45	401	107	121	13.6	0.2	0.2
Transportation and warehousing	48, 49	231	15	4	0.5	0.1	0.1
Information	51	9,045	1,512	2,536	22.8	1.5	13.5
Publishing	511	8,239	1,056	2,035	28.6	22.2	13.6
Newspaper, periodical, book, and database	5111	474	64	31	5.6	0.8	0.6
Software	5112	8,239	1,056	1,890	28.6	22.2	20.1
Broadcasting and telecommunications	513	1,015	99	124	0.7	0.5	0.4
Telecommunications	5133	1,015	99	106	0.7	0.5	0.4
Other broadcasting and telecommunications	other 513	29	2	D	17.4	0.4	-
Other information	other 51	1,581	183	231	9.0	0.9	7.3
Finance, insurance, and real estate	52, 53	491	255	313	0.9	0.4	0.2
Professional, scientific, and technical services	54	4,829	1,760	2,248	20.1	20.7	40.3
Architectural, engineering, and related services	5413	1,279	450	541	100.6	16.0	21.8
Computer systems design and related services	5415	4,174	646	880	23.8	5.7	17.0
Scientific R&D services	5417	1,812	601	1,163	21.4	76.2	162.9
Other professional, scientific, and technical services	other 54	700	113	138	4.6	7.8	1.6
Management of companies and enterprises	55	47	13	1	5.0	6.0	0.3
Health care services	621–23	394	41	36	4.4	1.0	0.7
Other nonmanufacturing	56, 61, 624, 71, 72, 81	334	140	157	8.0	6.3	4.8

TABLE 28. Funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by R&D program size: 2003

Industry and company size	NAICS codes	All R&D funds (millions of dollars)			All R&D funds as a percent of net sales		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
Company size (employees)							
All companies	na	22,798	15,344	25,272	15.5	12.5	5.3
5-24	na	146	38	63	27.8	486.9	18.0
25-49	na	89	68	145	67.4	2.7	192.9
50-99	na	145	96	223	47.2	141.9	137.7
100-249	na	358	236	539	130.0	433.3	119.4
250-499	na	432	336	834	241.8	33.7	49.4
500-999	na	761	631	1,188	121.8	30.6	61.5
1,000-4,999	na	2,734	1,518	3,479	59.3	32.8	25.3
5,000-9,999	na	3,220	2,388	4,132	22.0	18.8	11.8
10,000-24,999	na	6,425	4,411	7,052	16.9	16.4	8.1
25,000 or more	na	22,798	15,344	24,536	15.5	12.5	5.1

D = data withheld to avoid disclosing operations of individual companies.

na = not applicable.

NOTES: Excludes data for federally funded research and development centers. Rankings were based on total funds from all sources (company, federal, and other) spent for R&D and are determined separately for each industry and company size category. Consequently, industry and company size details do not add to totals. For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 29. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by nonfederally funded R&D program size: 2003

Industry and company size	NAICS codes	Company and other nonfederal R&D funds (millions of dollars)			Company and other nonfederal R&D funds as a percent of net sales		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
All industries	21–23, 31–33, 42, 44–81	21,023	12,745	21,573	12.6	11.6	5.3
Manufacturing industries	31–33	16,227	10,254	16,666	10.0	3.8	6.5
Food	311	917	320	359	1.3	0.5	0.5
Beverage and tobacco products	312	117	45	11	0.4	0.8	0.2
Textiles, apparel, and leather	313–16	65	44	83	0.8	2.6	1.7
Wood products	321	103	20	9	1.3	0.4	0.3
Paper, printing, and support activities	322, 323	2,079	147	197	3.5	0.6	1.8
Petroleum and coal products	324	1,079	185	19	0.4	0.1	0.6
Chemicals	325	6,321	4,673	5,623	14.9	11.1	8.9
Basic chemicals	3251	554	296	522	2.7	7.8	2.6
Resin, synthetic rubber, fibers, and filament	3252	1,885	318	138	4.9	3.1	1.0
Pharmaceuticals and medicines	3254	6,321	4,529	3,550	14.9	11.5	12.6
Other chemicals	other 325	1,087	271	363	5.4	3.4	2.3
Plastics and rubber products	326	558	157	248	3.3	2.5	2.0
Nonmetallic mineral products	327	203	92	102	1.7	2.0	1.1
Primary metals	331	269	53	97	1.0	0.7	0.5
Fabricated metal products	332	473	158	179	2.6	3.2	1.1
Machinery	333	1,960	697	974	8.6	4.7	3.6
Computer and electronic products	334	11,199	2,900	5,555	16.3	11.2	5.3
Computers and peripheral equipment	3341	1,438	347	307	4.6	19.3	11.5
Communications equipment	3342	6,684	532	617	19.2	13.9	9.8
Semiconductor and other electronic components	3344	6,839	1,396	1,741	15.1	5.0	29.6
Navigational, measuring, electromedical, and control instruments	3345	2,543	1,589	1,548	5.9	7.4	8.0
Other computer and electronic products	other 334	384	70	52	5.5	11.2	5.7
Electrical equipment, appliances, and components	335	527	274	379	2.1	4.3	3.0
Transportation equipment	336	13,884	4,788	3,745	4.0	2.7	2.7
Motor vehicles, trailers, and parts	3361–63	12,006	1,482	1,401	3.7	2.4	2.1
Aerospace products and parts	3364	6,665	1,213	253	3.5	4.0	3.1
Other transportation equipment	other 336	718	161	100	4.6	2.1	1.5
Furniture and related products	337	128	53	39	0.9	0.9	0.6
Miscellaneous manufacturing	339	4,390	675	909	12.0	6.2	6.6
Medical equipment and supplies	3391	4,390	639	532	12.0	8.8	6.3
Other miscellaneous manufacturing	other 339	445	201	151	4.2	8.1	2.7

TABLE 29. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by nonfederally funded R&D program size: 2003

Industry and company size	NAICS codes	Company and other nonfederal R&D funds (millions of dollars)			Company and other nonfederal R&D funds as a percent of net sales		
		First 4	Next 4	Next 12	First 4	Next 4	Next 12
		companies	companies	companies	companies	companies	companies
Nonmanufacturing industries	21–23, 42, 44–81	16,245	5,260	7,953	18.6	13.8	7.5
Mining, extraction, and support activities	21	584	47	44	5.1	1.2	0.8
Utilities	22	61	31	29	0.1	0.1	0.0
Construction	23	113	21	14	1.1	1.1	0.7
Wholesale trade	42	11,188	2,969	3,664	14.2	5.7	15.0
Professional and commercial equipment and supplies, including computers	4214	6,209	1,227	1,036	7.8	12.4	9.9
Electrical goods	4216	1,988	650	633	14.4	5.6	5.4
Drugs and druggists' sundries	4222	7,476	817	917	15.9	11.6	4.8
Other wholesale trade	other 42	434	179	269	4.5	1.9	0.7
Retail trade	44, 45	401	107	121	13.6	0.2	0.2
Transportation and warehousing	48, 49	231	14	4	0.5	0.1	0.1
Information	51	9,020	1,512	2,536	22.7	1.5	13.5
Publishing	511	8,239	1,056	2,035	28.6	22.2	13.6
Newspaper, periodical, book, and database	5111	474	64	31	5.6	0.8	0.6
Software	5112	8,239	1,056	1,890	28.6	22.2	20.1
Broadcasting and telecommunications	513	1,015	99	124	0.7	0.5	0.4
Telecommunications	5133	1,015	99	106	0.7	0.5	0.4
Other broadcasting and telecommunications	other 513	29	2	D	17.4	0.4	-
Other information	other 51	1,556	183	231	8.8	0.9	7.3
Finance, insurance, and real estate	52, 53	491	255	313	0.9	0.4	0.2
Professional, scientific, and technical services	54	4,399	1,431	1,835	23.5	15.7	41.8
Architectural, engineering, and related services	5413	830	219	308	27.2	17.0	3.0
Computer systems design and related services	5415	3,607	477	878	27.6	4.6	8.3
Scientific R&D services	5417	1,812	601	1,146	21.4	76.2	204.8
Other professional, scientific, and technical services	other 54	700	113	115	4.6	7.8	1.4
Management of companies and enterprises	55	47	13	1	5.0	6.0	0.5
Health care services	621–23	392	40	34	4.4	1.0	0.7
Other nonmanufacturing	56, 61, 624, 71, 72, 81	328	114	137	7.9	5.4	2.6

TABLE 29. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by nonfederally funded R&D program size: 2003

Industry and company size	NAICS codes	Company and other nonfederal R&D funds (millions of dollars)			Company and other nonfederal R&D funds as a percent of net sales		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
Company size (employees)							
All companies	na	21,023	12,745	21,573	12.6	11.6	5.3
5-24	na	144	38	62	27.4	486.9	17.4
25-49	na	87	65	138	3.4	155.4	163.0
50-99	na	139	88	213	45.2	275.3	132.7
100-249	na	353	214	519	197.0	201.0	120.7
250-499	na	432	336	830	241.8	33.7	49.2
500-999	na	761	619	1,063	121.8	31.6	33.1
1,000-4,999	na	2,572	1,457	3,370	59.8	25.3	25.9
5,000-9,999	na	3,213	2,207	3,836	17.8	19.5	11.6
10,000-24,999	na	6,424	4,304	6,034	16.9	15.1	5.2
25,000 or more	na	21,023	12,745	19,808	12.6	11.6	4.4

D = data withheld to avoid disclosing operations of individual companies.

na = not applicable.

NOTES: Rankings were based on company and other funds from nonfederal sources spent for R&D and are determined separately for each industry and company size category. Consequently, industry and company size details do not add to totals. The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the federal government. The funds are predominantly the company's own, but also include funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D performed by other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 30. Federal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by federally funded R&D program size: 2003

Industry and company size	NAICS codes	Federal R&D funds (millions of dollars)			Federal R&D funds as a percent of net sales		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		All industries	21–23, 31–33, 42, 44–81	10,507	2,351	2,728	16.7
Manufacturing industries	31–33	10,507	1,912	1,985	16.7	6.4	1.1
Food	311	D	0	0	0.0	0.0	0.0
Beverage and tobacco products	312	0	0	0	0.0	0.0	0.0
Textiles, apparel, and leather	313–16	D	0	0	3.4	0.0	0.0
Wood products	321	D	0	0	0.4	0.0	0.0
Paper, printing, and support activities	322, 323	D	0	0	0.2	0.0	0.0
Petroleum and coal products	324	D	0	0	0.0	0.0	0.0
Chemicals	325	259	20	22	1.0	0.1	0.1
Basic chemicals	3251	65	5	*	0.7	0.1	0.0
Resin, synthetic rubber, fibers, and filament	3252	16	0	0	0.1	0.0	0.0
Pharmaceuticals and medicines	3254	11	4	1	0.1	5.2	0.8
Other chemicals	other 325	D	1	0	2.4	0.0	0.0
Plastics and rubber products	326	3	D	0	0.4	0.3	0.0
Nonmetallic mineral products	327	2	*	0	0.0	0.1	0.0
Primary metals	331	12	*	0	0.1	0.7	0.0
Fabricated metal products	332	45	1	D	2.4	0.5	0.0
Machinery	333	60	9	2	0.4	7.5	0.1
Computer and electronic products	334	5,890	374	143	15.9	1.5	3.7
Computers and peripheral equipment	3341	19	1	*	2.3	0.8	0.4
Communications equipment	3342	255	6	*	1.1	2.5	0.4
Semiconductor and other electronic components	3344	13	6	3	2.2	0.0	1.4
Navigational, measuring, electromedical, and control instruments	3345	5,890	199	56	15.9	9.6	0.3
Other computer and electronic products	other 334	3	0	0	0.5	0.0	0.0
Electrical equipment, appliances, and components	335	53	7	3	0.8	2.3	1.0
Transportation equipment	336	6,529	1,014	545	11.7	0.7	0.1
Motor vehicles, trailers, and parts	3361–63	56	12	1	0.0	0.0	0.0
Aerospace products and parts	3364	6,330	868	328	4.7	1.6	0.9
Other transportation equipment	other 336	D	0	0	8.6	0.0	0.0
Furniture and related products	337	D	0	0	0.0	0.0	0.0
Miscellaneous manufacturing	339	34	3	1	1.6	0.4	0.0
Medical equipment and supplies	3391	9	2	*	6.7	0.2	0.0
Other miscellaneous manufacturing	other 339	D	0	0	1.0	0.0	0.0

TABLE 30. Federal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by federally funded R&D program size: 2003

Industry and company size	NAICS codes	Federal R&D funds (millions of dollars)			Federal R&D funds as a percent of net sales		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		Nonmanufacturing industries	21–23, 42, 44–81	1,483	325	545	22.5
Mining, extraction, and support activities	21	D	0	0	0.0	0.0	0.0
Utilities	22	D	0	0	0.2	0.0	0.0
Construction	23	2	0	0	82.3	0.0	0.0
Wholesale trade	42	74	3	1	0.2	0.0	0.0
Professional and commercial equipment and supplies, including computers	4214	D	D	0	0.1	0.0	0.0
Electrical goods	4216	D	0	0	0.2	0.0	0.0
Drugs and druggists' sundries	4222	48	D	0	0.3	1.4	0.0
Other wholesale trade	other 42	1	0	0	0.2	0.0	0.0
Retail trade	44, 45	2	0	0	11.0	0.0	0.0
Transportation and warehousing	48, 49	*	0	0	0.0	0.0	0.0
Information	51	46	2	*	0.4	14.2	0.3
Publishing	511	21	2	*	2.8	17.6	0.1
Newspaper, periodical, book, and database	5111	*	0	0	0.1	0.0	0.0
Software	5112	21	2	D	2.8	17.6	0.2
Broadcasting and telecommunications	513	0	0	0	0.0	0.0	0.0
Telecommunications	5133	0	0	0	0.0	0.0	0.0
Other broadcasting and telecommunications	other 513	0	0	0	0.0	0.0	0.0
Other information	other 51	D	0	0	0.2	0.0	0.0
Finance, insurance, and real estate	52, 53	0	0	0	0.0	0.0	0.0
Professional, scientific, and technical services	54	1,483	325	522	22.5	89.0	42.8
Architectural, engineering, and related services	5413	826	183	231	79.7	56.5	13.2
Computer systems design and related services	5415	D	33	56	13.1	83.8	0.4
Scientific R&D services	5417	305	182	285	78.7	28.7	29.1
Other professional, scientific, and technical services	other 54	33	D	0	173.4	64.3	0.0
Management of companies and enterprises	55	0	0	0	0.0	0.0	0.0
Health care services	621–23	6	1	0	1.2	0.4	0.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	60	D	0	15.0	0.8	0.0

TABLE 30. Federal funds for industrial R&D as a percent of net sales of companies that performed industrial R&D in the United States, by industry and company size, ranked by federally funded R&D program size: 2003

Industry and company size	NAICS codes	Federal R&D funds (millions of dollars)			Federal R&D funds as a percent of net sales		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
Company size (employees)							
All companies	na	10,507	2,351	2,728	16.7	16.5	1.3
5-24	na	14	9	21	87.9	0.3	60.1
25-49	na	44	27	57	143.5	95.4	76.5
50-99	na	74	51	111	75.6	75.2	77.8
100-249	na	174	78	150	77.3	70.3	59.3
250-499	na	188	136	206	67.8	71.1	29.5
500-999	na	412	236	93	82.6	46.4	5.0
1,000-4,999	na	777	154	129	35.3	5.6	2.2
5,000-9,999	na	993	81	27	16.2	1.3	0.1
10,000-24,999	na	1,879	105	11	11.7	0.6	0.0
25,000 or more	na	10,261	1,405	535	15.9	0.9	0.1

* = data less than \$500,000.

D = data withheld to avoid disclosing operations of individual companies.

na = not applicable.

NOTES: Excludes data for federally funded research and development centers. Rankings were based on federal funds spent for R&D and are determined separately for each industry and company size category. Consequently, industry and company size details do not add to totals. The R&D in this table is the industrial R&D performed within company facilities funded by the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 31. Funds for performance of industrial basic research, applied research, and development in the United States: 1953–2003
(Millions of dollars)

Year	All R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
1953	3,630	19,901	151	828	726	3,980	2,753	15,093
1954	4,070	22,096	166	901	814	4,419	3,090	16,775
1955	4,640	24,747	189	1,008	928	4,949	3,523	18,789
1956	6,605	34,064	253	1,305	1,268	6,539	5,084	26,220
1957	7,731	38,578	271	1,352	1,670	8,333	5,790	28,892
1958	8,389	40,922	295	1,439	1,911	9,322	6,183	30,161
1959	9,618	46,352	320	1,542	1,991	9,595	7,307	35,214
1960	10,509	49,948	376	1,787	2,029	9,644	8,104	38,517
1961	10,908	51,259	395	1,856	1,977	9,290	8,536	40,113
1962	11,464	53,148	488	2,262	2,449	11,354	8,527	39,532
1963	12,630	57,936	522	2,394	2,457	11,271	9,651	44,271
1964	13,512	61,057	549	2,481	2,600	11,749	10,363	46,828
1965	14,185	62,960	592	2,628	2,658	11,798	10,935	48,535
1966	15,548	67,075	624	2,692	2,843	12,265	12,081	52,118
1967	16,385	68,585	629	2,633	2,915	12,202	12,841	53,751
1968	17,429	69,968	642	2,577	3,124	12,541	13,663	54,849
1969	18,308	70,011	618	2,363	3,287	12,570	14,403	55,078
1970	18,067	65,627	602	2,187	3,427	12,448	14,038	50,992
1971	18,320	63,369	590	2,041	3,415	11,813	14,315	49,516
1972	19,552	64,806	593	1,966	3,514	11,647	15,445	51,193
1973	21,249	66,716	631	1,981	3,825	12,009	16,793	52,725
1974	22,887	65,900	699	2,013	4,288	12,347	17,900	51,540
1975	24,187	63,650	730	1,921	4,570	12,026	18,887	49,703
1976	26,997	67,157	819	2,037	5,112	12,716	21,066	52,403
1977	29,825	69,766	911	2,131	5,636	13,184	23,278	54,451
1978	33,304	72,780	1,035	2,262	6,300	13,767	25,969	56,750
1979	38,226	77,146	1,158	2,337	7,225	14,581	29,843	60,228
1980	44,505	82,356	1,325	2,452	8,450	15,637	34,730	64,267
1981	51,810	87,635	1,614	2,730	10,699	18,097	39,497	66,808
1982	58,650	93,496	1,904	3,035	12,323	19,645	44,423	70,816
1983	65,268	100,089	2,223	3,409	13,927	21,357	49,118	75,323
1984	74,800	110,553	2,608	3,855	15,765	23,300	56,427	83,398
1985	84,239	120,842	2,862	4,106	18,255	26,187	63,122	90,549
1986	87,823	123,260	4,047	5,680	19,759	27,732	64,017	89,848
1987	92,155	125,895	4,324	5,907	19,813	27,067	68,018	92,921
1988	97,015	128,174	4,500	5,945	20,748	27,412	71,767	94,817
1989	102,055	129,907	5,216	6,640	22,691	28,884	74,148	94,384
1990	109,727	134,486	5,128	6,285	24,785	30,377	79,814	97,823
1991	116,952	138,503	7,837	9,281	27,446	32,504	81,669	96,718
1992	119,110	137,891	7,002	8,106	26,168	30,294	85,940	99,491
1993	117,400	132,835	6,919	7,829	24,686	27,932	85,796	97,076
1994	119,595	132,501	7,017	7,774	23,490	26,025	89,088	98,702
1995	132,103	143,419	6,099	6,621	27,454	29,806	98,552	106,994
1996	144,667	154,147	8,207	8,745	29,241	31,157	107,218	114,244
1997	157,539	165,118	10,419	10,920	32,642	34,212	114,478	119,985
1998	169,180	175,371	6,421	6,656	32,438	33,625	130,320	135,089

TABLE 31. Funds for performance of industrial basic research, applied research, and development in the United States: 1953–2003
(Millions of dollars)

Year	All R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
1999	184,129	188,136	7,202	7,359	36,912	37,715	140,015	143,062
2000	201,962	201,962	7,588	7,588	39,446	39,446	154,929	154,929
2001	202,017	197,282	8,053	7,864	44,012	42,980	149,952	146,438
2002	193,868	186,250	7,547	7,250	28,533	27,412	157,788	151,588
2003	204,004	192,457	8,585	8,099	38,076	35,921	157,343	148,437

NOTES: Some statistics for 1999–2002 have been revised since originally published. Excludes data for federally funded research and development centers. Gross domestic product implicit price deflators were used to convert current dollars to constant (2000) dollars. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 32. Company and other nonfederal funds for performance of industrial basic research, applied research, and development in the United States: 1953–2003

(Millions of dollars)

Year	All R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
1953	2,200	12,061	132	724	438	2,401	1,630	8,936
1954	2,320	12,595	143	776	492	2,671	1,685	9,148
1955	2,460	13,120	162	864	560	2,987	1,738	9,269
1956	3,277	16,900	216	1,114	794	4,095	2,267	11,692
1957	3,396	16,946	230	1,148	992	4,950	2,174	10,848
1958	3,630	17,707	252	1,229	1,137	5,546	2,241	10,932
1959	3,983	19,195	248	1,195	1,178	5,677	2,557	12,323
1960	4,428	21,046	297	1,412	1,196	5,684	2,935	13,950
1961	4,668	21,936	314	1,476	1,165	5,475	3,189	14,986
1962	5,029	23,315	345	1,599	1,438	6,667	3,246	15,049
1963	5,360	24,587	375	1,720	1,450	6,651	3,535	16,216
1964	5,792	26,173	384	1,735	1,560	7,049	3,848	17,388
1965	6,445	28,606	406	1,802	1,620	7,190	4,419	19,614
1966	7,216	31,130	451	1,946	1,804	7,783	4,961	21,402
1967	8,020	33,571	427	1,787	1,849	7,740	5,744	24,044
1968	8,869	35,604	462	1,855	2,081	8,354	6,326	25,395
1969	9,857	37,694	458	1,751	2,272	8,688	7,127	27,254
1970	10,288	37,370	444	1,613	2,378	8,638	7,466	27,120
1971	10,654	36,852	456	1,577	2,441	8,443	7,757	26,832
1972	11,535	38,233	463	1,535	2,562	8,492	8,510	28,207
1973	13,104	41,143	499	1,567	2,832	8,892	9,773	30,684
1974	14,667	42,232	536	1,543	3,263	9,395	10,868	31,293
1975	15,582	41,005	573	1,508	3,440	9,053	11,569	30,445
1976	17,436	43,373	634	1,577	3,912	9,731	12,890	32,065
1977	19,340	45,240	701	1,640	4,311	10,084	14,328	33,516
1978	22,115	48,328	785	1,715	4,870	10,642	16,460	35,970
1979	25,708	51,883	893	1,802	5,670	11,443	19,145	38,638
1980	30,476	56,395	1,035	1,915	6,550	12,121	22,891	42,359
1981	35,428	59,926	1,313	2,221	8,359	14,139	25,756	43,566
1982	40,105	63,933	1,523	2,428	9,363	14,926	29,219	46,579
1983	44,588	68,376	1,760	2,699	10,286	15,774	32,542	49,903
1984	51,404	75,974	2,132	3,151	11,541	17,057	37,731	55,766
1985	57,043	81,829	2,373	3,404	12,908	18,517	41,762	59,908
1986	59,932	84,115	3,496	4,907	15,082	21,168	41,354	58,041
1987	61,403	83,884	3,583	4,895	15,153	20,701	42,667	58,288
1988	66,672	88,086	3,507	4,633	16,531	21,840	46,634	61,612
1989	73,501	93,560	3,832	4,878	17,993	22,904	51,676	65,779
1990	81,602	100,015	3,760	4,608	18,432	22,591	59,410	72,815
1991	90,580	107,271	6,125	7,254	21,425	25,373	63,030	74,645
1992	94,388	109,271	5,816	6,733	21,184	24,524	67,385	78,010
1993	94,591	107,028	5,961	6,745	19,956	22,580	68,678	77,708
1994	97,131	107,612	6,078	6,734	19,372	21,462	71,683	79,418
1995	108,652	117,959	5,379	5,840	23,755	25,790	79,516	86,327
1996	121,015	128,945	6,848	7,297	25,370	27,032	88,798	94,617
1997	133,611	140,039	8,766	9,188	29,782	31,215	95,064	99,637
1998	145,016	150,322	4,851	5,029	29,576	30,658	110,590	114,637

TABLE 32. Company and other nonfederal funds for performance of industrial basic research, applied research, and development in the United States: 1953–2003

(Millions of dollars)

Year	All R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
1999	161,594	165,111	5,537	5,658	33,821	34,557	122,236	124,896
2000	182,844	182,844	6,115	6,115	36,494	36,494	140,236	140,236
2001	185,118	180,779	7,299	7,128	40,409	39,462	137,410	134,189
2002	177,467	170,494	6,659	6,397	26,081	25,056	144,727	139,040
2003	183,305	172,929	6,957	6,563	32,894	31,032	143,454	135,334

NOTES: Some statistics for 1999–2002 have been revised since originally published. Gross domestic product implicit price deflators were used to convert current dollars to constant (2000) dollars. The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the federal government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 33. Federal funds for performance of industrial basic research, applied research, and development in the United States: 1953–2003

(Millions of dollars)

Year	All R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
1953	1,430	7,840	19	104	288	1,579	1,123	6,157
1954	1,750	9,501	23	125	322	1,748	1,405	7,628
1955	2,180	11,627	27	144	368	1,963	1,785	9,520
1956	3,328	17,163	37	191	474	2,445	2,817	14,528
1957	4,335	21,632	41	205	678	3,383	3,616	18,044
1958	4,759	23,215	43	210	774	3,776	3,942	19,229
1959	5,635	27,157	72	347	813	3,918	4,750	22,892
1960	6,081	28,902	79	375	833	3,959	5,169	24,567
1961	6,240	29,323	81	381	812	3,816	5,347	25,127
1962	6,434	29,828	143	663	1,011	4,687	5,281	24,483
1963	7,270	33,349	147	674	1,007	4,619	6,116	28,055
1964	7,720	34,885	165	746	1,040	4,700	6,515	29,440
1965	7,740	34,354	186	826	1,038	4,607	6,516	28,921
1966	8,332	35,945	173	746	1,039	4,482	7,120	30,716
1967	8,365	35,015	202	846	1,066	4,462	7,097	29,707
1968	8,560	34,364	180	723	1,043	4,187	7,337	29,454
1969	8,451	32,317	160	612	1,015	3,881	7,276	27,824
1970	7,779	28,256	158	574	1,049	3,810	6,572	23,872
1971	7,666	26,517	134	464	974	3,369	6,558	22,684
1972	8,017	26,573	130	431	952	3,155	6,935	22,986
1973	8,145	25,573	132	414	993	3,118	7,020	22,041
1974	8,220	23,668	163	469	1,025	2,951	7,032	20,248
1975	8,605	22,645	157	413	1,130	2,974	7,318	19,258
1976	9,561	23,784	185	460	1,200	2,985	8,176	20,338
1977	10,485	24,526	210	491	1,325	3,099	8,950	20,936
1978	11,189	24,451	250	546	1,430	3,125	9,509	20,780
1979	12,518	25,263	265	535	1,555	3,138	10,698	21,590
1980	14,029	25,960	290	537	1,900	3,516	11,839	21,908
1981	16,382	27,710	301	509	2,340	3,958	13,741	23,243
1982	18,545	29,563	381	607	2,960	4,719	15,204	24,237
1983	20,680	31,713	463	710	3,641	5,583	16,576	25,419
1984	23,396	34,579	476	704	4,224	6,243	18,696	27,632
1985	27,196	39,013	489	701	5,347	7,670	21,360	30,641
1986	27,891	39,145	551	773	4,678	6,566	22,662	31,806
1987	30,752	42,011	740	1,011	4,660	6,366	25,352	34,634
1988	30,343	40,089	993	1,312	4,217	5,571	25,133	33,205
1989	28,554	36,347	1,384	1,762	4,698	5,980	22,472	28,605
1990	28,125	34,471	1,368	1,677	6,353	7,786	20,404	25,008
1991	26,372	31,232	1,712	2,027	6,021	7,131	18,639	22,074
1992	24,722	28,620	1,186	1,373	4,983	5,769	18,555	21,481
1993	22,809	25,808	958	1,084	4,730	5,352	17,118	19,369
1994	22,463	24,887	939	1,040	4,119	4,563	17,405	19,283
1995	23,451	25,460	720	782	3,699	4,016	19,031	20,661
1996	23,653	25,203	1,358	1,447	3,871	4,125	18,423 S	19,630
1997	23,928	25,079	1,654	1,734	2,861	2,999	19,412	20,346
1998	24,164	25,048	1,570	1,627	2,862	2,967	19,730	20,452
1999	22,535	23,025	1,665	1,701	3,091	3,158	17,779	18,166

TABLE 33. Federal funds for performance of industrial basic research, applied research, and development in the United States: 1953–2003

(Millions of dollars)

Year	All R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
2000	19,118	19,118	1,472	1,472	2,951	2,951	14,695	14,695
2001	16,899	16,503	754	736	3,603	3,519	12,542	12,248
2002	16,401	15,757	888	853	2,452	2,356	13,061 S	12,548
2003	20,699	19,527	1,628	1,536	5,182	4,889	13,889	13,103

S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. Excludes data for federally funded research and development centers. Gross domestic product implicit price deflators were used to convert current dollars to constant (2000) dollars. The R&D in this table is the industrial R&D performed within company facilities funded by the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 34. Funds for and number of companies that performed industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2003
(Millions of dollars)

Industry and company size	NAICS codes	All industrial R&D				Basic research			
		Companies	Total	Federal	Company and other	Companies	Total	Federal	Company and other
All industries	21-23, 31-33, 42, 44-81	37,843	204,004	20,699	183,305	3,624	8,585	1,628	6,957
Manufacturing industries	31-33	16,362	123,384	15,305	108,079	1,848	5,332	613	4,718
Food	311	598	D	D	1,987	104	D	D	D
Beverage and tobacco products	312	38	173	0	173	2	D	0	D
Textiles, apparel, and leather	313-16	516	D	D	309	137	24	0	24
Wood products	321	217	D	D	138	6	D	0	D
Paper, printing, and support activities	322, 323	547	D	D	2,909	174	D	1	D
Petroleum and coal products	324	101	D	D	1,308	16	D	0	D
Chemicals	325	1,624	23,001	307	22,693	270	2,841	20	2,820
Basic chemicals	3251	206	2,061	70	1,991	55	235	D	D
Resin, synthetic rubber, fibers, and filament	3252	84	2,406	16	2,390	20	215	0	215
Pharmaceuticals and medicines	3254	299	D	D	15,949	50	D	D	D
Other chemicals	other 325	1,035	D	D	2,364	145	D	D	D
Plastics and rubber products	326	1,144	1,764	35	1,729	86	80	0	80
Nonmetallic mineral products	327	400	474	4	470	19	D	D	D
Primary metals	331	268	530	12	518	57	9	*	9
Fabricated metal products	332	1,707	1,374	45	1,329	70	21	0	21
Machinery	333	3,048	6,304	80	6,224	221	D	D	D
Computer and electronic products	334	2,434	39,001	6,506	32,495	245	881	D	D
Computers and peripheral equipment	3341	284	2,587	27 S	2,561	41	21	D	D
Communications equipment	3342	439	9,198	266	8,932	49	371	D	D
Semiconductor and other electronic components	3344	592	12,635	28	12,607	60	196	5	191
Navigational, measuring, electromedical, and control instruments	3345	973	14,014	6,180	7,834	80	289	120	170
Other computer and electronic products	other 334	146	566	6	560	16	4	0	4
Electrical equipment, appliances, and components	335	675	2,073	71	2,002	105	14	4 S	9
Transportation equipment	336	1,169	34,273	8,162	26,111	65	1,078	D	D
Motor vehicles, trailers, and parts	3361-63	751	D	D	16,874	39	D	D	D
Aerospace products and parts	3364	170	15,731	7,528	8,203	14	725	417	308
Other transportation equipment	other 336	248	D	D	1,034	13	D	D	D
Furniture and related products	337	424	D	D	275	63	D	0	D
Miscellaneous manufacturing	339	1,453	7,455	47	7,408	206	98	D	D
Medical equipment and supplies	3391	713	6,386	17	6,370	150	D	D	D
Other miscellaneous manufacturing	other 339	740	1,069	31	1,038	56	D	0	D

TABLE 34. Funds for and number of companies that performed industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2003
(Millions of dollars)

Industry and company size	NAICS codes	All industrial R&D				Basic research			
		Companies	Total	Federal	Company and other	Companies	Total	Federal	Company and other
Nonmanufacturing industries	21-23, 42, 44-81	21,481	80,620	5,394	75,226	1,776	3,253	1,015	2,239
Mining, extraction, and support activities	21	100	D	D	750	20	D	D	D
Utilities	22	136	D	D	128	5	D	0	D
Construction	23	1,001	333	79	254	309	4	0	4
Wholesale trade	42	6,088	25,092	122	24,970	495	763	D	D
Professional and commercial equipment and supplies, including computers	4214	898	D	D	9,679	33	D	D	D
Electrical goods	4216	745	D	D	3,701	8	D	0	D
Drugs and druggists' sundries	4222	190	D	D	9,494	26	D	D	D
Other wholesale trade	other 42	4,254	2,099	2	2,097	428	55	0	55
Retail trade	44, 45	1,886	1,488	26	1,462	7	D	0	D
Transportation and warehousing	48, 49	222	272	*	272	3	D	0	D
Information	51	2,272	D	D	19,811	109	D	D	D
Publishing	511	1,499	D	D	15,760	77	D	D	D
Newspaper, periodical, book, and database	5111	347	665	*	665	1	D	*	D
Software	5112	1,153	D	D	15,095	76	D	D	D
Broadcasting and telecommunications	513	137	1,663	0	1,663	6	D	0	D
Telecommunications	5133	122	1,625	0	1,625	2	D	0	D
Other broadcasting and telecommunications	other 513	14	38	0	38	4	1	0	1
Other information	other 51	636	D	D	2,388	26	D	0	D
Finance, insurance, and real estate	52, 53	667	1,455	0	1,455	41	50	0	50
Professional, scientific, and technical services	54	5,446	28,721	4,966	23,755	498	1,940	D	D
Architectural, engineering, and related services	5413	1,048	5,159	1,898	3,261	160	263	D	D
Computer systems design and related services	5415	2,079	9,786	1,148	8,638	120	552	406	146
Scientific R&D services	5417	1,387	12,460	1,886	10,574	212	1,114	411	703
Other professional, scientific, and technical services	other 54	933	1,316	34	1,283	6	11	D	D
Management of companies and enterprises	55	36	67	0	67	0	0	0	0
Health care services	621-23	1,506	717	36	681	7	28	17	11
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,120	1,679	60 S	1,619	282	33	D	D

TABLE 34. Funds for and number of companies that performed industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2003
(Millions of dollars)

Industry and company size	NAICS codes	All industrial R&D				Basic research			
		Companies	Total	Federal	Company and other	Companies	Total	Federal	Company and other
Company size (employees)									
All companies	na	37,843	204,004	20,699	183,305	3,624	8,585	1,628	6,957
5-24	na	17,383	5,578	754	4,824	1,604	263	54	209
25-49	na	8,271	6,449	910	5,540	792	502	371	131
50-99	na	4,228	4,829	559	4,271	357	189	58	131
100-249	na	3,987	9,559	636	8,924	357	520	118	402
250-499	na	1,561	9,536	668	8,869	151	405	104	301
500-999	na	933	10,383	759	9,624	100	561	149	412
1,000-4,999	na	1,001	30,484	1,088	29,396	160	D	D	934
5,000-9,999	na	211	15,434	1,101	14,333	36	D	D	417
10,000-24,999	na	166	27,571	1,995	25,576	32	D	D	988
25,000 or more	na	100	84,180	12,231	71,949	34	3,576	544	3,032

TABLE 34. Funds for and number of companies that performed industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Applied research				Development			
		Companies	Total	Federal	Company and other	Companies	Total	Federal	Company and other
All industries	21-23, 31-33, 42, 44-81	13,984	38,076	5,182	32,894	28,499	157,343	13,889	143,454
Manufacturing industries	31-33	6,458	22,498	3,099	19,400	13,238	95,555	11,594	83,961
Food	311	261	D	D	D	489	1,553	0	1,553
Beverage and tobacco products	312	8	D	0	D	31	95	0	95
Textiles, apparel, and leather	313-16	193	D	D	D	482	262	D	D
Wood products	321	21	D	0	D	201	87	D	D
Paper, printing, and support activities	322, 323	326	D	D	D	496	2,090	13	2,078
Petroleum and coal products	324	31	D	0	D	69	859	D	D
Chemicals	325	778	6,287	129	6,158	1,325	13,874	158 S	13,715
Basic chemicals	3251	109	662	D	D	151	1,163	16	1,147
Resin, synthetic rubber, fibers, and filament	3252	41	1,186	D	D	70	1,005	D	D
Pharmaceuticals and medicines	3254	141	3,445	6	3,439	223	D	D	D
Other chemicals	other 325	487	994	D	D	882	D	D	1,277
Plastics and rubber products	326	352	377	24	353	955	1,307	11	1,296
Nonmetallic mineral products	327	118	D	D	D	364	251	D	D
Primary metals	331	117	63	0	63	184	458	12	446
Fabricated metal products	332	824	263	D	D	1,421	1,090	D	D
Machinery	333	1,086	D	D	D	2,510	5,300	D	D
Computer and electronic products	334	967	5,621	D	D	1,861	32,499	6,084	26,415
Computers and peripheral equipment	3341	123	199	D	D	236	2,367	D	D
Communications equipment	3342	115	1,363	D	D	331	7,465	D	D
Semiconductor and other electronic components	3344	240	2,146	11	2,135	427	10,294	12	10,282
Navigational, measuring, electromedical, and control instruments	3345	449	1,849	255	1,593	730	11,876	5,805	6,071
Other computer and electronic products	other 334	39	65	6	59	139	497	0	497
Electrical equipment, appliances, and components	335	261	314	53	261	554	1,745	13	1,732
Transportation equipment	336	446	6,050	D	D	917	27,144	5,179	21,965
Motor vehicles, trailers, and parts	3361-63	220	2,629	D	D	635	D	D	14,018
Aerospace products and parts	3364	58	3,234	2,456	778	130	11,772	4,655	7,117
Other transportation equipment	other 336	168	187	D	D	152	D	D	830
Furniture and related products	337	64	D	0	D	393	261	D	D
Miscellaneous manufacturing	339	604	679	D	D	983	6,678	34	6,644
Medical equipment and supplies	3391	327	D	D	D	523	5,788	D	D
Other miscellaneous manufacturing	other 339	277	D	D	D	460	890	D	D

TABLE 34. Funds for and number of companies that performed industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Applied research				Development			
		Companies	Total	Federal	Company and other	Companies	Total	Federal	Company and other
Nonmanufacturing industries	21-23, 42, 44-81	7,526	15,578	2,083	13,494	15,261	61,789	2,296	59,493
Mining, extraction, and support activities	21	80	D	0	D	55	422	0	422
Utilities	22	15	D	0	D	127	136	D	D
Construction	23	581	105	0	105	993	223	79	145
Wholesale trade	42	1,366	4,009	67	3,942	4,878	20,320	D	D
Professional and commercial equipment and supplies, including computers	4214	71	D	D	D	830	D	D	9,079
Electrical goods	4216	249	D	0	D	475	D	D	2,858
Drugs and druggists' sundries	4222	128	2,534	D	D	92	D	D	D
Other wholesale trade	other 42	918	342	2	340	3,482	1,701	0	1,701
Retail trade	44, 45	456	D	0	D	1,017	932	26	907
Transportation and warehousing	48, 49	193	D	D	D	33	137	D	D
Information	51	857	D	D	D	1,935	16,615	D	D
Publishing	511	570	D	D	D	1,260	13,196	D	D
Newspaper, periodical, book, and database	5111	262	D	*	D	323	615	*	615
Software	5112	308	D	D	2,456	936	12,581	D	D
Broadcasting and telecommunications	513	16	D	0	D	116	1,274	0	1,274
Telecommunications	5133	12	D	0	D	106	1,250	0	1,250
Other broadcasting and telecommunications	other 513	4	12	0	12	9	25	0	25
Other information	other 51	271	D	0	D	559	2,144	D	D
Finance, insurance, and real estate	52, 53	565	74	0	74	609	1,331	0	1,331
Professional, scientific, and technical services	54	2,481	6,808	1,961	4,847	3,502	19,972	D	D
Architectural, engineering, and related services	5413	387	1,636	D	D	644	3,260	D	D
Computer systems design and related services	5415	996	802	19	782	1,176	8,432	723	7,709
Scientific R&D services	5417	775	4,161	841	3,320	807	7,186	634	6,551
Other professional, scientific, and technical services	other 54	323	210	D	D	874	1,095	D	D
Management of companies and enterprises	55	7	10	0	10	30	57	0	57
Health care services	621-23	264	258	D	D	400	431	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	659	435	D	D	1,681	1,211	D	D

TABLE 34. Funds for and number of companies that performed industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2003
(Millions of dollars)

Industry and company size	NAICS codes	Applied research				Development			
		Companies	Total	Federal	Company and other	Companies	Total	Federal	Company and other
Company size (employees)									
All companies	na	13,984	38,076	5,182	32,894	28,499	157,343	13,889	143,454
5-24	na	6,985	1,870	401	1,469	12,565	3,444	298	3,146
25-49	na	2,882	1,489	381	1,109	6,560	4,458	158	4,300
50-99	na	1,554	1,587	281	1,306	3,092	3,053	220	2,833
100-249	na	1,145	2,079	189	1,890	3,179	6,960	328	6,632
250-499	na	529	1,984	281	1,703	1,231	7,148	283	6,864
500-999	na	292	2,024	340	1,684	736	7,798	270	7,528
1,000-4,999	na	389	D	D	4,852	785	24,182	572	23,610
5,000-9,999	na	74	D	D	3,371	159	11,415	869	10,545
10,000-24,999	na	81	D	D	5,157	119	21,141	1,709	19,432
25,000 or more	na	52	12,859	2,507	10,353	73	67,745	9,181	58,564

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; S = more than 50 percent of the cell value is imputed.

NOTES: Statistics for total and federally funded industrial R&D exclude data for federally funded research and development centers. The estimates of companies are the numbers of companies that actually distributed total R&D among the three character-of-work categories (basic research, applied research, and development) when responding to the survey. During subsequent statistical processing, when undistributed amounts of R&D were allocated among the three categories for this table, it was not possible to similarly allocate the associated number of companies among the three categories. See table A-7 for the amount of undistributed R&D and the number of companies that reported undistributed R&D. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 35. Funds for industrial R&D performance in the United States, by state: Selected years 1989–2003

(Millions of dollars)

State	1989	1991	1993	1995	1997	1998	1999	2000	2001	2002	2003	% change, 2002–03
United States	102,055	116,952	117,400	132,103	157,539	169,180	184,129	201,962	202,017	193,868	204,004	5.2
Alabama	430	596	557 S	686	589 S	845	823	821 S	905	846	999	18.1
Alaska	9	21	14	30	24 S	37 E	82 E	48 E	68	51 E	36 E	-29.2
Arizona	921	1,080	1,039	1,356 S	1,854	1,801	2,109 S	2,182 S	2,707	3,201	2,605	-18.6
Arkansas	51	S	179	181	118	213 E	326	400	254 E	225 E	270	19.9
California	23,781	S	21,975	28,710	34,011	32,856	38,169	45,455	44,628	42,177	47,142	11.8
Colorado	1,167	S	1,966	1,865	2,248	3,180	3,266	3,143	3,082	2,823	3,544	25.6
Connecticut	2,421	1,756	2,228	3,906	3,014	3,346	4,145 S	4,132 S	4,686	6,077	5,834	-4.0
Delaware	D	D	913 S	1,077 S	1,009 S	1,356 S	1,295 S	1,468 S	1,232	1,219	1,298	6.5
District of Columbia	D	46	515 S	672 S	D	598 S	268 E	196 E	242	194	235	21.2
Florida	2,352	S	2,386	4,101	3,442	3,265	3,482	3,773 S	3,755	3,707	3,181	-14.2
Georgia	722	993	792	1,175	1,273	1,617	1,904	2,159 S	1,912	2,107	2,108	0.1
Hawaii	9	13	255	14	87	55 E	68 E	93 E	93	103	133	29.5
Idaho	D	S	686	827	1,181 S	1,103 S	1,239	1,363	884	992	745	-24.9
Illinois	4,068	5,750	5,023	5,776 S	6,248	7,318	8,102	8,393 S	8,232	7,616	8,319	9.2
Indiana	1,823	2,274	2,141	2,721 S	2,677	2,922	2,863 S	2,888 S	3,583	3,572	3,658	2.4
Iowa	365	527	505	998	578	750	730	762	817	753	833	10.6
Kansas	406	S	280 S	569	1,136 S	1,384 S	1,448 S	1,327 S	1,299 S	1,427 S	1,675 S	17.4
Kentucky	227	176	282	452	359	606	777	762	636	656	601	-8.4
Louisiana	169	S	106	61	172	377 E	516 E	364 E	316 E	248 E	295	19.1
Maine	33	S	D	286	83	137	208	255	249	250 S	200	-19.9
Maryland	1,093	1,376	1,296	1,075	1,425	1,905	2,020	2,213	3,682	3,800	3,998	5.2
Massachusetts	5,851	S	5,960	7,416	8,300	10,367	9,781	10,857	11,756	10,609	11,094	4.6
Michigan	8,506	9,283	18,845	12,388	13,009	12,554	16,877	17,489 S	14,283	13,565	15,241	12.4
Minnesota	2,075	2,070	2,341	2,636 S	3,116	3,367	3,695	3,971	4,355	4,460	5,003	12.2
Mississippi	56	S	51	66	73	183 E	224 E	242 E	219 E	224	1,021	354.9
Missouri	2,391	S	1,339 S	2,028 S	1,290 S	1,505	1,664	1,978	1,792	1,592	1,742	9.4
Montana	D	S	D	17	92	63	92 E	78 E	70 E	66	65	-1.7
Nebraska	64	67	93	150	71	195 E	217 E	335 E	306	342	363	6.1
Nevada	29	95	65	322	380	476	490	433	290	339	383	12.8
New Hampshire	D	D	247	472	652	1,138	1,157	722	1,339	1,153	1,349	17.0
New Jersey	6,410	8,933	8,009	8,200	11,069	11,107	10,145	10,580	10,164	11,566	11,401	-1.4
New Mexico	1,039	1,217	D	1,461	1,310 S	1,450 S	1,352 S	1,203 S	231	331	349	5.4
New York	8,107	9,457	8,597	8,651	9,939 S	10,283	12,260	11,622	10,884	9,234	8,556	-7.3
North Carolina	1,311	1,470	1,886	2,226	3,590	3,483	3,754	4,535	4,437	3,704	4,424	19.4
North Dakota	S	S	D	12	33	46 E	95 E	83 E	347	154	216	40.6

TABLE 35. Funds for industrial R&D performance in the United States, by state: Selected years 1989–2003

(Millions of dollars)

State	1989	1991	1993	1995	1997	1998	1999	2000	2001	2002	2003	% change, 2002–03
Ohio	3,964	5,406	4,494	4,001	5,608	5,742	6,531	6,245	6,694	6,230	6,260	0.5
Oklahoma	333	448	299	288	428	369	562 E	463	543 E	412	577	39.9
Oregon	357	S	455	741	1,102	1,345	1,408	1,533	2,677	2,320 S	2,973	28.2
Pennsylvania	4,653	S	4,652	5,331	6,609 S	7,393	7,474	8,473	8,967	7,064	7,091	0.4
Rhode Island	140	174	154	520	704 S	1,332 S	1,317 S	1,167 S	1,134 S	1,121	1,203 S	7.3
South Carolina	388	479	461	739	783 S	996	922	1,059	921	1,054	976	-7.4
South Dakota	4	6	D	19	26	40 E	57 E	89 E	87 E	53	75	42.5
Tennessee	934	843	788	1,003	1,089	2,440	2,205	1,644	1,503	1,289	1,507	16.9
Texas	5,051	5,439	4,562	6,211 S	7,265	8,984	8,661	10,048	9,839	10,744	11,057	2.9
Utah	389	407	279	803	1,027	1,119	1,028	1,063	1,173	1,116	996	-10.7
Vermont	D	D	D	248	246	114	346	389	339	286 S	360	25.7
Virginia	1,131	1,275	1,046	1,577	1,767	2,540	2,662	2,683	2,957	2,920	4,152	42.2
Washington	2,728	3,677	4,575 S	4,294 S	6,610 S	7,072 S	7,093 S	8,235 S	8,933 S	8,579	9,222	7.5
West Virginia	D	D	100 S	243	D	335	351	329	211	264	219	-17.1
Wisconsin	1,035	1,304	1,296	1,706	1,707	1,929	2,194	2,415	2,469 S	2,649 E	2,623	-1.0
Wyoming	D	2	15	25	28	20 E	65 E	37 E	28 E	21	37	75.4
Undistributed funds ^a	2,945	772	683	1,773 S	7,211 S	5,521 S	5,610 S	9,762 S	9,770 S	8,361	5,762	-31.1

D = data withheld to avoid disclosing operations of individual companies.

E = more than 50 percent of the cell value is imputed due to raking of state data.

S = more than 50 percent of the cell value is imputed. For years prior to 1993, data have been withheld.

^a Includes data reported on Form RD-1 that were not allocated to a specific state. Data reported on Form RD-1A were allocated to the state in the address on the company's survey form which is usually the company's headquarters.

NOTES: Some statistics for 1998–2002 have been revised since originally published. Excludes data for federally funded research and development centers. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 36. Funds for and number of companies that performed industrial R&D in the United States, by state and source of funds: 2003

(Millions of dollars)

State	Total		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount
United States	37,843	204,004	2,028	20,699	36,958	183,305
Alabama	254	999	32	461	241	539
Alaska	23	36 E	4	5 E	20	31 E
Arizona	546	2,605	19	574	542	2,031
Arkansas	158	270	2	D	158	263
California	7,238	47,142	324	4,497	7,117	42,644
Colorado	875	3,544	106	95	797	3,449
Connecticut	662	5,834	21	852	656	4,982
Delaware	52	1,298	3	12	52	1,285
District of Columbia	129	235	11	95	122	140
Florida	1,611	3,181	83	1,031	1,595	2,150
Georgia	597	2,108	10	57 E	592	2,051
Hawaii	200	133	18	53	190	80
Idaho	209	745	9	9	201	736
Illinois	1,722	8,319	60	190	1,720	8,129
Indiana	1,223	3,658	61	256	1,188	3,401
Iowa	424	833	1	D	424	826
Kansas	288	1,675 S	49	D	244	D
Kentucky	999	601	4	21 E	997	580
Louisiana	360	295	19	24 E	358	271
Maine	243	200	4	30	242	169
Maryland	450	3,998	79	1,745	412	2,253
Massachusetts	1,153	11,094	175	2,153 S	1,137	8,941
Michigan	1,399	15,241	29	213	1,392	15,028
Minnesota	1,615	5,003	27	236	1,612	4,767
Mississippi	184	1,021	10	D	178	D
Missouri	911	1,742	35	80	898	1,662
Montana	294	65	1	D	294	63
Nebraska	216	363	4	7	215	356
Nevada	248	383	6	31	245	352
New Hampshire	253	1,349	56	D	220	D
New Jersey	1,182	11,401	70	215	1,166	11,185
New Mexico	119	349	23	165	109	184
New York	1,786	8,556	80	598	1,784	7,958
North Carolina	968	4,424	37	108	961	4,315
North Dakota	61	216	2	D	60	214
Ohio	2,032	6,260	155	425	1,920	5,835
Oklahoma	563	577	22	33	546	545
Oregon	952	2,973	93	39	943	2,934
Pennsylvania	2,090	7,091	106	166	2,014	6,925
Rhode Island	149	1,203 S	19	D	145	D
South Carolina	381	976	32	36	377	940
South Dakota	90	75	2	D	89	73
Tennessee	404	1,507	18	206	392	1,302
Texas	3,267	11,057	75	638	3,251	10,419
Utah	361	996	31	135	355	861

TABLE 36. Funds for and number of companies that performed industrial R&D in the United States, by state and source of funds: 2003

(Millions of dollars)

State	Total		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount
Vermont	114	360	3	10 S	112	349
Virginia	1,155	4,152	131	1,846	1,105	2,306
Washington	644	9,222	57	103	629	9,119
West Virginia	61	219	4	21	59	198
Wisconsin	1,355	2,623	271	34 E	1,096	2,589
Wyoming	79	37	8	2 E	79	35
Undistributed funds ^a	116	5,762	7	104 E	116	5,658

D = data withheld to avoid disclosing operations of individual companies.

E = more than 50 percent of the cell value is imputed due to raking of state data.

S = more than 50 percent of the cell value is imputed.

^a Includes data reported on Form RD-1 that were not allocated to a specific state. Data reported on the Form RD-1A were allocated to the state in the address on the company's survey form which is usually the company's headquarters.

NOTES: Detail for number of companies will not add to total because companies may perform R&D in more than one state and have more than one source of funds. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Companies	United States	Alabama	Alaska	Arizona	Arkansas	California
All industries	21-23, 31-33, 42, 44-81	37,843	204,004	999	36 E	2,605	270	47,142
Manufacturing industries	31-33	16,362	123,384	478	D	1,920	168	25,220
Food	311	598	D	1 E	1 E	1 E	18	84
Beverage and tobacco products	312	38	173	* E	* E	* E	* E	D
Textiles, apparel, and leather	313-16	516	D	4 S	* E	*	4 S	26
Wood products	321	217	D	3	* E	* E	* S	D
Paper, printing, and support activities	322, 323	547	D	2 E	* E	2 E	6	90 S
Petroleum and coal products	324	101	D	* E	* E	* E	* E	D
Chemicals	325	1,624	23,001	34	2	45	10	2,623
Basic chemicals	3251	206	2,061	19	D	* S	D	76 S
Resin, synthetic rubber, fibers, and filament	3252	84	2,406	1	0	D	D	23
Pharmaceuticals and medicines	3254	299	D	7	D	D	2	2,360
Other chemicals	other 325	1,035	D	6 S	0	25	1 E	165
Plastics and rubber products	326	1,144	1,764	5	* E	10	4 E	D
Nonmetallic mineral products	327	400	474	* E	D	* E	1 S	40
Primary metals	331	268	530	10 S	* E	* E	1 S	6
Fabricated metal products	332	1,707	1,374	4 E	* E	4 E	4	264
Machinery	333	3,048	6,304	24	D	D	20	1,575
Computer and electronic products	334	2,434	39,001	117	* E	1,287	55	12,688
Computers and peripheral equipment	3341	284	2,587	D	* E	2 E	D	772
Communications equipment	3342	439	9,198	71	0	25	* E	3,565 S
Semiconductor and other electronic components	3344	592	12,635	7 E	0	699	D	4,620
Navigational, measuring, electromedical, and control instruments	3345	973	14,014	25	* E	558	6	3,639
Other computer and electronic products	other 334	146	566	D	0	4 S	3 S	91 S
Electrical equipment, appliances, and components	335	675	2,073	9 S	D	13	25	211
Transportation equipment	336	1,169	34,273	258	D	D	19	6,695
Motor vehicles, trailers, and parts	3361-63	751	D	22 E	*	16	16	2,365 S
Aerospace products and parts	3364	170	15,731	235	D	68	1 E	4,314
Other transportation equipment	other 336	248	D	1 E	* E	D	2	16 S
Furniture and related products	337	424	D	3	* E	1	1 S	14 S
Miscellaneous manufacturing	339	1,453	7,455	4 E	* E	98	1 E	626
Medical equipment and supplies	3391	713	6,386	3	* E	77	1 E	454
Other miscellaneous manufacturing	other 339	740	1,069	1 E	* E	21	1 E	172

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Companies	United States	Alabama	Alaska	Arizona	Arkansas	California
Nonmanufacturing industries	21-23, 42, 44-81	21,481	80,620	521	D	685	102 E	21,921
Mining, extraction, and support activities	21	100	D	2	3 E	10	* E	106 S
Utilities	22	136	D	D	* E	D	*	18
Construction	23	1,001	333	2 E	1 E	4 E	1 E	24 E
Wholesale trade	42	6,088	25,092	63	2 E	259	18 E	5,438
Professional and commercial equipment and supplies, including computers	4214	898	D	46	* E	152	2 E	2,894
Electrical goods	4216	745	D	1 E	* E	48	1 E	1,535
Drugs and druggists' sundries	4222	190	D	1 E	* E	29 S	5 E	683
Other wholesale trade	other 42	4,254	2,099	15 E	1 E	29	11 E	327
Retail trade	44, 45	1,886	1,488	11 E	2 E	16 E	8 E	280
Transportation and warehousing	48, 49	222	272	* E	* E	D	* E	D
Information	51	2,272	D	56	3 E	92	40	5,113
Publishing	511	1,499	D	29	*	56	D	4,498
Newspaper, periodical, book, and database	5111	347	665	1 E	* E	1 E	D	38
Software	5112	1,153	D	28	*	55	1 E	4,460
Broadcasting and telecommunications	513	137	1,663	D	2 E	5 E	7 E	168
Telecommunications	5133	122	1,625	D	2 E	5 E	7 E	165
Other broadcasting and telecommunications	other 513	14	38	* E	* E	* E	* E	2 S
Other information	other 51	636	D	D	* E	31	D	448
Finance, insurance, and real estate	52, 53	667	1,455	1 E	* E	7	1 E	196
Professional, scientific, and technical services	54	5,446	28,721	338	D	250	26 E	10,486
Architectural, engineering, and related services	5413	1,048	5,159	154	D	63 E	8 E	1,320
Computer systems design and related services	5415	2,079	9,786	35	1 E	122	14 E	3,926
Scientific R&D services	5417	1,387	12,460	147	D	62	3 S	5,162
Other professional, scientific, and technical services	other 54	933	1,316	2 E	* E	4 E	1 E	78 E
Management of companies and enterprises	55	36	67	* E	* E	* E	* E	D
Health care services	621-23	1,506	717	D	* E	6 E	2 E	55
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,120	1,679	10 E	2 E	38	4 E	184 E

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Companies	United States	Alabama	Alaska	Arizona	Arkansas	California
Company size (employees)								
All companies	na	37,843	204,004	999	36 E	2,605	270	47,142
5-24	na	17,383	5,578	65 E	15 E	81 E	28 E	933 E
25-49	na	8,271	6,449	66 E	3 E	95 E	23 E	1,329 E
50-99	na	4,228	4,829	32 E	2 E	82	9 E	1,306
100-249	na	3,987	9,559	56	3 E	81	17 E	3,110
250-499	na	1,561	9,536	63	3 E	116	13 E	3,415
500-999	na	933	10,383	106	1 E	137	9	3,333
1,000-4,999	na	1,001	30,484	435	2	354	102	9,215
5,000-9,999	na	211	15,434	29	4	42	14	5,342
10,000-24,999	na	166	27,571	17	1	83	24	4,427
25,000 or more	na	100	84,180	130	2 S	1,533	30	14,731

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Hawaii
All industries	21-23, 31-33, 42, 44-81	3,544	5,834	1,298	235	3,181	2,108	133
Manufacturing industries	31-33	1,796	2,790	861	50	1,738	1,033	D
Food	311	16	D	1 E	* E	16	10	1 S
Beverage and tobacco products	312	D	D	* E	0	1 S	D	D
Textiles, apparel, and leather	313-16	D	2 S	* E	* E	4 S	24	* E
Wood products	321	* E	* E	* E	* E	D	D	* E
Paper, printing, and support activities	322, 323	5 E	D	1 E	* E	9 E	155	* E
Petroleum and coal products	324	* E	* E	* E	0	2 S	D	* E
Chemicals	325	D	794	821	D	140	180	22
Basic chemicals	3251	5	D	D	0	D	22	* E
Resin, synthetic rubber, fibers, and filament	3252	D	D	D	0	D	113	D
Pharmaceuticals and medicines	3254	21	743	237	D	77	22	D
Other chemicals	other 325	13	17	7	0	35	23	* E
Plastics and rubber products	326	27	22	8	D	36	12 E	* E
Nonmetallic mineral products	327	36 S	2 S	* E	* E	5 S	3 S	* E
Primary metals	331	* E	1 E	* E	0	D	1 E	0
Fabricated metal products	332	26	29	2 S	* E	20	10	* E
Machinery	333	D	107	8 S	* E	66	64	* E
Computer and electronic products	334	554	189	9	D	971	350	* E
Computers and peripheral equipment	3341	205	7 S	0	0	31	13	0
Communications equipment	3342	54	32 S	* E	D	56	208	* E
Semiconductor and other electronic components	3344	233	78	D	* E	64	19	0
Navigational, measuring, electromedical, and control instruments	3345	61	71	D	1	820	D	*
Other computer and electronic products	other 334	* E	1 S	* E	0	1 E	D	* E
Electrical equipment, appliances, and components	335	7	125	* E	* E	22	38	0
Transportation equipment	336	D	D	4	D	345	92	D
Motor vehicles, trailers, and parts	3361-63	9 E	10	D	* E	30 E	D	* E
Aerospace products and parts	3364	D	D	D	D	255	D	D
Other transportation equipment	other 336	1	D	D	D	60	D	*
Furniture and related products	337	* E	1	* E	0	1 E	5 S	* E
Miscellaneous manufacturing	339	28	23	7	* E	88	48	* E
Medical equipment and supplies	3391	22 S	7	7	* E	85	35	* E
Other miscellaneous manufacturing	other 339	6	16	* E	* E	3 E	14	* S

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Hawaii
Nonmanufacturing industries	21-23, 42, 44-81	1,749	3,043	437 S	185	1,443	1,075	D
Mining, extraction, and support activities	21	11	D	D	* E	1 E	D	* E
Utilities	22	* E	D	* E	* E	D	* E	D
Construction	23	5 E	2 E	1 E	* E	9 E	5 E	1 E
Wholesale trade	42	757	2,546	D	3	D	166	7 E
Professional and commercial equipment and supplies, including computers	4214	602	D	2 E	D	D	62	1 E
Electrical goods	4216	128	10 S	D	D	9 E	27	* E
Drugs and druggists' sundries	4222	2 E	D	D	0	73 S	5 E	1 E
Other wholesale trade	other 42	25 E	83	2 E	1 E	44 E	72	5 E
Retail trade	44, 45	18 E	15 E	3 E	1 E	56 E	30 E	3 E
Transportation and warehousing	48, 49	3	D	* E	* E	6	1 E	1 S
Information	51	329	79	12	29 S	D	195	3 E
Publishing	511	168	64	1 E	11	D	82	1 E
Newspaper, periodical, book, and database	5111	11	2 E	* E	4 E	4 E	2 E	* E
Software	5112	156	62	1 E	7	D	80	* E
Broadcasting and telecommunications	513	72	3 E	* E	14 S	71	47	1 E
Telecommunications	5133	71	3 E	* E	D	71	47	1 E
Other broadcasting and telecommunications	other 513	* E	* E	* E	D	* E	* E	* E
Other information	other 51	90	12	10	4	68	66	1
Finance, insurance, and real estate	52, 53	43	25	15	1 E	19	51	* E
Professional, scientific, and technical services	54	517	303	55	143	581	530	62
Architectural, engineering, and related services	5413	93 E	45 E	6 E	D	264	220	23
Computer systems design and related services	5415	216	70	4 E	46	150	219	5 S
Scientific R&D services	5417	195	162	45	70 E	140	59 E	33
Other professional, scientific, and technical services	other 54	12	26 S	1 E	D	27 E	32 S	2
Management of companies and enterprises	55	* E	1 S	* E	* E	* E	D	* E
Health care services	621-23	43	4 E	D	1 E	22 E	9 E	1 E
Other nonmanufacturing	56, 61, 624, 71, 72, 81	24 E	13 E	3 E	6 E	118 E	62	6 E

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Hawaii
Company size (employees)								
All companies	na	3,544	5,834	1,298	235	3,181	2,108	133
5-24	na	113 E	78 E	12 E	27 E	231 E	148 E	17 E
25-49	na	94 E	82 E	8 E	27 E	195 E	120 E	13 E
50-99	na	113	117	4 E	12 E	94 E	98	32 S
100-249	na	168	229	13	13 E	253	127	28
250-499	na	185	168	D	50	196	174	9 S
500-999	na	215	119	19	20	201 S	202	D
1,000-4,999	na	867	304	286 S	39	486	619	4 S
5,000-9,999	na	249	93	219 S	*	755	117	D
10,000-24,999	na	233	728	8	D	112	180	2
25,000 or more	na	1,308	3,915	D	D	659	323	11

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana
All industries	21-23, 31-33, 42, 44-81	745	8,319	3,658	833	1,675 S	601	295
Manufacturing industries	31-33	591	6,610	3,375	715	1,456 S	475	174
Food	311	11	256	17	D	15	14 S	2 E
Beverage and tobacco products	312	* E	*	* E	* E	* E	D	* E
Textiles, apparel, and leather	313-16	* E	1 E	* E	3 S	* E	4	* E
Wood products	321	* E	* S	1 S	D	* E	* E	* E
Paper, printing, and support activities	322, 323	D	60 S	6 E	3 E	7 E	5 E	3 E
Petroleum and coal products	324	* E	D	2 S	* E	D	D	D
Chemicals	325	11	1,617	1,598	144	50	25	49
Basic chemicals	3251	* E	275	D	8 S	D	10	24
Resin, synthetic rubber, fibers, and filament	3252	0	28	D	D	D	D	14
Pharmaceuticals and medicines	3254	5	1,255	D	26	29	6	6
Other chemicals	other 325	6	59	20	D	17	D	4 E
Plastics and rubber products	326	1	57	43	7 S	12	12	D
Nonmetallic mineral products	327	* E	73	20	* E	* E	2 S	* E
Primary metals	331	* S	16 S	37	1 S	2 S	1 E	* E
Fabricated metal products	332	3	74	32	5	3 E	9	2 E
Machinery	333	16	733	160	358	52	42 S	14 S
Computer and electronic products	334	D	2,805	217 S	18	D	228	6
Computers and peripheral equipment	3341	* E	44 S	1 E	D	1 E	D	0
Communications equipment	3342	D	D	D	D	4	D	* E
Semiconductor and other electronic components	3344	D	51	21	5	3 E	3	1
Navigational, measuring, electromedical, and control instruments	3345	1 E	D	62	8	D	D	5
Other computer and electronic products	other 334	* E	19	D	0	D	3 S	* E
Electrical equipment, appliances, and components	335	1 E	180	54	65	3 E	5	1 E
Transportation equipment	336	5 E	514	1,039	21 E	295	118	20
Motor vehicles, trailers, and parts	3361-63	D	317	765	21 E	13 E	D	1 E
Aerospace products and parts	3364	D	158	D	* E	280	D	15
Other transportation equipment	other 336	*	39 S	D	1 S	1 S	* E	4 S
Furniture and related products	337	* E	D	27	D	1 S	* E	* E
Miscellaneous manufacturing	339	1	129	121	2 E	4 E	8 S	1 E
Medical equipment and supplies	3391	* E	23	69	1 E	2 E	4 S	1 E
Other miscellaneous manufacturing	other 339	1	107	52	1 E	2	4	1 E

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana
Nonmanufacturing industries	21-23, 42, 44-81	154	1,710	283 E	118 E	220	126 E	121 E
Mining, extraction, and support activities	21	* E	8	3	* E	6	4 E	7 E
Utilities	22	* E	* E	1	D	* E	*	*
Construction	23	1 E	15 E	4 E	2 E	4	6	3 E
Wholesale trade	42	103	345	70	41	58	29 E	19 E
Professional and commercial equipment and supplies, including computers	4214	D	54 E	23	4 E	5 E	6 E	4 E
Electrical goods	4216	* E	15 E	2 E	4	12	1 E	1 E
Drugs and druggists' sundries	4222	* E	162	7 E	1 E	1 E	6	1 E
Other wholesale trade	other 42	D	115	38 E	33	40	16 E	12 E
Retail trade	44, 45	3 E	62 E	18 E	9 E	11 E	11 E	11 E
Transportation and warehousing	48, 49	* E	2 E	1 E	* E	* E	* E	* E
Information	51	17	314	47	31	33	14	12 E
Publishing	511	3 E	247	11	8 E	8 E	2 E	4 E
Newspaper, periodical, book, and database	5111	* E	32	2 E	1 E	1 E	1 E	1 E
Software	5112	2	215	9 S	7	8 E	1 E	3
Broadcasting and telecommunications	513	D	27	5 E	8 E	20	3 E	5 E
Telecommunications	5133	D	27	5 E	8 E	20	3 E	5 E
Other broadcasting and telecommunications	other 513	* E	* E	* E	* E	* E	* E	* E
Other information	other 51	D	40	31	15	5	8	4
Finance, insurance, and real estate	52, 53	1	28 S	5	2 E	1 E	4	1 E
Professional, scientific, and technical services	54	24	869	109 E	21 E	96	46 E	52 E
Architectural, engineering, and related services	5413	10 E	88 E	35 E	9 E	22 E	16 E	33 E
Computer systems design and related services	5415	4 E	599	34	6 E	18 E	15	9 E
Scientific R&D services	5417	5 E	126	37 E	4 E	D	13	7 E
Other professional, scientific, and technical services	other 54	6 S	56 S	3 E	1 E	D	2 E	3 E
Management of companies and enterprises	55	* E	* E	* E	* E	* E	* E	* E
Health care services	621-23	1 E	11 E	7 E	D	4 E	3 E	4 E
Other nonmanufacturing	56, 61, 624, 71, 72, 81	3 E	55 E	19 E	6 E	7 E	9 E	12 E

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana
Company size (employees)								
All companies	na	745	8,319	3,658	833	1,675 S	601	295
5-24	na	14 E	243 E	89 E	30 E	44 E	45 E	59 E
25-49	na	14 E	279 E	198 E	43 E	38 E	55 E	27 E
50-99	na	8 E	153 E	50 E	17 E	23 E	19 E	15 E
100-249	na	12	260	86 E	32 E	31 E	28 E	22 E
250-499	na	22	194	71	27	34	41	16 E
500-999	na	4	486	67	31	48	34	7 E
1,000-4,999	na	56	802	213	82	103	235	33
5,000-9,999	na	15	224	355	57	67	23	2
10,000-24,999	na	D	829	1,976	106	26	27	21
25,000 or more	na	D	4,849	551	409	1,262 S	93	92

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri
All industries	21-23, 31-33, 42, 44-81	200	3,998	11,094	15,241	5,003	1,021	1,742
Manufacturing industries	31-33	D	2,452	6,323	12,817	3,881	919	1,091
Food	311	1 E	44	4 E	118	215	D	39
Beverage and tobacco products	312	* E	* E	D	D	D	* E	D
Textiles, apparel, and leather	313-16	1	4	37	2	3	1 E	1 E
Wood products	321	* E	D	* E	D	D	* E	* E
Paper, printing, and support activities	322, 323	14	31	24	12 E	D	D	7 E
Petroleum and coal products	324	* E	D	5	* E	* E	D	1 S
Chemicals	325	29	268	752	563	83	D	486
Basic chemicals	3251	* E	32	47	40	2	3 S	28
Resin, synthetic rubber, fibers, and filament	3252	*	D	60	373	14	D	15
Pharmaceuticals and medicines	3254	27	223	563	64	39	3	418
Other chemicals	other 325	2 S	D	83 S	85	29	2 E	26
Plastics and rubber products	326	1 E	18 S	24	176	34	D	28
Nonmetallic mineral products	327	* E	* E	D	75	8 S	* E	1 E
Primary metals	331	* E	D	8	52	6 S	* E	1 E
Fabricated metal products	332	1 E	D	37	75	21	D	100
Machinery	333	8 S	17	220	209	231	D	64
Computer and electronic products	334	40	436	4,127 S	230	1,163	9	123
Computers and peripheral equipment	3341	0	13	93 S	4 S	363	* E	1 E
Communications equipment	3342	* E	151	583 S	7	D	5	1
Semiconductor and other electronic components	3344	34	34	522	D	65	3 E	76
Navigational, measuring, electromedical, and control instruments	3345	6	237	2,766 S	D	573	1	45
Other computer and electronic products	other 334	* E	* E	164	4 E	D	* E	* E
Electrical equipment, appliances, and components	335	D	10 S	184	171	24	D	25
Transportation equipment	336	24	1,439	350	10,881	271	D	172
Motor vehicles, trailers, and parts	3361-63	D	38	22 S	10,733 S	54	D	D
Aerospace products and parts	3364	D	D	D	88	79	D	D
Other transportation equipment	other 336	D	D	D	60	138	1 E	2
Furniture and related products	337	* E	1	1 S	93	8	D	D
Miscellaneous manufacturing	339	1 E	112	507	153	1,017	2 S	19 S
Medical equipment and supplies	3391	* E	98	462	35	996	1 S	15 S
Other miscellaneous manufacturing	other 339	1 S	13	46	119	20	1 E	5 S

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri
Nonmanufacturing industries	21-23, 42, 44-81	D	1,545	4,770	2,424	1,122	102	651
Mining, extraction, and support activities	21	* E	* E	D	1 E	1 E	1 E	1 E
Utilities	22	* E	* E	* S	D	* E	* E	1 S
Construction	23	1 E	12 S	5 E	6 E	9	1 E	7 E
Wholesale trade	42	5 E	43 E	1,567	D	559	19	226
Professional and commercial equipment and supplies, including computers	4214	1 E	12 E	1,123	24 E	458	2 E	D
Electrical goods	4216	* E	10	172	3 E	14	* E	3
Drugs and druggists' sundries	4222	* E	3 E	164	D	20	* E	D
Other wholesale trade	other 42	3 E	18 E	107	52 E	67	16	26 E
Retail trade	44, 45	4 E	26 E	23 E	34 E	36	12 E	17 E
Transportation and warehousing	48, 49	* E	1 S	1 E	1 E	1 E	* E	1 E
Information	51	D	194 S	847	D	120	19	211
Publishing	511	8	149 S	655	75	96	D	60
Newspaper, periodical, book, and database	5111	5	3	31	29	20	* E	D
Software	5112	3	146 S	624	46	76	D	D
Broadcasting and telecommunications	513	1 E	21 E	97 S	D	7 E	5 E	D
Telecommunications	5133	1 E	21 E	97 S	D	7 E	5 E	D
Other broadcasting and telecommunications	other 513	* E	* E	* E	* E	* E	* E	* E
Other information	other 51	D	24	94	D	17	D	D
Finance, insurance, and real estate	52, 53	* E	9	95	3 E	6 E	1 E	16
Professional, scientific, and technical services	54	36	1,236	2,114	D	364	42	134 E
Architectural, engineering, and related services	5413	8 E	240	186	156 E	45 E	9 E	39 E
Computer systems design and related services	5415	17 S	372	592	D	231	23	71
Scientific R&D services	5417	9	610	1,302	296	74	8	11 E
Other professional, scientific, and technical services	other 54	1 E	14	35	D	13	1 E	12
Management of companies and enterprises	55	* E	* E	D	* E	4 S	* E	* S
Health care services	621-23	2 S	5 E	25	7 E	5 E	2 E	6 E
Other nonmanufacturing	56, 61, 624, 71, 72, 81	4 E	19 E	86	39 E	17 E	6 E	33 E

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri
Company size (employees)								
All companies	na	200	3,998	11,094	15,241	5,003	1,021	1,742
5-24	na	17 E	145 E	265 E	246 E	100 E	22 E	85 E
25-49	na	19 E	163 E	364 E	327 E	115 E	20 E	81 E
50-99	na	6 E	131	375	143 E	98	9 E	42 E
100-249	na	19	232	758	224	198	13 E	68 E
250-499	na	17 S	190	830	132	158	9 E	51
500-999	na	9	374	902	361	237	23	50
1,000-4,999	na	D	878	1,908	884	670	D	255
5,000-9,999	na	*	21	755	472	826	6	438
10,000-24,999	na	D	369	1,321	1,050	1,166	19	176
25,000 or more	na	36	1,495	3,615 S	11,401	1,435	D	495

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York
All industries	21-23, 31-33, 42, 44-81	65	363	383	1,349	11,401	349	8,556
Manufacturing industries	31-33	24	118	141	973	6,821	152	4,140
Food	311	* E	19	1	1 S	316	1	163
Beverage and tobacco products	312	* E	* E	* E	* E	* S	* E	* E
Textiles, apparel, and leather	313-16	* E	* S	D	D	9	* E	18
Wood products	321	* E	* E	* E	* E	D	* E	* S
Paper, printing, and support activities	322, 323	* E	2 E	1 E	6	17 E	* E	130
Petroleum and coal products	324	* E	* E	* S	* E	D	* E	19
Chemicals	325	2	13	5 E	7	5,446	2	1,816
Basic chemicals	3251	1 S	2 E	1 E	D	295	1	D
Resin, synthetic rubber, fibers, and filament	3252	* E	D	0	D	55	0	23
Pharmaceuticals and medicines	3254	1	8	2 E	1 E	4,723	1	693
Other chemicals	other 325	* E	D	1 E	4 S	374	* E	D
Plastics and rubber products	326	1 S	14 S	1 E	21	66	* E	30 S
Nonmetallic mineral products	327	* E	* E	* E	* E	D	D	15
Primary metals	331	* E	1	D	D	15	* E	3
Fabricated metal products	332	* E	1 E	2	15	8 E	* E	47
Machinery	333	D	27	2 E	79 S	148 S	1	202
Computer and electronic products	334	2	17 S	24 S	800	296	138	698
Computers and peripheral equipment	3341	* E	* E	* E	11	14 S	* S	18
Communications equipment	3342	* E	4	* E	9 S	51 S	9	61
Semiconductor and other electronic components	3344	* E	2 E	5	D	73	12	284
Navigational, measuring, electromedical, and control instruments	3345	2	11 S	19 S	D	158	D	333
Other computer and electronic products	other 334	* E	* S	* E	D	1 E	D	2
Electrical equipment, appliances, and components	335	* E	6	1 S	3 E	77	D	116
Transportation equipment	336	D	16	17	4 E	43	3	702
Motor vehicles, trailers, and parts	3361-63	D	D	D	3 E	18	1 E	271
Aerospace products and parts	3364	* E	D	D	*	D	D	423
Other transportation equipment	other 336	* E	D	* E	* E	D	D	7
Furniture and related products	337	* S	1 S	* E	* E	1 E	* E	3
Miscellaneous manufacturing	339	1 E	1 E	86	23 S	181	1 E	176
Medical equipment and supplies	3391	* E	D	2 S	17 S	159	* E	156
Other miscellaneous manufacturing	other 339	*	D	84	6	22	* E	20

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York
Nonmanufacturing industries	21-23, 42, 44-81	42	245	242	376	4,580	197	4,416
Mining, extraction, and support activities	21	1 E	* E	2 E	* E	1 E	2 E	2
Utilities	22	* E	* E	* E	* E	D	* E	23 S
Construction	23	* E	1 E	2 E	1 E	16	1 E	11 E
Wholesale trade	42	3 E	21	21 S	23	2,065	18	2,309
Professional and commercial equipment and supplies, including computers	4214	1 E	9	3 E	13	31 E	D	1,323
Electrical goods	4216	* E	* E	11 S	2 E	455	D	85
Drugs and druggists' sundries	4222	* E	1 E	1 E	4	1,511	1 E	747
Other wholesale trade	other 42	2 E	11 E	7 E	4 E	68 E	D	154 E
Retail trade	44, 45	2 E	5 E	7 E	29	72	5 E	51 E
Transportation and warehousing	48, 49	* E	* E	* E	* E	10	* E	1 E
Information	51	9 S	66	58	124	630	43	854
Publishing	511	7 S	4 E	21	102	180	3	652
Newspaper, periodical, book, and database	5111	* E	1 E	* E	* E	33	* E	317
Software	5112	7 S	3 E	20	101	147	3	334
Broadcasting and telecommunications	513	1 E	4 E	D	D	D	D	155 S
Telecommunications	5133	1 E	4 E	D	D	D	D	153 S
Other broadcasting and telecommunications	other 513	* E	* E	* E	* E	* E	* E	1 E
Other information	other 51	1	58	D	D	D	D	48 E
Finance, insurance, and real estate	52, 53	* E	D	1 E	1 E	115	* E	107
Professional, scientific, and technical services	54	23	72	102 E	175	1,554	112	953
Architectural, engineering, and related services	5413	4 E	61	37	21	D	32	137 E
Computer systems design and related services	5415	6 S	6 E	12	99 S	549	19	219 E
Scientific R&D services	5417	13	1 E	51 E	54	414	60	536
Other professional, scientific, and technical services	other 54	* E	3 S	2 E	1 E	D	1 E	61 E
Management of companies and enterprises	55	* E	* E	* E	* E	D	* E	1 E
Health care services	621-23	1 E	D	2 E	1 E	12 E	1 E	23 E
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2 E	5 E	47 S	23 S	78	16	81 E

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York
Company size (employees)								
All companies	na	65	363	383	1,349	11,401	349	8,556
5-24	na	9 E	22 E	48 E	37 E	211 E	25 E	343 E
25-49	na	6 E	19 E	53 E	50 E	298 E	19 E	367 E
50-99	na	4 E	8 E	19 E	53	200 E	20	192 E
100-249	na	15 S	38 S	15 E	65	357	D	539 S
250-499	na	12	23	63	59 S	252	62	460
500-999	na	17	6	9	73 S	346	23 S	343
1,000-4,999	na	1 E	D	27 S	118	2,159	17	1,282
5,000-9,999	na	* E	4	D	19 S	855	3	419
10,000-24,999	na	*	D	6	839	2,973	29	657
25,000 or more	na	1	31	D	36	3,751	D	3,956

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island
All industries	21-23, 31-33, 42, 44-81	4,424	216	6,260	577	2,973	7,091	1,203 S
Manufacturing industries	31-33	1,685	D	4,811	345	2,207	4,131	1,076 S
Food	311	39	1 E	29	3 S	3 E	66	D
Beverage and tobacco products	312	D	* E	* E	* E	* E	* E	* E
Textiles, apparel, and leather	313-16	38	* E	3	* E	2 S	D	D
Wood products	321	1 S	* E	1 S	* E	5 S	D	* E
Paper, printing, and support activities	322, 323	10 E	*	943	2 E	15	33	D
Petroleum and coal products	324	* E	0	25	D	* E	19	* E
Chemicals	325	607	4	652	54	27	2,158	D
Basic chemicals	3251	D	* S	177	13 S	D	251	1
Resin, synthetic rubber, fibers, and filament	3252	127	D	45	D	8	144	D
Pharmaceuticals and medicines	3254	396	D	314 S	3	6 E	1,599	1
Other chemicals	other 325	D	* E	116	D	D	165	1
Plastics and rubber products	326	45	* E	393 S	4	6 E	81	15 S
Nonmetallic mineral products	327	12	* E	64	* E	2	27	* E
Primary metals	331	3	* S	29	1 E	2	247	D
Fabricated metal products	332	14 S	* E	140	4 E	9 S	133	D
Machinery	333	125	D	251	37	64	143	8 E
Computer and electronic products	334	499 S	D	214	D	1,968	473	D
Computers and peripheral equipment	3341	2 E	* E	18 S	D	73	59	D
Communications equipment	3342	261 S	* E	7	D	10	44 S	* E
Semiconductor and other electronic components	3344	152	* S	24	2 E	1,743	159	D
Navigational, measuring, electromedical, and control instruments	3345	84	* E	D	24	D	180	D
Other computer and electronic products	other 334	1 E	D	D	* E	D	30 S	0
Electrical equipment, appliances, and components	335	D	* E	160	4	4	71	D
Transportation equipment	336	112	5 E	1,792	48	92	485	1 E
Motor vehicles, trailers, and parts	3361-63	92	5 E	D	31	82	101	1 E
Aerospace products and parts	3364	17	* E	915	D	D	331	* E
Other transportation equipment	other 336	4	* E	D	D	D	54 S	1 E
Furniture and related products	337	25	* E	5 S	*	* E	3 E	* E
Miscellaneous manufacturing	339	47	* E	110	12	10 S	137	72
Medical equipment and supplies	3391	30	* E	52	11	6 S	103 S	D
Other miscellaneous manufacturing	other 339	16	* E	58	1 E	4 S	34	D

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island
Nonmanufacturing industries	21-23, 42, 44-81	2,738	D	1,449	232	766	2,959	127
Mining, extraction, and support activities	21	6	* E	4 S	45	* E	62	* E
Utilities	22	D	D	D	D	* E	1	* E
Construction	23	9 E	* E	45	1 E	2 E	8 E	* E
Wholesale trade	42	1,778	5 E	208	16 E	292	1,566	10 E
Professional and commercial equipment and supplies, including computers	4214	D	1 E	75	5 E	113	170	6 S
Electrical goods	4216	283	* E	6 E	1 E	1 E	63	* E
Drugs and druggists' sundries	4222	D	* E	10 E	1 E	2 E	1,288	* E
Other wholesale trade	other 42	34 E	4 E	116	9 E	176	45 E	3 E
Retail trade	44, 45	23 E	2 E	75	27	23 E	74	3 E
Transportation and warehousing	48, 49	D	* E	10	D	* E	2 E	* E
Information	51	343	D	192	48	257	267	4 E
Publishing	511	284	D	127	D	230	167	2 E
Newspaper, periodical, book, and database	5111	1 E	* E	18	D	1 E	11	* E
Software	5112	283	D	108	D	229	156	2 E
Broadcasting and telecommunications	513	13 E	1 E	30	5 E	4 E	24 E	* E
Telecommunications	5133	13 E	1 E	29	5 E	3 E	D	* E
Other broadcasting and telecommunications	other 513	* E	* E	* E	* E	* E	D	* E
Other information	other 51	45	1	36	D	23	76	2
Finance, insurance, and real estate	52, 53	39 S	* E	26	3	1 E	84	16
Professional, scientific, and technical services	54	501	15 S	808	81	176	738	30 E
Architectural, engineering, and related services	5413	144 S	3 E	123 E	17 E	30 E	121 E	12
Computer systems design and related services	5415	88	1 E	192	16	62	138	4 E
Scientific R&D services	5417	264	11 S	483	46	81	411	13 E
Other professional, scientific, and technical services	other 54	6 E	* E	9 E	2 E	2 E	68	1 E
Management of companies and enterprises	55	* E	* E	D	* E	* E	* E	* E
Health care services	621-23	8 E	1 E	10 E	3 E	4 E	116 S	2 E
Other nonmanufacturing	56, 61, 624, 71, 72, 81	23 E	D	62 E	7 E	11 E	41 E	61

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island
Company size (employees)								
All companies	na	4,424	216	6,260	577	2,973	7,091	1,203 S
5-24	na	127 E	D	197 E	47 E	63 E	229 E	16 E
25-49	na	139 E	9 E	265 E	47 E	59 E	230 E	18 E
50-99	na	86 E	2 E	161 E	45	38 E	208	9 E
100-249	na	197	14 S	204	25 E	113	399	24 S
250-499	na	127	2 E	199	17 E	132	284	D
500-999	na	181	2	136	7	144	245 S	19 S
1,000-4,999	na	769	D	1,024	134	361	1,164	D
5,000-9,999	na	283	D	527 S	22	31	488	21 S
10,000-24,999	na	1,239	* E	1,123 S	25 S	235	1,545	4
25,000 or more	na	1,275	40	2,425	210	1,798	2,299	D

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia
All industries	21-23, 31-33, 42, 44-81	976	75	1,507	11,057	996	360	4,152
Manufacturing industries	31-33	751	37	875	6,651	421	53	2,579
Food	311	1 E	D	20	72	4 S	* E	D
Beverage and tobacco products	312	* E	* E	D	D	* E	* E	* E
Textiles, apparel, and leather	313-16	44	* S	5	5	* E	D	12
Wood products	321	1 S	D	D	D	* E	* S	* E
Paper, printing, and support activities	322, 323	28	1 E	22	61	9	3 S	12 E
Petroleum and coal products	324	* E	0	* E	567	* E	* E	D
Chemicals	325	134 E	4	257	470	58	11	232
Basic chemicals	3251	70 E	D	191	85	13 S	D	D
Resin, synthetic rubber, fibers, and filament	3252	22	D	D	227	* E	0	D
Pharmaceuticals and medicines	3254	34	3 E	17 S	110	38	D	82
Other chemicals	other 325	8 E	1 E	D	48	6	* E	43
Plastics and rubber products	326	252	1 S	11 E	34	1 E	1 E	26
Nonmetallic mineral products	327	2 S	* E	4 S	9	* E	* E	5 S
Primary metals	331	8	* E	3	10	1 E	* E	D
Fabricated metal products	332	8	* E	13	25 E	6 S	1 S	27
Machinery	333	27	4	81	240	34 S	7 S	28
Computer and electronic products	334	52	3 E	62	4,195	104	14	282
Computers and peripheral equipment	3341	* E	0	1	D	55	0	4 S
Communications equipment	3342	1	0	11	1,101	D	* E	108
Semiconductor and other electronic components	3344	44	3 E	5 E	2,450	23	10	109
Navigational, measuring, electromedical, and control instruments	3345	6	* E	43	D	19	4 S	60
Other computer and electronic products	other 334	* E	0	2 E	3	D	* E	2 S
Electrical equipment, appliances, and components	335	43	* E	77	55	5	1 S	33
Transportation equipment	336	148	10	247	618	151	2 E	1,777
Motor vehicles, trailers, and parts	3361-63	D	D	229	67 E	D	2 E	26
Aerospace products and parts	3364	D	D	14	544	D	D	D
Other transportation equipment	other 336	4	0	4	7	* E	D	D
Furniture and related products	337	* E	* E	9	1 E	1 S	D	7 S
Miscellaneous manufacturing	339	4	9	57	286	47	11	11
Medical equipment and supplies	3391	1 E	* E	47	270	29	D	2 E
Other miscellaneous manufacturing	other 339	3	8	9	16	18	D	9

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia
Nonmanufacturing industries	21-23, 42, 44-81	226	38	632	4,406	575 S	307	1,573
Mining, extraction, and support activities	21	D	* E	D	221	1 E	D	2 E
Utilities	22	D	* E	D	9 S	D	* E	D
Construction	23	2 E	* E	3 E	50	1 E	* E	5 E
Wholesale trade	42	20 E	5 E	61 E	1,740	23 S	D	57 E
Professional and commercial equipment and supplies, including computers	4214	7 E	1 E	10 E	854	6 E	D	22 E
Electrical goods	4216	1 E	2 S	9 S	732	1 E	* E	11
Drugs and druggists' sundries	4222	1 E	* E	5 E	27 S	10 S	1 E	2 E
Other wholesale trade	other 42	11 E	2 E	36 E	126 E	7 E	6	22 E
Retail trade	44, 45	11 E	16	16 E	66 E	6 E	2 E	22 E
Transportation and warehousing	48, 49	* E	* E	D	7	1 S	* E	3 S
Information	51	26	4 E	27	858	293 S	D	295
Publishing	511	19	* E	13 S	483	281 S	3 S	125
Newspaper, periodical, book, and database	5111	* E	* E	2 E	17	3	* E	3 E
Software	5112	19	* E	11 S	466	279 S	3 S	123
Broadcasting and telecommunications	513	4 E	2 E	4 E	109	5 E	* E	137 S
Telecommunications	5133	4 E	D	4 E	109	5 E	* E	137 S
Other broadcasting and telecommunications	other 513	* E	D	* E	* E	* E	* E	* E
Other information	other 51	2	1	10	265	7	D	32 E
Finance, insurance, and real estate	52, 53	16	* E	12	110	2	* E	23 S
Professional, scientific, and technical services	54	104	8	353	1,082	D	39	1,127
Architectural, engineering, and related services	5413	45	2 E	184	241 E	33	4 E	404
Computer systems design and related services	5415	24 S	5	114	342	D	26	316
Scientific R&D services	5417	12 E	1 E	35 E	476	73	9 S	317
Other professional, scientific, and technical services	other 54	23 S	* E	20 E	23 E	1 E	* E	90
Management of companies and enterprises	55	* S	* E	* E	3	* E	* E	D
Health care services	621-23	D	1 E	D	18 E	D	* E	6 E
Other nonmanufacturing	56, 61, 624, 71, 72, 81	13 E	2 E	17 E	242 S	7 E	3 E	33 E

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia
Company size (employees)								
All companies	na	976	75	1,507	11,057	996	360	4,152
5-24	na	51 E	6 E	81 E	424 E	37 E	8 E	185 E
25-49	na	61 E	6 E	100 E	372 E	52 E	8 E	194 E
50-99	na	28 E	6 E	47 E	302	48	8 S	158
100-249	na	51 S	6 E	82	388	80	D	354
250-499	na	44	7	37	436	78	7	212
500-999	na	256	9 S	53	429	94	19 S	183
1,000-4,999	na	157	11	306	877	374 S	43	328
5,000-9,999	na	85	D	125	1,349	62	* S	156
10,000-24,999	na	111	D	380	3,197	121	2	549 S
25,000 or more	na	133	D	296	3,284	50	D	1,832

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Washington	West Virginia	Wisconsin	Wyoming	Undistributed
All industries	21-23, 31-33, 42, 44-81	9,222	219	2,623	37	5,762
Manufacturing industries	31-33	1,714	178	2,182	D	4,135
Food	311	15	* E	72	* E	15 S
Beverage and tobacco products	312	D	* E	D	* E	0
Textiles, apparel, and leather	313-16	1 S	* E	9	* S	12 S
Wood products	321	1 S	* E	4 S	* E	0
Paper, printing, and support activities	322, 323	38	1 E	311	* E	0
Petroleum and coal products	324	1 E	* E	D	* E	0
Chemicals	325	220 S	112	200	* E	102 S
Basic chemicals	3251	D	* E	36	D	23 S
Resin, synthetic rubber, fibers, and filament	3252	D	D	6	D	23
Pharmaceuticals and medicines	3254	211 S	D	31	D	36 S
Other chemicals	other 325	5	1 E	127	* E	20 S
Plastics and rubber products	326	6 E	6 S	44	* E	78 S
Nonmetallic mineral products	327	2 S	* E	1 E	* E	0
Primary metals	331	7	3 S	8	* E	16 S
Fabricated metal products	332	19 S	1 E	96	* E	15
Machinery	333	D	3 E	264	* E	325 S
Computer and electronic products	334	406	6	149	D	394 S
Computers and peripheral equipment	3341	42	D	21	D	58 S
Communications equipment	3342	20	0	4 S	0	93 S
Semiconductor and other electronic components	3344	39	D	45	0	184
Navigational, measuring, electromedical, and control instruments	3345	295	2	79	D	59
Other computer and electronic products	other 334	9	0	* E	* E	0
Electrical equipment, appliances, and components	335	3 E	3	150	* E	17 S
Transportation equipment	336	D	42	836	* E	63 S
Motor vehicles, trailers, and parts	3361-63	30	9 E	400 S	* E	60 S
Aerospace products and parts	3364	D	33	D	D	3 S
Other transportation equipment	other 336	19 S	* E	D	D	0
Furniture and related products	337	3	* E	12	* E	0
Miscellaneous manufacturing	339	45	3	26	* S	3,099
Medical equipment and supplies	3391	20	2	18	* S	3,045
Other miscellaneous manufacturing	other 339	25	*	8	* E	54 S

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Washington	West Virginia	Wisconsin	Wyoming	Undistributed
Nonmanufacturing industries	21-23, 42, 44-81	7,508	40 E	441	D	1,627 S
Mining, extraction, and support activities	21	1 E	4 E	1 E	4 E	5
Utilities	22	* E	D	5	* E	5 S
Construction	23	5 E	1 E	5 E	* E	33 S
Wholesale trade	42	D	4 E	73	1 E	286
Professional and commercial equipment and supplies, including computers	4214	D	1 E	17 E	* E	71 S
Electrical goods	4216	10	* E	2 E	* E	21 S
Drugs and druggists' sundries	4222	D	* E	10	* E	180
Other wholesale trade	other 42	26 E	3 E	44	1 E	14 S
Retail trade	44, 45	40	4 E	17 E	2 E	170 S
Transportation and warehousing	48, 49	1 E	D	7	* E	180
Information	51	D	9	88	1 E	161 S
Publishing	511	D	1	64	* E	113 S
Newspaper, periodical, book, and database	5111	2 E	* E	9	* E	8 S
Software	5112	D	*	54	* E	104 S
Broadcasting and telecommunications	513	67	D	9 E	1 E	11 S
Telecommunications	5133	67	D	8 E	1 E	0
Other broadcasting and telecommunications	other 513	* E	* E	* E	* E	11 S
Other information	other 51	D	D	16	* E	38 S
Finance, insurance, and real estate	52, 53	D	* E	D	* E	187 S
Professional, scientific, and technical services	54	688	13 E	121 E	10	527 S
Architectural, engineering, and related services	5413	93 E	8 E	32 E	3 E	93 S
Computer systems design and related services	5415	169	4	27 E	D	249 S
Scientific R&D services	5417	411	1 E	59 E	D	37 S
Other professional, scientific, and technical services	other 54	15	1 E	4 E	* E	148 S
Management of companies and enterprises	55	* E	* E	* E	* E	0
Health care services	621-23	5 E	1 E	D	* E	8 S
Other nonmanufacturing	56, 61, 624, 71, 72, 81	36	3 E	14 E	D	65 S

TABLE 37. Funds for industrial R&D performance in the United States, by industry and company size, by state: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Washington	West Virginia	Wisconsin	Wyoming	Undistributed
Company size (employees)						
All companies	na	9,222	219	2,623	37	5,762
5-24	na	114 E	16 E	84 E	D	35 S
25-49	na	145 E	14 E	114 E	3 E	4 S
50-99	na	111	4 E	66 E	2 E	10 S
100-249	na	206	11	105	2 E	167 S
250-499	na	432	3 E	80	2 E	261 S
500-999	na	339	D	160	* E	294 S
1,000-4,999	na	378	45	536	2	1,041 S
5,000-9,999	na	165 S	D	297	* E	271 S
10,000-24,999	na	D	D	535	*	261 S
25,000 or more	na	D	D	647	D	3,418

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; E = more than 50 percent of the cell value is imputed due to raking of state data; na = not applicable; S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. Includes data reported on Form RD-1 that were not allocated to a specific state. Data reported on Form RD-1A were allocated to the state in the address on the company's survey form which is usually the company's headquarters. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 38. Domestic employment of companies that performed industrial R&D in the United States, by industry, by size of company: 2003

(Thousands)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
All industries	21-23, 31-33, 42, 44-81	15,337	193	295	296	603	541
Manufacturing industries	31-33	8,971	68	113	192	383	329
Food	311	945	*	3	9	30	18
Beverage and tobacco products	312	61	D	D	D	D	D
Textiles, apparel, and leather	313-16	187	2	5	D	12	8
Wood products	321	97	2	1	2	6	3
Paper, printing, and support activities	322, 323	595	2	5	2	26	16
Petroleum and coal products	324	197	1	1	1	2	D
Chemicals	325	864	8	11	16	31	32
Basic chemicals	3251	164	1	1	2	4	6
Resin, synthetic rubber, fibers, and filament	3252	122	*	1	1	1	5
Pharmaceuticals and medicines	3254	341	1	1	4	9	9
Other chemicals	other 325	237	5	9	10	17	12
Plastics and rubber products	326	448	3	7	14	46	31
Nonmetallic mineral products	327	198	3	1	4	6	4
Primary metals	331	267	1	1	D	D	9
Fabricated metal products	332	463	8	12	26	29	36
Machinery	333	686	12	26	43	59	45
Computer and electronic products	334	1,111	11	17	30	47	47
Computers and peripheral equipment	3341	73	2	2	D	4	8
Communications equipment	3342	169	2	3	D	8	11
Semiconductor and other electronic components	3344	367	2	5	D	13	12
Navigational, measuring, electromedical, and control instruments	3345	470	5	7	D	20	16
Other computer and electronic products	other 334	32	1	1	D	2	1
Electrical equipment, appliances, and components	335	311	3	3	8	18	17
Transportation equipment	336	1,939	5	6	12	29	25
Motor vehicles, trailers, and parts	3361-63	1,041	4	2	8	D	20
Aerospace products and parts	3364	751	1	1	1	3	1
Other transportation equipment	other 336	147	1	2	3	D	3
Furniture and related products	337	203	D	D	D	7	8
Miscellaneous manufacturing	339	399	7	7	D	D	28
Medical equipment and supplies	3391	242	3	4	D	D	17
Other miscellaneous manufacturing	other 339	157	4	3	D	12	11

TABLE 38. Domestic employment of companies that performed industrial R&D in the United States, by industry, by size of company: 2003

(Thousands)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
Nonmanufacturing industries	21-23, 42, 44-81	6,366	125	182	104	220	212
Mining, extraction, and support activities	21	88	1	D	D	1	D
Utilities	22	253	*	0	0	0	D
Construction	23	94	8	3	1	3	2
Wholesale trade	42	1,165	31	89	28	45	71
Professional and commercial equipment and supplies, including computers	4214	494	6	10	3	5	9
Electrical goods	4216	139	6	3	7	5	11
Drugs and druggists' sundries	4222	157	1	2	3	2	2
Other wholesale trade	other 42	375	19	74	16	33	48
Retail trade	44, 45	649	13	7	*	10	13
Transportation and warehousing	48, 49	591	4	1	D	0	1
Information	51	1,227	10	23	16	27	56
Publishing	511	374	7	20	10	18	20
Newspaper, periodical, book, and database	5111	139	0	9	0	4	4
Software	5112	235	7	11	10	15	17
Broadcasting and telecommunications	513	693	0	D	0	4	29
Telecommunications	5133	689	0	0	0	3	D
Other broadcasting and telecommunications	other 513	4	0	D	0	1	D
Other information	other 51	160	2	D	5	4	7
Finance, insurance, and real estate	52, 53	747	2	D	D	10	2
Professional, scientific, and technical services	54	916	37	35	42	58	52
Architectural, engineering, and related services	5413	208	10	6	5	7	10
Computer systems design and related services	5415	301	11	16	14	26	D
Scientific R&D services	5417	175	7	11	13	23	18
Other professional, scientific, and technical services	other 54	233	9	2	9	2	D
Management of companies and enterprises	55	7	*	*	1	2	D
Health care services	621-23	133	5	D	6	18	1
Other nonmanufacturing	56, 61, 624, 71, 72, 81	495	14	4	10	48	11

TABLE 38. Domestic employment of companies that performed industrial R&D in the United States, by industry, by size of company: 2003

(Thousands)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
All industries	21-23, 31-33, 42, 44-81	649	2,255	1,472	2,599	6,434
Manufacturing industries	31-33	396	1,623	954	1,529	3,384
Food	311	30	100	89	152	513
Beverage and tobacco products	312	D	27	D	D	0
Textiles, apparel, and leather	313-16	D	62	36	D	D
Wood products	321	4	17	27	36	0
Paper, printing, and support activities	322, 323	13	104	51	100	275
Petroleum and coal products	324	0	D	D	D	150
Chemicals	325	34	211	127	168	225
Basic chemicals	3251	8	70	D	D	0
Resin, synthetic rubber, fibers, and filament	3252	4	22	D	D	D
Pharmaceuticals and medicines	3254	10	47	D	80	D
Other chemicals	other 325	12	73	D	D	D
Plastics and rubber products	326	42	D	D	D	D
Nonmetallic mineral products	327	4	54	21	100	0
Primary metals	331	9	47	64	D	D
Fabricated metal products	332	29	109	72	D	D
Machinery	333	51	148	81	104	116
Computer and electronic products	334	63	212	64	202	419
Computers and peripheral equipment	3341	8	16	D	D	0
Communications equipment	3342	15	36	D	D	D
Semiconductor and other electronic components	3344	19	96	D	D	D
Navigational, measuring, electromedical, and control instruments	3345	17	55	43	94	D
Other computer and electronic products	other 334	4	9	0	D	0
Electrical equipment, appliances, and components	335	25	83	25	130	0
Transportation equipment	336	37	166	104	185	1,371
Motor vehicles, trailers, and parts	3361-63	28	127	D	87	D
Aerospace products and parts	3364	5	19	22	D	D
Other transportation equipment	other 336	4	20	D	D	D
Furniture and related products	337	14	37	46	D	D
Miscellaneous manufacturing	339	23	112	62	69	D
Medical equipment and supplies	3391	10	64	37	D	D
Other miscellaneous manufacturing	other 339	13	48	25	D	0

TABLE 38. Domestic employment of companies that performed industrial R&D in the United States, by industry, by size of company: 2003

(Thousands)

Industry	NAICS codes	Company size (employees)				
		500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 or more
Nonmanufacturing industries	21-23, 42, 44-81	253	632	518	1,070	3,050
Mining, extraction, and support activities	21	D	D	D	D	D
Utilities	22	D	D	93	D	D
Construction	23	D	21	D	D	0
Wholesale trade	42	39	151	100	242	370
Professional and commercial equipment and supplies, including computers	4214	D	41	D	63	D
Electrical goods	4216	D	24	D	63	0
Drugs and druggists' sundries	4222	D	34	D	59	D
Other wholesale trade	other 42	18	53	57	58	0
Retail trade	44, 45	35	41	41	92	398
Transportation and warehousing	48, 49	D	6	0	D	D
Information	51	D	111	D	145	D
Publishing	511	D	85	30	84	D
Newspaper, periodical, book, and database	5111	D	17	D	D	D
Software	5112	D	68	D	D	D
Broadcasting and telecommunications	513	D	8	D	D	D
Telecommunications	5133	D	D	D	D	D
Other broadcasting and telecommunications	other 513	D	D	0	0	0
Other information	other 51	D	18	D	D	D
Finance, insurance, and real estate	52, 53	D	43	56	106	D
Professional, scientific, and technical services	54	59	140	99	116	277
Architectural, engineering, and related services	5413	D	60	26	37	D
Computer systems design and related services	5415	D	32	28	D	D
Scientific R&D services	5417	D	17	D	0	D
Other professional, scientific, and technical services	other 54	4	31	D	D	D
Management of companies and enterprises	55	D	D	0	0	0
Health care services	621-23	6	10	D	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	30	66	54	153	105

* = data less than 500.

D = data withheld to avoid disclosing operations of individual companies.

NOTES: Excludes data from federally funded research and development centers. For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 39. R&D funds per employee spent by companies that performed industrial R&D in the United States, by company size: 1999–2003
(Dollars)

Company (employees)	1999 ^a	2000	2001	2002	2003	% change, 2002–03
All R&D	8,025	11,425	12,047	12,560	13,301	5.9
5–24	34,057	37,703	30,366	29,559	28,885	-2.3
25–49	19,590	27,786	21,040	23,695	21,883	-7.6
50–99	20,460	22,381	22,801	22,019	16,317	-25.9
100–249	11,892	15,190	20,206	24,721	15,845	-35.9
250–499	11,861	12,915	16,736	14,755	17,616	19.4
500–999	9,031	12,550	12,981	14,384	15,998	11.2
1,000–4,999	9,276	9,819	11,465	12,307	13,519	9.8
5,000–9,999	7,897	9,160	9,880	12,025	10,486	-12.8
10,000–24,999	8,454	7,693	11,292	10,961	10,608	-3.2
25,000 or more	6,173	10,942	10,758	11,009	13,084	18.8
Company and other						
All companies	7,044	10,344	10,977	11,498	11,952	3.9
5–24	31,087	32,637	26,260	24,083	24,979	3.7
25–49	18,072	26,552	19,911	22,096	18,797	-14.9
50–99	18,754	20,797	21,277	20,366	14,429	-29.2
100–249	10,781	14,063	18,792	23,589	14,792	-37.3
250–499	11,132	11,775	15,660	13,499	16,382	21.4
500–999	8,272	11,866	12,211	13,614	14,829	8.9
1,000–4,999	8,942	9,570	11,204	11,883	13,036	9.7
5,000–9,999	6,837	8,273	8,944	10,971	9,738	-11.2
10,000–24,999	8,327	10,274	10,915	10,453	9,841	-5.9
25,000 or more	7,955	9,251	9,411	9,653	11,183	15.8

^a Some statistics for 1999–2002 have been revised since originally published.

NOTES: Beginning with 2001, all and federally funded industrial R&D exclude data for federally funded research and development centers. Averages were derived by dividing total and company R&D funds spent during a calendar year by employment in March of that year. The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from the federal government. Excluded from this table are R&D not performed within the company (e.g., R&D performed by other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations). For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 40. Distribution of total employment in companies that performed industrial R&D in the United States, ranked by R&D program size: 1993–2003
(Percent distribution)

Companies ranked by R&D program size	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	6	6	6	6	5	5	4	2	2	3	3
Next 4 (5–8)	2	2	2	2	2	3	2	2	2	2	3
Next 12 (9–20)	5	4	4	4	3	4	5	6	6	5	6
Next 20 (21–40)	4	4	4	4	4	4	3	4	4	5	4
Next 60 (41–100)	8	7	7	7	6	7	5	8	4	8	9
Next 100 (101–200)	9	8	7	8	6	8	7	7	8	10	9
Next 200 (201–400)	10	9	9	9	11	11	14	13	12	10	9
All others	56	60	61	60	63	58	60	58	62	57	57

NOTES: Some percentages for 1997 and 1999–2002 have been revised since originally published. Beginning with 2001, statistics exclude data for federally funded research and development centers. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

This table shows the percentage of total employment in the top R&D-performing companies. The companies are grouped for analysis. For example, to determine the percentage of total employment accounted for by the top 20 R&D-performing companies in 1999, add the percentages shown for the categories "first 4," "next 4," and "next 12." The result is 11%.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 41. Full-time equivalent R&D scientists and engineers in companies that performed industrial R&D in the United States, by industry and company size: January 2000–January 2004
(Thousands)

Industry and company size	NAICS codes	January 2000	January 2001	January 2002	January 2003	January 2004	% change, 2003–04
All industries	21–23, 31–33, 42, 44–81	1,037.0	1,048.1	1,071.1	1,075.5	1,156.0	7.5
Manufacturing industries	31–33	600.0	615.6	626.7	597.4	649.5	8.7
Food	311	8.1	7.7	12.2	12.9	D	na
Beverage and tobacco products	312	1.9	2.0	0.9	1.0	0.8	-20.0
Textiles, apparel, and leather	313–16	11.1	2.1	2.5	2.5	D	na
Wood products	321	0.7	1.6 S	2.0 S	D	1.1	na
Paper, printing, and support activities	322, 323	13.5 S	12.6 S	11.1	17.9	D	na
Petroleum and coal products	324	3.0	2.8 S	2.8 S	4.3 S	3.9 S	-9.3
Chemicals	325	84.9	83.2 S	81.5	86.9	91.3	5.1
Basic chemicals	3251	15.5	12.5	9.3	8.5	D	na
Resin, synthetic rubber, fibers, and filament	3252	8.0	10.0	11.1	12.8	D	na
Pharmaceuticals and medicines	3254	41.3	43.1	39.6	51.8	56.3	8.7
Other chemicals	other 325	20.1	17.6 S	21.5 S	13.9	13.9	0.0
Plastics and rubber products	326	14.0	12.7	11.5	11.0	11.9	8.2
Nonmetallic mineral products	327	3.8	7.6	6.9	D	6.1 S	na
Primary metals	331	5.0 S	4.6 S	4.7	4.0 S	4.1 S	2.5
Fabricated metal products	332	10.5	10.9	10.1	13.1	13.5	3.1
Machinery	333	56.0	53.9	55.9	56.5	55.3	-2.1
Computer and electronic products	334	202.1 S	261.0 S	267.6 S	221.5	228.4 S	3.1
Computers and peripheral equipment	3341	21.3	23.6	15.6	15.1	13.8	-8.6
Communications equipment	3342	49.9 S	91.8 S	101.5 S	52.8 S	56.0 S	6.1
Semiconductor and other electronic components	3344	53.8 S	65.4 S	83.3	73.3	76.0	3.7
Navigational, measuring, electromedical, and control instruments	3345	72.3	78.0	63.5 S	75.9	78.2 S	3.0
Other computer and electronic products	other 334	4.8	2.3	3.7	4.4	4.4	0.0
Electrical equipment, appliances, and components	335	25.5	24.3	33.6	14.0	16.4	17.1
Transportation equipment	336	139.4 S	109.0 S	99.5	123.1	144.5	17.4
Motor vehicles, trailers, and parts	3361–63	76.0	75.6	73.5	83.2	D	na
Aerospace products and parts	3364	55.3 S	25.1	19.1	32.5	40.6	24.9
Other transportation equipment	other 336	8.1	8.3 S	6.9 S	7.3 S	D	na
Furniture and related products	337	2.7	3.0	2.2	2.0	2.6	30.0
Miscellaneous manufacturing	339	17.8	16.6	21.9	22.6	24.6	8.8
Medical equipment and supplies	3391	12.9	12.3	15.7	14.4	16.1	11.8
Other miscellaneous manufacturing	other 339	4.9	4.3	6.2	8.2	8.5	3.7

TABLE 41. Full-time equivalent R&D scientists and engineers in companies that performed industrial R&D in the United States, by industry and company size: January 2000–January 2004
(Thousands)

Industry and company size	NAICS codes	January 2000	January 2001	January 2002	January 2003	January 2004	% change, 2003–04
Nonmanufacturing industries	21–23, 42, 44–81	437.1	432.5	444.4	477.8	506.4	6.0
Mining, extraction, and support activities	21	5.6	5.4	4.9	D	D	na
Utilities	22	0.7	0.6	0.6	0.5	D	na
Construction	23	8.3	0.9	2.1	1.0	2.7 S	170.0
Wholesale trade	42	NA	NA	NA	124.1	127.0	2.3
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	73.0	D	na
Electrical goods	4216	NA	NA	NA	21.1	D	na
Drugs and druggists' sundries	4222	NA	NA	NA	20.1	22.6	12.4
Other wholesale trade	other 42	NA	NA	NA	9.8	19.5	99.0
Retail trade	44, 45	NA	NA	NA	7.9	11.7	48.1
Transportation and warehousing	48, 49	4.8	1.9	0.7	D	D	na
Information	51	114.2	118.1	119.4	117.0	D	na
Publishing	511	79.7	87.7	86.7	85.1	112.2	31.8
Newspaper, periodical, book, and database	5111	3.2	3.6	5.5	4.3	5.9	37.2
Software	5112	76.5	84.1	81.1	80.8	106.4	31.7
Broadcasting and telecommunications	513	15.7	12.0 S	D	8.6 S	11.6 S	34.9
Telecommunications	5133	D	D	11.7	8.5 S	11.3 S	32.9
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	*	na
Other information	other 51	18.7	18.4	D	23.3	D	na
Finance, insurance, and real estate	52, 53	16.9	20.5	19.9	18.9	19.2	1.6
Professional, scientific, and technical services	54	145.1	172.5	152.9	181.8	167.6	-7.8
Architectural, engineering, and related services	5413	39.4	36.8	23.7	32.2	38.3	18.9
Computer systems design and related services	5415	46.1	62.2	62.8	90.8	64.8	-28.6
Scientific R&D services	5417	51.9	64.3	59.9	50.0	46.9	-6.2
Other professional, scientific, and technical services	other 54	7.6	9.2	6.5	8.9	17.6	97.8
Management of companies and enterprises	55	0.5	0.3	1.5	1.5	0.5 S	-66.7
Health care services	621–23	6.4	4.6	8.1	9.1	14.1	54.9
Other nonmanufacturing	56, 61, 624, 71, 72, 81	9.4	6.8	20.0	10.8	13.1	21.3

TABLE 41. Full-time equivalent R&D scientists and engineers in companies that performed industrial R&D in the United States, by industry and company size: January 2000–January 2004
(Thousands)

Industry and company size	NAICS codes	January 2000	January 2001	January 2002	January 2003	January 2004	% change, 2003–04
Company size (employees)							
All companies	na	1,037.0	1,048.1	1,071.1	1,075.3	1,156.0	7.5
5–24	na	51.2	53.6	34.4	60.0	51.4	-14.3
25–49	na	34.8	32.3	26.7	26.6	57.2	115.0
50–99	na	57.7	35.8	40.4	38.4	38.0	-1.0
100–249	na	49.0	55.6	79.9	61.4	80.2	30.6
250–499	na	45.2	45.7	47.6	46.4	74.1	59.7
500–999	na	64.2	66.7	61.9	61.3	64.1	4.6
1,000–4,999	na	154.9	154.3	159.1	165.5	167.5	1.2
5,000–9,999	na	118.1	107.3 S	107.8 S	101.5 S	102.2	0.7
10,000–24,999	na	121.5	149.0	144.3	158.3	171.1	8.1
25,000 or more	na	340.4	347.9 S	368.9	356.1	350.2	-1.7

* = data less than 500; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for January 2000–January 2003 have been revised since originally published. Beginning with January 2002, excludes data from federally funded research and development centers. Data recorded each year in January represent employment figures for the previous year. For definitions and more information about year-to-year comparability of the statistics, see the technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 42. Full-time equivalent R&D scientists and engineers in companies that performed industrial R&D in the United States, by industry and company size, by source of R&D funds: January 2004

(Thousands)

Industry and company size	NAICS codes	All R&D	Federal	Company and other
All industries	21-23, 31-33, 42, 44-81	1,156.0	76.9 S	1,079.2
Manufacturing industries	31-33	649.5	44.9 S	604.7
Food	311	D	D	11.3
Beverage and tobacco products	312	0.8	0.0	0.8
Textiles, apparel, and leather	313-16	D	D	21.6
Wood products	321	1.1	*	1.0
Paper, printing, and support activities	322, 323	D	D	11.7 S
Petroleum and coal products	324	3.9 S	0.0	3.9 S
Chemicals	325	91.3	1.3	90.0
Basic chemicals	3251	D	D	9.1
Resin, synthetic rubber, fibers, and filament	3252	D	D	11.7
Pharmaceuticals and medicines	3254	56.3	*	56.0
Other chemicals	other 325	13.9	0.6 S	13.3
Plastics and rubber products	326	11.9	*	11.7
Nonmetallic mineral products	327	6.1 S	*	6.0 S
Primary metals	331	4.1 S	*	4.1 S
Fabricated metal products	332	13.5	*	13.4
Machinery	333	55.3	0.5	54.8
Computer and electronic products	334	228.4 S	29.0 S	199.4
Computers and peripheral equipment	3341	13.8	*	13.5
Communications equipment	3342	56.0 S	2.1 S	54.0 S
Semiconductor and other electronic components	3344	76.0	*	75.8
Navigational, measuring, electromedical, and control instruments	3345	78.2 S	26.4 S	51.8
Other computer and electronic products	other 334	4.4	*	4.4
Electrical equipment, appliances, and components	335	16.4	*	16.2
Transportation equipment	336	144.5	12.9 S	131.6
Motor vehicles, trailers, and parts	3361-63	D	D	95.3
Aerospace products and parts	3364	40.6	11.5 S	29.0
Other transportation equipment	other 336	D	D	7.3 S
Furniture and related products	337	2.6	0.0	2.6
Miscellaneous manufacturing	339	24.6	*	24.3
Medical equipment and supplies	3391	16.1	*	15.8
Other miscellaneous manufacturing	other 339	8.5	*	8.5

TABLE 42. Full-time equivalent R&D scientists and engineers in companies that performed industrial R&D in the United States, by industry and company size, by source of R&D funds: January 2004

(Thousands)

Industry and company size	NAICS codes	All R&D	Federal	Company and other
Nonmanufacturing industries	21–23, 42, 44–81	506.4	32.1	474.6
Mining, extraction, and support activities	21	D	D	4.5
Utilities	22	D	D	0.7
Construction	23	2.7 S	* S	2.4 S
Wholesale trade	42	127.0	0.5	126.5
Professional and commercial equipment and supplies, including computers	4214	D	D	65.5
Electrical goods	4216	D	D	19.1
Drugs and druggists' sundries	4222	22.6	*	22.4
Other wholesale trade	other 42	19.5	*	19.5
Retail trade	44, 45	11.7	0.6	11.1
Transportation and warehousing	48, 49	D	D	1.1
Information	51	D	D	143.5
Publishing	511	112.2	0.7	111.7
Newspaper, periodical, book, and database	5111	5.9	* S	5.8
Software	5112	106.4	0.7	105.9
Broadcasting and telecommunications	513	11.6 S	0.0	11.6 S
Telecommunications	5133	11.3 S	0.0	11.3 S
Other broadcasting and telecommunications	other 513	*	0.0	*
Other information	other 51	D	D	20.1
Finance, insurance, and real estate	52, 53	19.2	0.0	19.2
Professional, scientific, and technical services	54	167.6	29.0	138.6
Architectural, engineering, and related services	5413	38.3	14.3	24.0
Computer systems design and related services	5415	64.8	4.5	60.2
Scientific R&D services	5417	46.9	10.0	36.9
Other professional, scientific, and technical services	other 54	17.6	*	17.5
Management of companies and enterprises	55	0.5 S	0.0	0.5 S
Health care services	621–23	14.1	0.6	13.5
Other nonmanufacturing	56, 61, 624, 71, 72, 81	13.1	* S	13.0
Company size (employees)				
All companies	na	1,156.0	76.9 S	1,079.2
5–24	na	51.4	6.0	45.4
25–49	na	57.2	4.6	52.7
50–99	na	38.0	2.9	35.2
100–249	na	80.2	3.7	76.5
250–499	na	74.1	4.0	70.1
500–999	na	64.1	6.2	58.1
1,000–4,999	na	167.5	2.4	165.0
5,000–9,999	na	102.2	15.2	87.0
10,000–24,999	na	171.1	8.8	162.2
25,000 or more	na	350.2	23.2	327.0

* = data less than 500; D = data withheld to avoid disclosing operations of individual companies; na = not applicable; S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. Data recorded in January represent employment figures for previous year. Data for number of full-time equivalent R&D scientists and engineers by funding source are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies may not be represented by the statistics in this table. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 43. R&D funds per full-time equivalent R&D scientist or engineer spent by companies that performed industrial R&D in the United States, by industry, by company size: 2003

(Dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
All industries	21-23, 31-33, 42, 44-81	192,234	164,818	174,606	145,792	139,563	157,250
Manufacturing industries	31-33	206,103	121,824	208,826	156,318	153,462	109,582
Food	311	171,440	109,543	0	68,083	115,811	141,533
Beverage and tobacco products	312	191,450	14,530 S	D	D	D	D
Textiles, apparel, and leather	313-16	26,109	D	5,692 S	D	73,473	D
Wood products	321	153,170	10,000 S	35,827 S	D	45,229	102,490
Paper, printing, and support activities	322, 323	262,632	80,953 S	0 S	0 S	239,742	180,249
Petroleum and coal products	324	318,050	281,425 S	0	72,917	195,149	106,957
Chemicals	325	260,547	102,124	115,844	206,692	222,631	164,138
Basic chemicals	3251	234,930	17,316	94,284	143,928	210,343	167,277
Resin, synthetic rubber, fibers, and filament	3252	197,163	93,030	0	D	307,647	114,459
Pharmaceuticals and medicines	3254	296,564	178,044	164,074	279,464	274,272	214,060
Other chemicals	other 325	190,679	95,093	105,672	133,716	135,511	128,548
Plastics and rubber products	326	166,042	466,509	D	110,936	154,283	102,881
Nonmetallic mineral products	327	100,044	69,480	135,180	194,496	96,412	121,861
Primary metals	331	136,456	D	D	223,544	121,932	130,090
Fabricated metal products	332	109,929	76,002	83,556	100,380	153,676	109,834
Machinery	333	118,501	51,812 S	161,473	185,570	115,472	105,192
Computer and electronic products	334	182,002	165,796	197,498	153,099	159,173	165,295
Computers and peripheral equipment	3341	184,384	162,923	215,647	133,077	147,063	159,445
Communications equipment	3342	187,228	D	173,938	154,381	131,783	152,954
Semiconductor and other electronic components	3344	171,796	177,518	254,390	190,839	228,422	205,405
Navigational, measuring, electromedical, and control instruments	3345	191,298	147,506	167,500	132,827	136,245	158,883
Other computer and electronic products	other 334	130,995	102,470	134,944	159,969	147,985	135,480
Electrical equipment, appliances, and components	335	141,844	95,806	113,195	143,671	105,510	167,488
Transportation equipment	336	262,389	159,688	299,231 S	92,016	161,948	187,300
Motor vehicles, trailers, and parts	3361-63	195,875	179,432	308,471 S	D	164,957	149,600
Aerospace products and parts	3364	431,467	101,127	125,411	90,402	203,973	301,614
Other transportation equipment	other 336	209,225	169,853 S	165,631	125,469	105,559	153,227
Furniture and related products	337	122,796	3,681 S	126,008 S	130,337 S	140,603	96,771
Miscellaneous manufacturing	339	324,262	54,763	153,449	153,467	159,046	199,215
Medical equipment and supplies	3391	431,067	128,122	201,989	184,921	168,772	230,859
Other miscellaneous manufacturing	other 339	130,741	18,873	104,197	120,982	130,077	153,892

TABLE 43. R&D funds per full-time equivalent R&D scientist or engineer spent by companies that performed industrial R&D in the United States, by industry, by company size: 2003

(Dollars)

Industry	NAICS codes	Company size (employees)					
		All companies	5-24	25-49	50-99	100-249	250-499
Nonmanufacturing industries	21-23, 42, 44-81	174,285	177,564	162,163	140,738	134,104	203,722
Mining, extraction, and support activities	21	173,463	1,013,153	0	D	D	0
Utilities	22	240,713	20,000 S	0	0	0	D
Construction	23	194,206 S	D	424,429 S	20,392 S	38,215	143,620
Wholesale trade	42	202,936	101,964	181,423	191,972	127,763	253,125
Professional and commercial equipment and supplies, including computers	4214	141,247	110,265	D	D	74,392	313,314
Electrical goods	4216	185,588	34,780	158,604 S	207,726	64,974	D
Drugs and druggists' sundries	4222	456,703	369,337	D	944,256	D	D
Other wholesale trade	other 42	150,007	104,306 S	108,609	136,791	233,752	137,987
Retail trade	44, 45	172,233	208,047	308,409 S	155,273	D	62,301
Transportation and warehousing	48, 49	268,347	38,557	0	D	0	129,935
Information	51	154,960	162,951	152,178	141,514	58,009	157,095
Publishing	511	163,268	160,083	151,309	162,059	46,590	135,849
Newspaper, periodical, book, and database	5111	131,063	0	117,283	0	173,856	D
Software	5112	165,049	160,083	161,458	162,059	44,750	135,973
Broadcasting and telecommunications	513	165,972	0	D	0	170,494	240,588
Telecommunications	5133	166,165	0	0	0	186,415	236,420
Other broadcasting and telecommunications	other 513	158,072	0	D	0	135,416	D
Other information	other 51	112,357	D	155,800	85,906	144,899	122,663
Finance, insurance, and real estate	52, 53	74,641	33,333 S	D	D	129,987	85,993
Professional, scientific, and technical services	54	188,276	196,996	204,675	137,270	201,048	233,446
Architectural, engineering, and related services	5413	150,802	406,604	42,635	103,755	174,469	147,867
Computer systems design and related services	5415	162,304	96,920	146,119	110,362	139,046	172,787
Scientific R&D services	5417	274,311	215,346	321,690	222,724	270,027	323,962
Other professional, scientific, and technical services	other 54	104,292	17,669	D	21,961	96,219	D
Management of companies and enterprises	55	172,372	262,000	D	74,104	D	D
Health care services	621-23	67,059	12,682	38,252	178,456	24,549	214,162
Other nonmanufacturing	56, 61, 624, 71, 72, 81	151,256	283,048 D	157,354	102,790 S	99,087 S	137,031

TABLE 43. R&D funds per full-time equivalent R&D scientist or engineer spent by companies that performed industrial R&D in the United States, by industry, by company size: 2003
(Dollars)

Industry	NAICS codes	Company size (employees)				
		500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 or more
All industries	21–23, 31–33, 42, 44–81	167,938	184,029	163,263	165,068	248,210
Manufacturing industries	31–33	174,827	177,194	171,523	160,137	277,702
Food	311	121,557	168,003	177,403	167,444	214,114
Beverage and tobacco products	312	D	149,092	D	D	0
Textiles, apparel, and leather	313–16	136,258	68,256	117,138	D	D
Wood products	321	108,711	149,218	181,815	D	0
Paper, printing, and support activities	322, 323	118,569	323,386	183,733	D	297,114
Petroleum and coal products	324	0	D	D	D	336,362
Chemicals	325	259,833	258,454	229,509	292,674	274,001
Basic chemicals	3251	417,517	234,979	215,921	D	0
Resin, synthetic rubber, fibers, and filament	3252	117,562	183,917	D	D	D
Pharmaceuticals and medicines	3254	238,856	380,573	265,954	334,880	274,680
Other chemicals	other 325	183,158	165,731	163,603	D	D
Plastics and rubber products	326	259,246	158,848	118,340	106,135	D
Nonmetallic mineral products	327	151,561	166,569	D	64,357	0
Primary metals	331	170,823	115,014	48,394	285,492	D
Fabricated metal products	332	164,277	90,362	94,251	162,422	D
Machinery	333	138,573	135,452	81,789	102,619	161,568
Computer and electronic products	334	194,704	174,768	183,688	140,545	210,791
Computers and peripheral equipment	3341	171,843	121,571	D	D	0
Communications equipment	3342	192,726	164,803	D	D	D
Semiconductor and other electronic components	3344	237,694	179,805	D	D	D
Navigational, measuring, electromedical, and control instruments	3345	179,295	208,447	115,177	150,551	279,420
Other computer and electronic products	other 334	97,841	152,335	0	D	0
Electrical equipment, appliances, and components	335	141,962	139,959	D	143,453	0
Transportation equipment	336	106,305	149,021	238,280	79,426	329,027
Motor vehicles, trailers, and parts	3361–63	105,977	137,384	256,993	45,607	246,542
Aerospace products and parts	3364	92,072	181,156	224,971	D	460,726
Other transportation equipment	other 336	200,094	146,566	D	117,204	D
Furniture and related products	337	20,768	91,570	217,859	D	D
Miscellaneous manufacturing	339	105,858	188,268	269,406	351,812	D
Medical equipment and supplies	3391	157,799	202,215	313,414	D	D
Other miscellaneous manufacturing	other 339	84,755	147,333	149,731	D	0

TABLE 43. R&D funds per full-time equivalent R&D scientist or engineer spent by companies that performed industrial R&D in the United States, by industry, by company size: 2003
(Dollars)

Industry	NAICS codes	Company size (employees)				
		500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 or more
Nonmanufacturing industries	21–23, 42, 44–81	162,998	193,142	143,965	174,822	191,248
Mining, extraction, and support activities	21	125,273	254,039	D	D	D
Utilities	22	D	140,676	392,451	250,706	D
Construction	23	150,998	146,825	D	D	0
Wholesale trade	42	177,529	269,002	201,176	185,968	203,541
Professional and commercial equipment and supplies, including computers	4214	140,719	222,387	180,970	122,946	129,173
Electrical goods	4216	178,238	233,855	D	167,338	0
Drugs and druggists' sundries	4222	523,494	343,203	D	D	D
Other wholesale trade	other 42	160,519	140,372	203,702	179,924	0
Retail trade	44, 45	D	178,965	15,316	105,645	247,181
Transportation and warehousing	48, 49	D	92,312	0	D	1,153,820
Information	51	148,236	148,568	134,103	169,791	198,335
Publishing	511	159,705	160,584	D	D	D
Newspaper, periodical, book, and database	5111	D	124,845	D	D	D
Software	5112	162,647	164,612	D	D	D
Broadcasting and telecommunications	513	D	D	D	D	156,240
Telecommunications	5133	D	D	D	D	156,240
Other broadcasting and telecommunications	other 513	D	D	0	0	0
Other information	other 51	124,091	56,448	D	152,417	D
Finance, insurance, and real estate	52, 53	D	106,466	195,706	106,068	38,117
Professional, scientific, and technical services	54	169,849	223,324	84,703	D	210,909
Architectural, engineering, and related services	5413	138,479	239,134	D	D	D
Computer systems design and related services	5415	127,922	177,469	D	D	D
Scientific R&D services	5417	230,079	357,832	D	0	D
Other professional, scientific, and technical services	other 54	56,755	127,452	127,898	D	D
Management of companies and enterprises	55	D	D	0	0	0
Health care services	621–23	D	D	D	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	132,520	78,973	D	138,012	D

D = data withheld to avoid disclosing operations of individual companies.

S = more than 50 percent of the cell value is imputed.

NOTES: Excludes data for federally funded research and development centers. The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January 2003 and January 2004. This number is then divided into the total R&D expenditures for 2003, and the ratio is attributed to 2003. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 44. R&D funds per full-time equivalent R&D scientist or engineer spent by the top 400 companies that performed industrial R&D in the United States, ranked by R&D program size: 1993–2003 (Dollars)

Companies ranked by R&D program size	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	% change, 2002–03
First 4	252,629	218,906	234,791	231,784	229,602 S	242,408	289,072 S	283,219 S	229,610 S	270,753	410,769	51.7
Next 4	199,559	245,626 S	188,928 S	185,032 S	180,389	193,597	192,657	199,586	215,439	193,858	303,275	56.4
Next 12	199,118	188,437	190,548	202,670	238,022 S	239,162	266,117 S	261,858 S	254,460 S	255,263	228,338	-10.5
Next 20	S	182,699	204,159	210,552	213,496	196,276	213,047 S	219,627 S	236,402	225,623	228,930	1.5
Next 60	193,925	181,163	196,023	202,405	206,350	208,144	206,956	230,259	223,650	212,780	200,754	-5.7
Next 100	138,227	174,524	162,707	160,560	155,255	162,965	162,654	176,239	182,360	158,657	155,153	-2.2
Next 200	140,292	156,025	152,977	151,812	157,347	154,395	161,664	238,522	180,908	207,624	190,977	-8.0
Average for top 400 R&D performers	154,814	174,536	167,339	168,362	171,495	173,585	209,921	233,946	217,909 S	210,101	225,124	7.2

S = more than 50 percent of the cell value is imputed.

NOTES: This table shows the average R&D funds spent per each full-time equivalent R&D scientist or engineer by the top R&D performing companies. Companies are grouped for analysis. For example, to find the average amount spent on R&D per full-time equivalent R&D scientist or engineer by the top 4 R&D-performing companies in 1999, look at the category "first 4." The result is \$289,072. Some percentages for 1999–2002 have been revised since originally published. Beginning with 2001, excludes data for federally funded research and development centers. The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January 2003 and January 2004. This number is then divided into the total R&D expenditures for 2003, and the ratio is attributed to 2003. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE 45. Full-time equivalent R&D scientists and engineers per 1,000 employees in companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
All industries	21–23, 31–33, 42, 44–81	44	59	63	70	69	-1.4
Manufacturing industries	31–33	58	56	63	67	67	0.0
Food	311	8	6	8	12	D	na
Beverage and tobacco products	312	25	23	24	16	15	-6.3
Textiles, apparel, and leather	313–16	31	9	10	11	D	na
Wood products	321	10	18 S	18 S	D	10	na
Paper, printing, and support activities	322, 323	20 S	19 S	19 S	29	D	na
Petroleum and coal products	324	26	15 S	17 S	20 S	21 S	5.0
Chemicals	325	84	98	97	99	102	3.0
Basic chemicals	3251	60	71	64	54	D	na
Resin, synthetic rubber, fibers, and filament	3252	65	77	88	97	D	na
Pharmaceuticals and medicines	3254	133	136	142	137	158	15.3
Other chemicals	other 325	61 S	77 S	73 S	68 S	57	-16.2
Plastics and rubber products	326	24	24	26	22	24	9.1
Nonmetallic mineral products	327	15	30	25	D	24 S	na
Primary metals	331	13 S	13 S	15 S	15 S	15 S	0.0
Fabricated metal products	332	13	15	19	26	27	3.8
Machinery	333	60	69	70	72	78	8.3
Computer and electronic products	334	179 S	160 S	184 S	190	193 S	1.6
Computers and peripheral equipment	3341	127	135	174	170	192	12.9
Communications equipment	3342	313 S	214 S	318 S	384 S	290 S	-24.5
Semiconductor and other electronic components	3344	141 S	132 S	148 S	180	201	11.7
Navigational, measuring, electromedical, and control instruments	3345	133	146	141 S	126 S	156 S	23.8
Other computer and electronic products	other 334	112	86	91	171	137	-19.9
Electrical equipment, appliances, and components	335	37	44	51	40	47	17.5
Transportation equipment	336	65	53	59	61	67	9.8
Motor vehicles, trailers, and parts	3361–63	64	60	70	76	D	na
Aerospace products and parts	3364	72 S	43	41	43 S	49	14.0
Other transportation equipment	other 336	40	38 S	49 S	50 S	D	na
Furniture and related products	337	10	9 S	9 S	9	11	22.2
Miscellaneous manufacturing	339	43	50	43	54	58	7.4
Medical equipment and supplies	3391	53	58	56	61	61	0.0
Other miscellaneous manufacturing	other 339	29	35	26	45	52	15.6

TABLE 45. Full-time equivalent R&D scientists and engineers per 1,000 employees in companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Nonmanufacturing industries	21–23, 42, 44–81	60	65	33	73	73	0.0
Mining, extraction, and support activities	21	16	29	45	D	D	na
Utilities	22	2	1	2	2	D	na
Construction	23	52	8	13	10	18 S	80.0
Wholesale trade	42	NA	NA	NA	NA	106	na
Professional and commercial equipment and supplies, including computers	4214	NA	NA	NA	NA	D	na
Electrical goods	4216	NA	NA	NA	NA	D	na
Drugs and druggists' sundries	4222	NA	NA	NA	NA	134	na
Other wholesale trade	other 42	NA	NA	NA	NA	37	na
Retail trade	44, 45	NA	NA	NA	NA	13	na
Transportation and warehousing	48, 49	1	3	2	D	D	na
Information	51	68	75	79	81	D	na
Publishing	511	230	248	221	179	259	44.7
Newspaper, periodical, book, and database	5111	26	31	32	32	37	15.6
Software	5112	344	358	332	245	391	59.6
Broadcasting and telecommunications	513	14 S	12 S	D	15 S	14 S	-6.7
Telecommunications	5133	D	D	11 S	14 S	14 S	0.0
Other broadcasting and telecommunications	other 513	NA	NA	NA	NA	57	na
Other information	other 51	114	95	D	98	D	na
Finance, insurance, and real estate	52, 53	20	25	26	24	26	8.3
Professional, scientific, and technical services	54	173	201	166	174	166	-4.6
Architectural, engineering, and related services	5413	180	207 S	129 S	104	165	58.7
Computer systems design and related services	5415	162	174	188	259 S	200	-22.8
Scientific R&D services	5417	348	366	355	302	260	-13.9
Other professional, scientific, and technical services	other 54	40	61	34	28	54	92.9
Management of companies and enterprises	55	65	110	34	66	54 S	-18.2
Health care services	621–23	84	20	35	43	80	86.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	7	8	17	22	22	0.0

TABLE 45. Full-time equivalent R&D scientists and engineers per 1,000 employees in companies that performed industrial R&D in the United States, by industry and company size: 1999–2003

Industry and company size	NAICS codes	1999	2000	2001	2002	2003	% change, 2002–03
Company size (employees)							
All companies	na	44	59	63	70	69	-1.4
5–24	na	249	295	277	242	175	-27.7
25–49	na	144	179	166	141	125	-11.3
50–99	na	163	111	106	126	112	-11.1
100–249	na	81	94	106	101	114	12.9
250–499	na	68	79	90	76	112	47.4
500–999	na	82	92	79	80	95	18.8
1,000–4,999	na	58	49	67	68	73	7.4
5,000–9,999	na	53	62 S	61 S	70	64	-8.6
10,000–24,999	na	40	50	61	63	64	1.6
25,000 or more	na	45	46 S	47 S	53	53	0.0

D = data withheld to avoid disclosing operations of individual companies; na = not applicable; NA = not available; S = more than 50 percent of the cell value is imputed.

NOTES: Some statistics for 1999–2002 have been revised since originally published. For 1999–2001, wholesale and retail trade are not shown separately; however, data are included in totals. Beginning with 2001, excludes data for federally funded research and development centers. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

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Appendix A. Technical Notes and Technical Tables

Survey Methodology

Much of the information for this appendix was provided by the Manufacturing and Construction Division of the U.S. Bureau of the Census, which collected and compiled the survey data. Copies of the technical papers cited can be obtained from NSF's Research and Development Statistics Program in the Division of Science Resources Statistics. The first part of this appendix focuses on recent changes to the survey methodology; major historical changes are discussed later in Comparability of Statistics. More detailed historical information is available from individual annual reports (<http://www.nsf.gov/statistics/industry/>).

Reporting Unit

The reporting unit for the Survey of Industrial Research and Development is initially the company,[4] defined as a business organization of one or more establishments under common ownership or control. Some companies, at their own request, are comprised of multiple reporting units. These reporting units are compiled to a single company record at the time of tabulation.

Frame Creation

The Standard Statistical Establishment List (SSEL), a former Bureau of the Census database, containing industry, geographic (state), employment, and payroll information, was the foundation from which the frame used to select the 2003 survey sample was created (see table A-1 for population and sample sizes). For companies with more than one establishment, data were summed to the company level and the resulting company record was used to select the sample and process and tabulate the survey data.

After data were summed to the company level, each company then was assigned a single North American Industry Classification System (NAICS)[5] code based on payroll. The method used followed the hierarchical structure of the NAICS. The company was first assigned to the economic sector, defined by a 2-digit NAICS code, or combination thereof, representing manufacturing, mining, trade, etc., that accounted for the highest percentage of its aggregated payroll. Then the company was assigned to a subsector, defined by a 3-digit NAICS code, that accounted for the highest percentage of its payroll within the economic sector. Finally, the company was assigned a 4-digit NAICS code within the subsector, again based on the highest percentage of its aggregated payroll within the subsector. Assignment below the 4-digit level was not done because the 4-digit level was the lowest level needed to guarantee publication level industry classification.

Frame Partitioning

For the 2003 survey, the frame was partitioned into three groups: (1) companies known to conduct R&D in the previous five survey years, (2) companies that previously only reported zero R&D in the previous five survey years, and (3) companies for which information about the extent of R&D activity was uncertain. There were 8,811 companies in the first group, 74,318 companies in the second group, and 1,748,720 companies in the third group for a total of 1,831,849 companies.

Defining Sampling Strata

For the first and third partitioned groups the sampling strata were defined corresponding to the 4-digit industries and groups of industries for which statistics were developed and published. There were 27 manufacturing and 22

nonmanufacturing strata in each of these partitioned groups. The second partitioned group was divided into two strata, one manufacturing and the other nonmanufacturing.

Identifying Arbitrary Certainty Companies

Arbitrary certainty companies were companies arbitrarily selected with certainty independent of relative standard error (RSE) constraints. There were different criteria defining an arbitrary certainty company depending on the partitioned group the company was in. Companies in the first partitioned group that also had prior R&D of \$3 million or more were arbitrary certainties. Companies in the third partition, which were also in the top 50 of their strata by payroll or in the top 50 of their state by payroll, were arbitrary certainties.

Probability Proportionate to Size

The distribution of companies by R&D in the first partitioned group or by payroll in the third partitioned group was skewed as in earlier frames. Because of this skewness, a fixed sample probability proportionate to size (pps) method remained the appropriate selection technique for these partitioned groups. That is, with the pps method large companies had higher probabilities of selection than did small companies. The fixed sample size methodology has been replicated for every survey year since the 1998 survey.

Companies in the first partitioned group received a measure of size equal to the most recent reported positive R&D expenditure. Companies in the third partitioned group received a measure of size equal to their company payroll. RSE constraints by industry and by state were imposed separately in the first and third partitioned groups and the company received a probability of selection for each industry in which it had activity, as well as each state. The company's final probability was the maximum of these industry and state probabilities.

Simple Random Sampling

The second partitioned group was split into two strata, manufacturing and nonmanufacturing. Each stratum was sampled using simple random sampling (srs). The use of srs implied that each company within a stratum had an equal probability of selection. Companies in the manufacturing stratum received a probability of selection of roughly 0.01. Companies in the nonmanufacturing stratum received a probability of selection of roughly 0.004.

Sample Stratification and Relative Standard Error Constraints

The particular sample selected was one of a large number of samples of the same type and size that by chance might have been selected. Statistics resulting from the different samples would differ somewhat from each other. These differences are represented by estimates of sampling error or variance. The smaller the sampling error, the less variable the statistic. The accuracy of the estimate, that is, how close it is to the true value, is also a function of nonsampling error.

Controlling Sampling Error. Historically, it has been difficult to achieve control over the sampling error of survey estimates. Efforts were confined to controlling the amount of error due to sample size variation, but this was only one component of the overall sampling error. The other component depended on the correlation between the data from the sampling frame used to assign probabilities (namely R&D values either imputed or reported in the previous survey) and the actual current year reported data. The nature of R&D is such that these correlations could not be predicted with any

reliability. Consequently, precise controls on overall sampling error were difficult to achieve.

Sampling Strata and Standard Error Estimates. The constraints used to control the sample size in each stratum were based on a universe total that, in large part, was improvised. That is, as previously noted, a prior R&D value for the first partitioned group and payroll for the third partitioned group were assigned to companies in their respective groups. Assignment of sampling probability was nevertheless based on this distribution. The presumption was that actual variation in the sample design would be less than that estimated, because many of the sampled companies in the third partitioned group have true R&D values of zero, not the widely varying values that were imputed using total payroll as a predictor of R&D. Previous sample selections indicate that in general this presumption held, but exceptions have occurred when companies with large sampling weights have reported large amounts of R&D spending. See table A-2 for a list by industry of the standard error estimates for selected items and table A-3 for a list of the standard error estimates of total R&D by state.

Nonsampling Error. In addition to sampling error, estimates are subject to nonsampling error. Errors are grouped in five categories: specification, coverage, response, nonresponse, and processing. For detailed discussions on the sources, control, and measurement of each of these types of error, see U.S. Bureau of the Census (1994b and 1994f).

Sample Size

The parameters set to control sampling error discussed above resulted in sample sizes of 6,709 companies from the first frame partition, 415 companies from the second frame partition, and 24,374 companies from the third frame partition. The overall final sample consisted of 31,498 companies. This total included an adjustment to the sample size based on a minimum probability rule and changes in the operational status of some companies.

Minimum Probability Rule. A minimum probability rule was imposed for both the first and third partitions. As noted earlier, probabilities of selection proportionate to size were assigned to each company, where size was the prior reported R&D or payroll value assigned to each company. Selected companies received a sample weight that was the inverse of their probability. Selected companies that ultimately report R&D expenditures vastly larger than their assigned values can have adverse effects on the statistics, which were based on the weighted value of survey responses. In order to minimize these effects on the final statistics, a minimum probability rule was imposed to control the maximum weight of a company. If the probability based on company size was less than the minimum probability, then it was reset to this minimum value. The consequence of raising these original probabilities to the specific minimum probability was to raise the final sample size.

Changes in Operational Status. Between the time that the frame was created and the survey was prepared for mailing, the operational status of some companies changed. That is, they were merged with or acquired by another company, or they were no longer in business. Before preparing the survey for mailing, the operational status was updated to identify these changes. As a result, the number of companies mailed a survey form was somewhat smaller than the number of companies initially selected for the survey.

Weighting, Maximum Weights, and Probabilities of Selection

Sample weights were applied to each company record to produce national estimates. Within the first partition of the sample, consisting of known R&D performers (positive R&D expenditures), the maximum sample weight was roughly 20. For the second partition, consisting of companies reporting zero R&D expenditures, the maximum sample weight was roughly 100 for companies classified in manufacturing and 250 for those classified in nonmanufacturing. For the third partition, consisting of companies with uncertain R&D activity, the maximum sample weight was roughly 100 for companies classified in manufacturing and 250 for those classified in nonmanufacturing.

Survey Forms

Two forms are used each year to collect data for the survey. Known large R&D performers are sent a detailed survey form, Form RD-1.[6] The Form RD-1 requests data on sales or receipts, total employment, employment of scientists and engineers, expenditures for R&D performed within the company with federal funds and with company and other funds, character of work (basic research, applied research, and development), company-sponsored R&D expenditures in foreign countries, R&D performed by others, R&D performed in collaboration with others, federally funded R&D by contracting agency, R&D costs by type of expense, R&D costs by technology area, domestic R&D expenditures by state, energy-related R&D, R&D done in collaboration with others, and foreign R&D by country. Because companies receiving the Form RD-1 have participated in previous surveys, computer-imprinted data reported by the company for the previous year are supplied for reference. Companies are encouraged to revise or update the prior-year data if they have more current information; however, prior-year statistics that had been previously published were revised only if large disparities were reported.

Small R&D performers and firms included in the sample for the first time were sent Form RD-1A. This form collects the same information as Form RD-1 except for five items: Federal R&D support to the firm by contracting agency, R&D costs by type of expense, domestic R&D expenditures by state, energy-related R&D, and foreign R&D by country. It also includes a screening item that allows respondents to indicate that they do not perform R&D. No prior-year information is made available since the majority of the companies that receive the Form RD-1A have not been surveyed in the previous year.

Recent Survey Form Content Changes

For 2002, a new item asking for R&D done in collaboration with others was added to the Form RD-1. For 2003, survey content was not changed; formatting and navigational cues were improved, however.

Number of Survey Forms Sent

For the 2003 survey, Form RD-1 was mailed to companies that reported R&D expenditures of \$3 million dollars or more in the 2002 survey. Approximately 3,039 companies received Form RD-1 and approximately 28,882 received Form RD-1A. Both survey forms and the instructions provided to respondents are reproduced in appendix B, Survey Documents.

Followup for Survey Nonresponse

The 2003 survey forms were mailed in February 2004. Recipients of Form RD-1A were asked to respond within 30 days, while Form RD-1 recipients were given 60 days. A follow-up form and letter were mailed to RD-1A recipients every 30 days (up to a total of five times) if their completed survey form had not been received.

A letter was mailed to Form RD-1 recipients 30 days after the initial mailing, reminding them that their completed survey forms were due within the next 30 days. A second form and reminder letter were mailed to Form RD-1 respondents after 60 days. Two additional followups (one mail, one telephone) were conducted for delinquent Form RD-1 recipients not ranked among the 300 largest R&D performers based on total R&D expenditures reported in the previous survey. For performers among the top 300, additional telephone followup was used to encourage response. Table A-4 shows the number of companies in each industry or industry group that received a survey form and the percentage that responded to the survey.

Response Rates and Mandatory/Voluntary Reporting

Survey reporting requirements divided survey items into two groups: mandatory and voluntary. Responses to five data items were mandatory; responses to the remaining items were voluntary. The mandatory items were total R&D expenditures, federal R&D funds, net sales, total employment (which are included in the Census Bureau's annual mandatory statistical program) and the distribution of R&D by state. During the 1990 survey cycle, NSF conducted a test of the effect of reporting on a completely voluntary basis to determine whether combining both mandatory and voluntary items on one survey form influences response rates. For this test, the 1990 sample was divided into two panels of approximately equal size. One panel, the mandatory panel, was asked to report as usual on four mandatory items with the remainder voluntary, and the other panel was asked to report all items on a completely voluntary basis. The result of the test was a decrease in the overall survey response rate to 80 percent from levels of 88 percent in 1989 and 89 percent in 1988. The response rates for the mandatory and voluntary panels were 89 percent and 69 percent, respectively. Detailed results of the test were published in *Research and Development in Industry: 1990*. For firms that reported R&D expenditures in 2002, table A-6 shows the percentage that also reported data for other selected items.

Imputation for Item Nonresponse

For various reasons, many firms chose to return the survey form with one or more blank items.[7] For some firms, internal accounting systems and procedures may not have allowed quantification of specific expenditures. Others may have refused to answer any voluntary questions as a matter of company policy.

When respondents did not provide the requested information, estimates for the missing data were made using imputation algorithms. In general, the imputation algorithms computed values for missing items by applying the average percentage change for the target item in the nonresponding firm's industry to the item's prior-year value for that firm, reported or imputed. This approach, with minor variation, was used for most items.[8] Table A-5 contains imputation rates for the principal survey items.

Character of Work Estimates

Response to questions about character of work (basic research, applied research, and development) declined in the mid-1980s, and as a result, imputation rates increased. The general imputation procedure described above became increasingly dependent upon information imputed in prior years, thereby distancing current-year estimates from any reported information. Because of the increasing dependence on imputed data, NSF chose not to publish character of work estimates in 1986. The imputation procedure used to develop these estimates was revised in 1987 for use with later data and differs from the general imputation approach. The new method calculated the character of work distribution for a nonresponding firm only if that firm reported a

distribution within a five-year period, extending from two years before to two years after the year requiring imputation. Imputation for a given year was initially performed in the year the data were collected and was based on a character of work distribution reported in either of the two previous years, if any. It was again performed using new data collected in the next two years. If reported data followed no previously imputed or reported data, previous period estimates were inserted based on the currently reported information. Similarly, if reported data did not follow two years of imputed data, the two years of previously imputed data were removed. Thus, character of work estimates were revised as newly reported information became available and were not final for two years following their initial publication.

Beginning with 1995, previously estimated values were not removed for firms that did not report in the third year, nor were estimates made for the two previous years for firms reporting after two years of nonresponse. This process was changed because in the prior period revisions were minimal. Estimates continued to be made for two consecutive years of nonresponse and discontinued if the firm did not report character of work in the third year. If no reported data were available for a firm, character of work estimates were not imputed. As a consequence, only a portion of the total estimated R&D expenditures were distributed at the firm level. Those expenditures not meeting the requirements of the new imputation methodology were placed in a "not distributed" category.

NSF's objective in conducting the survey has always been to provide estimates for the entire population of firms performing R&D in the United States. However, the revised imputation procedure would no longer produce such estimates because of the not distributed component. A baseline estimation method thus was developed to allocate the not distributed amounts among the character of work components. In the baseline estimation method, the not distributed expenditures were allocated by industry group to basic research, applied research, and development categories using the percentage splits in the distributed category for that industry. The allocation was done at the lowest level of published industry detail only; higher levels were derived by aggregation, just as national totals were derived by aggregation of individual industry estimates, and result in higher performance shares for basic and applied research and lower estimates for development's share than would have been calculated using the previous method.

Using data collected during the 1999 and 2000 cycles of the survey, reporting anomalies for the character of work survey items, especially for basic research, were investigated. It was discovered that a number of large companies known to develop and manufacture products reported all of their R&D as basic research. This phenomenon is not logical and prompted a renewed effort to strengthen character of work estimates produced from the survey. Identification of the anomalous reporting patterns was completed and edit checks were improved for processing of the 2001 and 2002 data. Consequently, publication of character of work distributions of R&D has been resumed, and the tables containing historical basic research, applied research, and development estimates have been revised and footnoted accordingly.

State Estimates

Form RD-1 requests a distribution of the total cost of R&D among the states where R&D was performed. Prior to the 1999 survey, an independent source, the *Directory of American Research and Technology*, published by the Data Base Publishing Group of the R. R. Bowker Company was used in conjunction with previous survey results to estimate R&D expenditures by state for companies that did not provide this information. The information on scientists and engineers published in the directory

was used as a proxy indicator of the proportion of R&D expenditures within each state. R&D expenditures by state were estimated by applying the distribution of scientists and engineers by state from the directory to total R&D expenditures for these companies. These estimates were included with reported survey data to arrive at published estimates of R&D expenditures for each state. However, the practice of using outside information to formulate or adjust estimates of R&D expenditures for each state has been discontinued because a suitable source for supporting information is no longer available. State estimates resulting from the 1999 and 2000 surveys were based solely on respondent reports and information internal to the survey.

Beginning with the 2001 survey, because of the lack of a reliable, comprehensive outside source of information, in an effort to improve the quality of reported data, NSF sought and was granted authorization to require reporting of the distribution of R&D by state from the Office of Management and Budget (OMB), the federal agency that oversees and controls burden on respondents.

Also beginning in 2001, the sampling and estimation methodologies used to produce state estimates were modified from previous years to yield better accuracy and precision and to reduce erroneous fluctuations in year-to-year estimates due to small sample sizes of R&D performers by state. The new sampling methodology selects known R&D performers with a higher probability than nonperformers and selects with certainty the largest 50 companies in each state based on payroll thus providing more coverage of R&D performers. The new estimation methodology for state estimates takes the form of a hybrid estimator combining the unweighted reported amount by state with a weighted amount apportioned (or raked) across states with industrial activity. The hybrid estimator smoothes the estimate over states with R&D activity by industry and accounts for real change within a state. The Horvitz-Thompson estimator continues to be used to estimate the number of R&D performers by state.

Comparability of Statistics

This section summarizes major survey improvements, enhancements, and changes in procedures and practices that may have affected the comparability of statistics produced from the Survey of Industrial Research and Development over time and with other statistical series (see also NSF 2002a and U.S. Bureau of the Census 1995). This section focuses on major historical changes. More detailed historical information is available from individual annual reports <http://www.nsf.gov/statistics/industry/>.

Industry Classification System

Beginning with the 1999 cycle of the survey, industry statistics are published using the North American Industrial Classification System (NAICS). The ongoing development of NAICS has been a joint effort of statistical agencies in Canada, Mexico, and the United States. The system replaced the Standard Industrial Classification (1980) of Canada, the Mexican Classification of Activities and Products (1994), and Standard Industrial Classification (SIC 1987) of the United States. (For a detailed comparison of NAICS to the Standard Industrial Classification (1987) of the United States, visit <http://www.census.gov/epcd/www/naics.html>.) NAICS was designed to provide a production-oriented system under which economic units with similar production processes are classified in the same industry. NAICS was developed with special attention to classifications for new and emerging industries, service industries, and industries that produce advanced technologies. NAICS not only eases comparability of information about the economies of the three

North American countries, but it also increases comparability with the two-digit level of the United Nations' International Standard Industrial Classification (ISIC) system. Important for the Survey of Industrial Research and Development is the creation of several new classifications that cover major performers of R&D in the U.S. Among manufacturers, the computer and electronic products classification (NAICS 334) includes makers of computers and peripherals, semiconductors, and navigational and electromedical instruments. Among nonmanufacturing industries are information (NAICS 51) and professional, scientific, and technical services (NAICS 54). Information includes publishing, both paper and electronic; broadcasting; and telecommunications. Professional, scientific, and technical services include a variety of industries. Of specific importance for the survey are engineering and scientific R&D service industries.

Effects of NAICS on Survey Statistics. The change of industry classification system affects most of the detailed statistical tables produced from the survey. Prior to the 1999 report, tables classified by industry contained the current survey's statistics plus statistics for 10 previous years. Because of the new classification system, the tables classified by industry in this report contain only statistics for the current year (2003) and previous years back to 1999 and only selected historical tables not classified by industry still contain estimates prior to 1999. However, to provide a bridge for users who want to make year-to-year comparisons below the aggregate level, in several tables in *Research and Development in Industry: 2000* statistics from the 1997 and 1998 cycles of the survey, which were previously classified and published using the SIC system, were reclassified using the new NAICS codes. These reclassified statistics were slotted using their new NAICS classifications alongside the 1999 and 2000 statistics, which were estimated using NAICS from the outset.

Company Size Classifications

Beginning with the 1999 cycle of the survey, the number of company size categories used to classify survey statistics was increased. The original 6 categories were expanded to 10 to emphasize the role of small companies in R&D performance. The more detailed business size information also facilitates better international comparisons. Generally, statistics produced by foreign countries that measure their industrial R&D enterprise are reported with more detailed company size classifications at the lower end of the scale than U.S. industrial R&D statistics traditionally have been. (For more information, visit the Organisation for Economic Co-operation and Development (OECD) website at <http://www.oecd.org>.) The new classifications of the U.S. statistics enable more direct comparisons with other countries' statistics.

Revisions to Historical and Immediate Prior-Year Statistics

Revisions to historical statistics usually have been made because of changes in the industry classification of companies caused by changes in payroll composition detected when a new sample was drawn. Various methodologies have been adopted over the years to revise, or backcast, the data when revisions to historical statistics have become necessary. Documented revisions to the historical statistics from post-1967 surveys through 1992 are summarized by NSF (1994) and in annual reports for subsequent surveys. Detailed descriptions of the specific revisions made to the statistics from pre-1967 surveys are scarce, but U.S. Bureau of the Census (1995) summarizes some of the major revisions.

Changes to reported data can come from three sources: respondents, analysts involved in survey and statistical processing, and the industry reclassification

process. Prior to 1995, routine revisions were made to prior-year statistics based on information from all three sources. Consequently, results from the current-year survey were used not only to develop current-year statistics, but also to revise immediate prior-year statistics. Beginning with the 1995 survey, this practice was discontinued. The reasons for discontinuation of this practice were annual sampling; continual strengthening of sampling methodology; and improvements in data verification, processing, and nonresponse followup. Moreover, it was not clear that respondents or those who processed the survey results had any better information a year after the data were first reported. Thus, it was determined that routinely revising published survey statistics increased the potential for error and often confused users of the statistics. Revisions are now made to historical and immediate prior-year statistics only if substantive errors are discovered.

For 1999, an error in the sample frame caused one very large company (based on payroll) to be selected for the sample and its statistical record to be assigned a large weight (see Frame Creation and Weighting and Maximum Weights above). Because the company's record had received a large weight during 1999 sampling, the company was selected with certainty for the 2000 sample and assigned a weight of one (see Identifying Certainty Companies above). This sampling artifact caused an abnormally large decrease in the company's data, especially for sales and employment, when comparing the 2000 statistics with the statistics originally published for 1999. The weight in the company's record in the 1999 statistical file was corrected, and revised 1999 statistics are included in the tables in this report. R&D estimates for the company also were affected; however, the amount of R&D reported was relatively small, even after weighting.

As summarized above under Character of Work Estimates, reporting anomalies for the character of work survey items, especially for basic research, were discovered and investigated using data collected during the 1999 and 2000 cycles of the survey. Companies known to develop and manufacture products but that reported all of their R&D as basic research were contacted and queried regarding their R&D activities. After reviewing the definitions of basic research, applied research, and development, all but several changed their distribution of R&D. Census, the collection and tabulation agent for the survey, was able to go back as far as 1998 and correct the statistical files. Consequently, the tables containing historical basic research, applied research, and development estimates have been revised and footnoted accordingly.

During statistical processing for the 2003 survey a problem was discovered. A very large company classified among the manufacturing industries was properly sampled for the survey and sent a questionnaire, but did not respond. The company had responded to the survey in the late 1990s but not since then. In such cases, estimates for the missing data are made using imputation algorithms (see Imputation for Item Nonresponse above). Using publicly available information, it was discovered that the amount of R&D imputed for the company for 2003 was much lower than the amount from the public sources. Further, amounts imputed since the company's last report were similarly much lower. The company was contacted and it provided a corrected amount for 2003 and updated R&D amounts for past years. Consequently, the historical statistics for 1999–2002 in this report have been revised and affected tables footnoted accordingly.

Year-to-Year Changes

Comparability from year to year may be affected by new sample design, annual sample selection, and industry shifts.

Sample Design

By far the most profound influence on statistics from recent surveys occurred when the new sample design for the 1992 survey was introduced. Revisions to the 1991 statistics were dramatic (see *Research and Development in Industry: 1992* for a detailed discussion). While the allocation of the sample was changed somewhat, the sample designs used for subsequent surveys were comparable to the 1992 sample design in terms of size and coverage.

Annual Sample Selection

With the introduction of annual sampling in 1992, more year-to-year change has resulted than when survey panels were used for two reasons. First, changes in classification of companies not surveyed are not reflected in the year-to-year movement. Prior to annual sampling, a wedging operation, which was performed when a new sample was selected, was a means of adjusting the data series to account for the changes in classification that occurred in the frame (see the discussion on wedging later under Time Series Analyses). Second, yearly correlation of R&D data is lost when independent samples are drawn each year.

Industry Shifts

The industry classification of companies is redefined each year with the creation of the sampling frame. By redefining the frame, the sample reflects current distributions of companies by size and industry. A company may move from one industry to another because of either changes in its payroll composition, which is used to determine the industry classification code (see previous discussion under Frame Creation); changes in the industry classification system itself; or changes in the way the industry classification code was assigned or revised during survey processing.

A company's payroll composition can change because of the growth or decline of product or service lines, the merger of two or more companies, the acquisition of one company by another, divestitures, or the formation of conglomerates. Although an unlikely occurrence, a company's industry designation could be reclassified yearly with the introduction of annual sampling. When companies shift industry classifications, the result is a downward movement in R&D expenditures in one industry that is balanced by an upward movement in another industry from one year to the next.

From time to time, the industry coding system used by federal agencies that publish industry statistics is changed or revised to reflect the changing composition of U.S. and North American industry. The Standard Industrial Classification (SIC) system, as revised in 1987, was used for statistics developed from the 1988–91 panel surveys and the 1992–98 annual surveys. As discussed above, the industrial classification system has been completely changed, and beginning with the 1999 cycle of the survey, the North American Industrial Classification System (NAICS) is now used.

The method used to classify firms during survey processing was revised slightly in 1992. Research has shown that the impact on individual industry estimates was minor. (The effects of changes in the way companies were classified during survey processing are discussed in detail in U.S. Bureau of the Census 1994a and 1994e). The current method used to classify firms was discussed previously under Frame Creation. Methods used for past surveys are discussed in U.S. Bureau of the Census (1995). Large year-to-year changes may occur because of the way industry classifications are assigned during statistical processing. As discussed above, a company's industry classification is a function of its primary activity based on

payroll, which is not necessarily the primary source of its R&D activity. If the majority of a company's payroll shifts to an activity other than an R&D-related activity, for example trade, all of its R&D similarly shifts to the new activity. Further, the design of the statistical sample sometimes contributes to large year-to-year changes in industry estimates. Since relatively few companies perform R&D and there is no national register of industrial R&D performers, a large statistical "net" must be cast to capture new R&D performers. When these companies are sampled for the first time, they are often given weights much higher than they would be given if their size and the amount of R&D they perform were known at the time of sampling. After the size of the company and the amount of R&D performed are discovered via the first survey, the weight assigned for subsequent surveys is adjusted.

Capturing Small and Nonmanufacturing R&D Performers

Before the 1992 survey, the sample of firms surveyed was selected at irregular intervals; until 1967, samples were selected every 5 years. Subsequent samples were selected for 1971, 1976, 1981, and 1987. In intervening years, a panel of the largest firms known to perform R&D was surveyed. For example, a sample of about 14,000 firms was selected for the 1987 survey. For the 1988–91 studies, about 1,700 of these firms were resurveyed annually; the other firms did not receive survey forms, and their R&D data were estimated. This sample design was adequate during the survey's early years because R&D performance was concentrated in relatively few manufacturing industries. However, as more and more firms began entering the R&D arena, the old sample design proved increasingly deficient because it did not capture births of new R&D-performing firms. The entry of fledgling R&D performers into the marketplace was completely missed during panel years. Additionally, beginning in the early 1970s, the need for more detailed R&D information for nonmanufacturing industries was recognized. At that time, the broad industry classifications "miscellaneous business services" and "miscellaneous services" were added to the list of industry groups for which statistics were published. By 1975, about 3 percent of total R&D was performed by firms in nonmanufacturing industries. (See also NSF 1994, 1995, and 1996a.)

During the mid-1980s, there was evidence that a significant amount of R&D was being conducted by an increasing number of companies classified among the nonmanufacturing industries. Again the number of industries used to develop the statistics for nonmanufacturers was increased. Consequently, the annual reports in this series for 1987–91 included separate R&D estimates for firms in the communication, utility, engineering, architectural, research, development, testing, computer programming, and data processing service industries; hospitals; and medical labs. Approximately 9 percent of the estimated industrial R&D performance during 1987 was undertaken by nonmanufacturing firms.

After the list of industries for which statistics were published was expanded, it became clear that the sample design itself should be changed to reflect the widening population of R&D performers among firms in the nonmanufacturing industries (NSF 1995a) and small firms in all industries so as to account better for births of R&D-performing firms and to produce more reliable statistics. Beginning with the 1992 survey, NSF decided (1) to draw new samples with broader coverage annually and (2) to increase the sample size to approximately 25,000 firms.^[9] As a result of the sample redesign, for 1992 the reported nonmanufacturing share was (and has continued to be) 25–30 percent of total R&D. (See also NSF 1997, 1998, 1999, 2000, 2001, and 2002b.)

Time-Series Analyses

The statistics resulting from this survey on R&D spending and personnel are often used as if they were prepared using the same collection, processing, and tabulation methods over time. Such uniformity has not been the case. Since the survey was first fielded, improvements have been made to increase the reliability of the statistics and to make the survey results more useful. To that end, past practices have been changed and new procedures instituted. Preservation of the comparability of the statistics has, however, been an important consideration in making these improvements.

Nonetheless, changes to survey definitions, the industry classification system, and the procedure used to assign industry codes to multiestablishment companies have had some, though not substantial, effects on the comparability of statistics. (For discussions of each of these changes, see U.S. Bureau of the Census 1994g; for considerations of comparability, see U.S. Bureau of the Census 1993 and 1994e.)

The aspect of the survey that had the greatest effect on comparability was the selection of samples at irregular intervals and the use of a subset or panel of the last sample drawn to develop statistics for intervening years. As discussed earlier, this practice introduced cyclical deterioration of the statistics. As compensation for this deterioration, periodic revisions were made to the statistics produced from the panels surveyed between sample years. Early in the survey's history, various methods were used to make these revisions (U.S. Bureau of the Census 1995). After 1976 and until the 1992 advent of annual sampling, a linking procedure called wedging was used. In wedging, the 2 sample years on each end of a series of estimates served as benchmarks in the algorithms used to adjust the estimates for the intervening years. (The process was dubbed wedging because of the wedgelike area produced on a graph that compares originally reported statistics with the revised statistics that resulted after linking. For a full discussion of the mathematical algorithm used for the wedging process that linked statistics from the 1992 survey with those from the 1987 survey, see U.S. Bureau of the Census 1994g and NSF 1995.)

Comparisons to Other Statistical Series

NSF collects data on federally financed R&D from both federal funding agencies, using the Survey of Federal Funds for Research and Development, and from performers of the R&D—industry, federal labs, universities, and other nonprofit organizations—using the Survey of Industrial Research and Development and other surveys (<http://www.nsf.gov/statistics/survey.cfm>). As reported by federal agencies, NSF publishes data on federal R&D budget authority and outlays, in addition to federal obligations. These terms are defined below (NSF 2002b):

- *Budget authority* is the primary source of legal authorization to enter into obligations that will result in outlays. Budget authority is most commonly granted in the form of appropriations by the congressional committees assigned to determine the budget for each function.
- *Obligations* represent the amounts for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated or when future payment of money is required.
- *Outlays* represent the amounts for checks issued and cash payments made during a given period, regardless of when the funds were appropriated or obligated.

National R&D expenditure totals in NSF's *National Patterns of R&D Resources* report series are primarily constructed with data reported by performers and include estimates of federal R&D funding to these sectors. But until performer-reported survey data on federal R&D expenditures become available from industry and academia, data collected from the federal agency funders of R&D are used to project R&D performance. When survey data from the performers subsequently are tabulated, as they were for this report, these statistics replace the projections based on funder expectations. Historically, the two survey systems have tracked fairly closely. For example, in 1980, performers reported using \$29.5 billion in federal R&D funding, and federal agencies reported total R&D funding between \$29.2 billion in outlays and \$29.8 billion in obligations (NSF 1996b). In recent years, however, the two series have diverged considerably. The difference in the federal R&D totals appears to be concentrated in funding of industry, primarily aircraft and missile firms, by the Department of Defense. Overall, industrial firms have reported significant declines in federal R&D support since 1990 (table A-1), while federal agencies have reported level or slightly increased funding of industrial R&D (NSF 2005a). NSF continues to identify and examine the factors behind these divergent trends.

Technical Tables

Table **Table Name**

- A-1 Companies in the target population and selected for the sample, by industry and company size: 2003
- A-2 Relative standard error for survey estimates, by industry and company size: 2003
- A-3 Relative standard error for estimates of total R&D and percentage of estimates attributed to certainty companies, by state: 2003
- A-4 Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003
- A-5 Imputation rates for survey items, by industry and company size: 2003
- A-6 Percentage of R&D-performing companies that reported non-zero data for major survey items: 2003
- A-7 Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed , by industry and company size, by source of funds: 2003

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2003

Industry and company size	NAICS codes	Companies in target population	Companies selected for the sample		
			All companies	Noncertainties	Certainties
All industries	21-23, 31-33, 42, 44-81	1,831,849	31,498	21,484	10,014
Manufacturing industries	31-33	168,385	11,216	6,342	4,874
Food	311	11,250	590	353	237
Beverage and tobacco products	312	1,226	167	93	74
Textiles, apparel, and leather	313-16	12,263	519	331	188
Wood products	321	8,852	427	319	108
Paper, printing, and support activities	322, 323	20,636	578	424	154
Petroleum and coal products	324	562	118	39	79
Chemicals	325	5,376	1,090	495	595
Basic chemicals	3251	618	208	56	152
Resin, synthetic rubber, fibers, and filament	3252	281	120	34	86
Pharmaceuticals and medicines	3254	862	219	76	143
Other chemicals	other 325	3,615	543	329	214
Plastics and rubber products	326	8,371	674	351	323
Nonmetallic mineral products	327	6,604	434	290	144
Primary metals	331	3,009	356	203	153
Fabricated metal products	332	33,863	958	626	332
Machinery	333	16,043	909	440	469
Computer and electronic products	334	8,290	1,720	850	870
Computers and peripheral equipment	3341	847	267	121	146
Communications equipment	3342	1,085	314	137	177
Semiconductor and other electronic components	3344	3,221	428	224	204
Navigational, measuring, electromedical, and control instruments	3345	2,528	557	310	247
Other computer and electronic products	other 334	609	154	58	96
Electrical equipment, appliances, and components	335	3,387	488	256	232
Transportation equipment	336	6,167	767	376	391
Motor vehicles, trailers, and parts	3361-63	3,909	349	146	203
Aerospace products and parts	3364	872	207	114	93
Other transportation equipment	other 336	1,386	211	116	95
Furniture and related products	337	9,805	485	339	146
Miscellaneous manufacturing	339	12,638	916	556	360
Medical equipment and supplies	3391	4,529	413	232	181
Other miscellaneous manufacturing	other 339	8,109	503	324	179
Unclassified		43	20	1	19

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2003

Industry and company size	NAICS codes	Companies in target population	Companies selected for the sample		
			All companies	Noncertainties	Certainties
Nonmanufacturing industries	21–23, 42, 44–81	1,663,464	20,282	15,142	5,140
Mining, extraction, and support activities	21	6,621	275	186	89
Utilities	22	1,421	134	33	101
Construction	23	229,395	2,293	1,997	296
Wholesale trade	42	138,845	2,365	1,590	775
Professional and commercial equipment and supplies, including computers	4214	13,926	368	203	165
Electrical goods	4216	11,199	316	195	121
Drugs and druggists' sundries	4222	2,152	181	94	87
Other wholesale trade	other 42	111,568	1,500	1,098	402
Retail trade	44, 45	268,261	2,373	2,041	332
Transportation and warehousing	48, 49	50,386	690	513	177
Information	51	26,023	1,454	781	673
Publishing	511	10,403	825	408	417
Newspaper, periodical, book, and database	5111	6,946	269	178	91
Software	5112	3,457	556	230	326
Broadcasting and telecommunications	513	6,704	318	176	142
Telecommunications	5133	3,387	137	58	79
Other broadcasting and telecommunications	other 513	3,317	181	118	63
Other information	other 51	8,916	311	197	114
Finance, insurance, and real estate	52, 53	112,322	1,364	1,013	351
Professional, scientific, and technical services	54	172,186	3,537	2,096	1,441
Architectural, engineering, and related services	5413	32,860	731	487	244
Computer systems design and related services	5415	19,088	909	449	460
Scientific R&D services	5417	3,064	711	199	512
Other professional, scientific, and technical services	other 54	117,174	1,186	961	225
Management of companies and enterprises	55	1,309	148	80	68
Health care services	621–23	171,964	1,720	1,460	260
Other nonmanufacturing	56, 61, 624, 71, 72, 81	481,043	3,818	3,256	562
Unclassified		3,688	111	96	15

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2003

Industry and company size	NAICS codes	Companies in target population	Companies selected for the sample		
			All companies	Noncertainties	Certainties
Company size (employees)					
All companies	na	1,831,849	31,498	21,484	10,014
5-24	na	1,439,004	10,435	10,061	374
25-49	na	213,634	4,512	3,974	538
50-99	na	100,321	4,274	3,255	1,019
100-249	na	51,658	4,887	2,767	2,120
250-499	na	14,185	2,748	904	1,844
500-999	na	6,435	1,976	333	1,643
1,000-4,999	na	5,071	1,957	163	1,794
5,000-9,999	na	736	336	19	317
10,000-24,999	na	516	237	4	233
25,000 or more	na	289	136	4	132

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2003

Industry and company size	NAICS codes	Companies that responded to the survey					Companies that did not respond to the survey
		Companies with R&D greater than or equal to \$3 million	Companies with R&D less than \$3 million	Companies that reported no R&D expenditures	Other companies		
All industries	21-23, 31-33, 42, 44-81	2,872	4,115	18,682	471	5,358	
Manufacturing industries	31-33	1,505	2,965	4,540	150	2,058	
Food	311	50	155	285	9	91	
Beverage and tobacco products	312	9	15	112	1	30	
Textiles, apparel, and leather	313-16	23	109	247	8	132	
Wood products	321	7	48	282	13	77	
Paper, printing, and support activities	322, 323	36	64	360	12	106	
Petroleum and coal products	324	9	35	43	2	29	
Chemicals	325	228	384	285	13	181	
Basic chemicals	3251	57	66	46	5	34	
Resin, synthetic rubber, fibers, and filament	3252	23	37	40	1	19	
Pharmaceuticals and medicines	3254	90	51	39	3	36	
Other chemicals	other 325	58	230	160	4	92	
Plastics and rubber products	326	72	251	255	6	90	
Nonmetallic mineral products	327	22	70	242	3	97	
Primary metals	331	23	84	187	5	57	
Fabricated metal products	332	55	216	511	11	165	
Machinery	333	166	307	280	7	148	
Computer and electronic products	334	453	522	361	38	348	
Computers and peripheral equipment	3341	60	87	61	5	54	
Communications equipment	3342	108	84	46	13	65	
Semiconductor and other electronic components	3344	124	87	116	10	91	
Navigational, measuring, electromedical, and control instruments	3345	147	215	90	7	98	
Other computer and electronic products	other 334	14	49	48	3	40	
Electrical equipment, appliances, and components	335	87	169	143	5	84	
Transportation equipment	336	126	185	305	8	143	
Motor vehicles, trailers, and parts	3361-63	80	91	108	5	65	
Aerospace products and parts	3364	27	36	107	3	34	
Other transportation equipment	other 336	19	58	90	0	44	
Furniture and related products	337	13	88	275	6	104	
Miscellaneous manufacturing	339	126	263	357	3	167	
Medical equipment and supplies	3391	89	124	129	2	69	
Other miscellaneous manufacturing	other 339	37	139	228	1	98	
Unclassified		0	0	10	0	9	

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2003

Industry and company size	NAICS codes	Companies that responded to the survey					Companies that did not respond to the survey
		Companies with R&D greater than or equal to \$3 million	Companies with R&D less than \$3 million	Companies that reported no R&D expenditures	Other companies		
Nonmanufacturing industries	21–23, 42, 44–81	1,367	1,150	14,142	321	3,300	
Mining, extraction, and support activities	21	15	17	190	7	46	
Utilities	22	12	21	79	5	18	
Construction	23	9	30	1,868	18	368	
Wholesale trade	42	188	258	1,500	43	375	
Professional and commercial equipment and supplies, including computers	4214	60	40	187	9	72	
Electrical goods	4216	49	34	166	6	60	
Drugs and druggists' sundries	4222	34	23	93	3	28	
Other wholesale trade	other 42	45	161	1,054	25	215	
Retail trade	44, 45	22	48	1,888	26	389	
Transportation and warehousing	48, 49	6	12	535	10	127	
Information	51	290	196	616	49	305	
Publishing	511	222	152	279	30	144	
Newspaper, periodical, book, and database	5111	11	14	195	9	40	
Software	5112	211	138	84	21	104	
Broadcasting and telecommunications	513	21	13	194	5	85	
Telecommunications	5133	18	7	70	1	41	
Other broadcasting and telecommunications	other 513	3	6	124	4	44	
Other information	other 51	47	31	143	14	76	
Finance, insurance, and real estate	52, 53	41	20	1,122	29	152	
Professional, scientific, and technical services	54	733	418	1,830	54	501	
Architectural, engineering, and related services	5413	89	80	456	3	103	
Computer systems design and related services	5415	236	165	287	19	202	
Scientific R&D services	5417	380	146	89	17	78	
Other professional, scientific, and technical services	other 54	28	27	998	15	118	
Management of companies and enterprises	55	6	9	100	6	27	
Health care services	621–23	12	57	1,444	12	196	
Other nonmanufacturing	56, 61, 624, 71, 72, 81	33	64	2,917	52	753	
Unclassified		0	0	53	10	43	

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2003

Industry and company size	NAICS codes	Companies that responded to the survey					Companies that did not respond to the survey
		Companies with R&D greater than or equal to \$3 million	Companies with R&D less than \$3 million	Companies that reported no R&D expenditures	Other companies		
Company size (employees)							
All companies	na	2,872	4,115	18,682	471	5,358	
5-24	na	33	579	7,842	61	1,925	
25-49	na	149	577	2,973	57	775	
50-99	na	251	737	2,539	82	679	
100-249	na	549	1,006	2,510	107	792	
250-499	na	441	536	1,242	65	473	
500-999	na	388	357	813	42	358	
1,000-4,999	na	664	264	649	46	295	
5,000-9,999	na	163	39	59	5	31	
10,000-24,999	na	140	14	36	5	21	
25,000 or more	na	94	6	19	1	9	

na = not applicable.

NOTES: Certainties are companies whose probability of selection is one including companies whose 2002 R&D expenditures were equal to or greater than \$3 million as well as others included in the sample for analytical purposes ("analytical certainties"). Noncertainties are companies whose probability of selection is less than one. Companies that were missing or had an incomplete North American Industry Classification System (NAICS) code at the time of sampling were assigned to an "unclassified" industry category temporarily. If an unclassified company reported R&D expenditures, its primary industrial activity was investigated and a NAICS code was assigned during statistical processing. Includes companies with reported or imputed R&D expenditures. The last five columns in the table account for all of the categories of companies selected for the sample. Companies that responded to the survey are distributed among four categories, those that reported or had imputed R&D greater than or equal to \$3 million, those that reported or had imputed R&D less than \$3 million, those that had no reported or imputed R&D, and those that reported they were out-of-scope, out-of-business, or had merged with another company (which may or may not have been selected for the survey, and may not be in the same industry). Companies that did not return a questionnaire are accounted for in the last column. Consequently, the sum of the counts in the last five columns equals the totals in the "companies selected for the sample" columns. The total number of "companies selected for the sample" is larger than the "number of companies that received a questionnaire" in table A-4 because some companies selected for the survey went out of business or were merged with other companies during the time between sample selection and survey mail-out, that is, the sample frame was updated before actual mail-out took place. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	All R&D	Basic research			Applied research		
			Total	Company funded	Federally funded	Total	Company funded	Federally funded
All industries	21-23, 31-33, 42, 44-81	1.0	2.7	1.4	12.4	1.6	1.7	5.1
Manufacturing industries	31-33	0.9	0.5	0.5	0.3	1.1	1.2	1.1
Food	311	1.3	1.9	1.9	0.0	1.8	1.8	0.0
Beverage and tobacco products	312	0.2	0.2	0.2	0.0	0.2	0.2	0.0
Textiles, apparel, and leather	313-16	4.8	14.6	14.6	0.0	9.7	9.9	0.0
Wood products	321	0.9	0.4	0.4	0.0	0.4	0.4	0.0
Paper, printing, and support activities	322, 323	6.9	3.9	4.0	0.0	1.3	1.3	0.0
Petroleum and coal products	324	1.2	2.2	2.2	0.0	0.2	0.2	0.0
Chemicals	325	0.8	0.3	0.3	0.0	2.0	2.0	1.5
Basic chemicals	3251	6.4	2.9	3.0	0.0	5.1	5.5	0.1
Resin, synthetic rubber, fibers, and filament	3252	0.1	0.0	0.0	0.0	0.1	0.1	0.0
Pharmaceuticals and medicines	3254	0.4	0.3	0.3	0.0	1.4	1.4	31.2
Other chemicals	other 325	4.3	1.9	2.1	0.0	11.0	11.8	0.0
Plastics and rubber products	326	8.5	5.2	5.2	0.0	27.5	22.9	96.9
Nonmetallic mineral products	327	2.3	0.2	0.2	0.0	3.1	3.1	0.0
Primary metals	331	2.5	10.3	10.1	97.6	9.9	9.9	0.0
Fabricated metal products	332	3.5	11.7	11.7	0.0	5.0	5.0	0.0
Machinery	333	3.4	10.8	10.8	0.0	10.5	11.0	15.8
Computer and electronic products	334	0.3	0.7	0.8	1.6	1.0	1.1	3.3
Computers and peripheral equipment	3341	0.8	6.6	6.9	0.0	5.2	4.2	24.3
Communications equipment	3342	0.2	0.8	0.8	2.0	0.5	0.5	2.6
Semiconductor and other electronic components	3344	0.9	2.2	2.2	14.7	2.5	2.5	28.5
Navigational, measuring, electromedical, and control instruments	3345	0.2	0.8	0.7	1.6	0.9	1.0	3.1
Other computer and electronic products	other 334	3.6	43.5	43.5	0.0	10.6	10.0	63.0
Electrical equipment, appliances, and components	335	4.1	3.2	4.7	0.0	8.4	9.2	14.6
Transportation equipment	336	2.9	1.9	3.3	0.0	2.5	4.3	0.8
Motor vehicles, trailers, and parts	3361-63	5.8	7.0	7.1	0.0	5.8	5.9	35.4
Aerospace products and parts	3364	0.1	0.0	0.1	0.0	0.1	0.3	0.1
Other transportation equipment	other 336	0.7	0.3	0.8	0.0	4.8	5.0	0.0
Furniture and related products	337	2.4	40.5	40.5	0.0	5.5	5.5	0.0
Miscellaneous manufacturing	339	0.5	4.4	4.6	6.3	3.2	3.2	48.1
Medical equipment and supplies	3391	0.5	1.0	1.0	6.3	3.4	3.4	44.1
Other miscellaneous manufacturing	other 339	2.2	18.6	18.6	0.0	8.1	7.8	98.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	All R&D	Basic research			Applied research		
			Total	Company funded	Federally funded	Total	Company funded	Federally funded
Nonmanufacturing industries	21-23, 42, 44-81	2.2	7.0	4.0	19.9	3.6	3.7	12.5
Mining, extraction, and support activities	21	8.7	41.9	42.1	0.0	6.4	6.4	0.0
Utilities	22	1.1	0.0	0.0	0.0	0.1	0.1	0.0
Construction	23	34.0	63.8	63.8	0.0	53.8	53.8	0.0
Wholesale trade	42	1.6	4.0	4.1	1.5	3.4	2.7	66.1
Professional and commercial equipment and supplies, including computers	4214	2.8	7.3	8.0	1.5	11.5	11.7	0.0
Electrical goods	4216	1.7	0.3	0.3	0.0	1.7	1.7	0.0
Drugs and druggists' sundries	4222	1.2	0.4	0.4	0.0	4.4	2.8	76.6
Other wholesale trade	other 42	12.4	49.8	49.8	0.0	17.8	17.9	67.1
Retail trade	44, 45	27.9	20.3	20.3	0.0	33.4	33.4	0.0
Transportation and warehousing	48, 49	6.3	0.0	0.0	0.0	28.1	28.3	0.0
Information	51	2.0	1.1	1.1	19.9	2.2	2.1	56.7
Publishing	511	0.8	2.5	2.5	19.9	2.2	1.9	56.7
Newspaper, periodical, book, and database	5111	11.8	1.8	1.6	93.6	83.7	83.8	93.6
Software	5112	0.7	2.6	2.6	17.1	1.6	1.1	56.8
Broadcasting and telecommunications	513	21.5	1.4	1.4	0.0	9.5	9.5	0.0
Telecommunications	5133	22.0	0.0	0.0	0.0	9.8	9.8	0.0
Other broadcasting and telecommunications	other 513	16.1	57.5	57.5	0.0	17.2	17.2	0.0
Other information	other 51	4.0	0.7	0.7	0.0	13.5	13.5	0.0
Finance, insurance, and real estate	52, 53	8.5	16.3	16.3	0.0	14.1	14.1	0.0
Professional, scientific, and technical services	54	5.3	11.2	6.8	20.7	5.7	6.1	13.0
Architectural, engineering, and related services	5413	26.9	21.1	50.3	11.0	19.0	41.7	19.8
Computer systems design and related services	5415	3.8	34.6	6.7	47.0	12.5	12.7	4.7
Scientific R&D services	5417	3.7	8.1	5.4	15.4	5.0	4.8	15.8
Other professional, scientific, and technical services	other 54	12.9	0.0	0.0	0.0	20.3	20.7	0.0
Management of companies and enterprises	55	6.1	0.0	0.0	0.0	9.0	9.0	0.0
Health care services	621-23	18.8	50.3	1.8	81.4	6.0	5.5	81.4
Other nonmanufacturing	56, 61, 624, 71, 72, 81	24.5	21.7	24.2	0.0	76.9	78.5	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	All R&D	Basic research			Applied research		
			Total	Company funded	Federally funded	Total	Company funded	Federally funded
Company size (employees)								
All companies	na	1.0	2.7	1.4	12.4	1.6	1.7	5.1
5-24	na	26.7	31.2	36.9	42.8	25.0	29.7	39.7
25-49	na	17.6	41.5	24.5	53.9	17.3	18.3	35.9
50-99	na	6.5	9.7	12.9	12.2	14.1	12.6	53.1
100-249	na	3.8	6.5	7.2	15.0	7.2	7.8	14.5
250-499	na	6.1	7.2	9.4	6.4	6.6	7.2	16.3
500-999	na	2.4	0.1	0.1	0.0	0.1	0.1	0.0
1,000-4,999	na	0.9	0.7	0.7	0.0	2.3	2.5	0.0
5,000-9,999	na	0.0	0.1	0.1	0.0	0.0	0.0	0.0
10,000-24,999	na	0.1	0.0	0.0	0.0	0.1	0.1	0.0
25,000 or more	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Development			Company funded R&D performed by other organizations			
		Total	Company funded	Federally funded	Total	For-profit company	University or college	Nonprofit organization
All industries	21-23, 31-33, 42, 44-81	1.0	1.1	0.9	2.1	0.0	0.0	0.0
Manufacturing industries	31-33	0.9	1.1	0.3	0.8	0.0	0.0	0.0
Food	311	1.5	1.5	0.0	1.1	0.0	0.0	0.0
Beverage and tobacco products	312	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	4.6	4.7	0.0	54.9	0.0	0.0	0.0
Wood products	321	1.4	1.6	2.9	1.3	0.0	0.0	0.0
Paper, printing, and support activities	322, 323	9.6	9.6	0.0	0.6	0.0	0.0	0.0
Petroleum and coal products	324	1.7	1.8	0.0	0.7	0.0	0.0	0.0
Chemicals	325	0.8	0.8	0.5	0.1	0.0	0.0	0.0
Basic chemicals	3251	7.9	8.0	2.0	0.0	0.0	0.0	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.2	0.2	0.0	1.1	0.0	0.0	0.0
Pharmaceuticals and medicines	3254	0.5	0.5	0.0	0.1	0.0	0.0	0.0
Other chemicals	other 325	0.8	0.9	0.5	0.9	0.0	0.0	0.0
Plastics and rubber products	326	3.9	3.4	76.1	3.9	0.0	0.0	0.0
Nonmetallic mineral products	327	2.4	2.3	85.3	9.6	0.0	0.0	0.0
Primary metals	331	2.2	2.3	0.0	10.6	0.0	0.0	0.0
Fabricated metal products	332	4.1	4.3	0.0	6.7	0.0	0.0	0.0
Machinery	333	3.3	3.4	2.1	19.4	0.0	0.0	0.0
Computer and electronic products	334	0.3	0.4	0.1	1.5	0.0	0.0	0.0
Computers and peripheral equipment	3341	0.7	0.7	17.2	0.5	0.0	0.0	0.0
Communications equipment	3342	0.2	0.2	2.0	1.4	0.0	0.0	0.0
Semiconductor and other electronic components	3344	1.0	1.0	7.6	4.4	0.0	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	0.2	0.4	0.1	1.4	0.0	0.0	0.0
Other computer and electronic products	other 334	2.5	2.5	0.0	15.7	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	4.6	4.7	0.0	22.4	0.0	0.0	0.0
Transportation equipment	336	3.0	3.7	0.5	0.2	0.0	0.0	0.0
Motor vehicles, trailers, and parts	3361-63	5.8	5.9	44.3	0.3	0.0	0.0	0.0
Aerospace products and parts	3364	0.1	0.1	0.0	0.4	0.0	0.0	0.0
Other transportation equipment	other 336	0.3	0.4	0.0	2.3	0.0	0.0	0.0
Furniture and related products	337	2.3	2.3	0.0	8.6	0.0	0.0	0.0
Miscellaneous manufacturing	339	0.4	0.4	6.2	5.8	0.0	0.0	0.0
Medical equipment and supplies	3391	0.4	0.4	27.3	8.2	0.0	0.0	0.0
Other miscellaneous manufacturing	other 339	1.3	1.4	0.0	2.7	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Development			Company funded R&D performed by other organizations			
		Total	Company funded	Federally funded	Total	For-profit company	University or college	Nonprofit organization
Nonmanufacturing industries	21–23, 42, 44–81	2.2	2.3	5.0	4.2	0.0	0.0	0.0
Mining, extraction, and support activities	21	1.1	1.1	0.0	0.0	0.0	0.0	0.0
Utilities	22	1.2	1.5	0.0	5.6	0.0	0.0	0.0
Construction	23	36.6	18.1	98.7	69.4	0.0	0.0	0.0
Wholesale trade	42	1.7	1.7	0.0	1.8	0.0	0.0	0.0
Professional and commercial equipment and supplies, including computers	4214	2.5	2.5	0.0	16.4	0.0	0.0	0.0
Electrical goods	4216	2.1	2.1	0.0	13.8	0.0	0.0	0.0
Drugs and druggists' sundries	4222	0.1	0.1	0.0	0.7	0.0	0.0	0.0
Other wholesale trade	other 42	14.6	14.6	0.0	19.9	0.0	0.0	0.0
Retail trade	44, 45	30.3	31.1	68.1	39.6	0.0	0.0	0.0
Transportation and warehousing	48, 49	4.6	4.6	0.0	15.1	0.0	0.0	0.0
Information	51	2.3	2.3	7.1	1.5	0.0	0.0	0.0
Publishing	511	0.8	0.8	17.0	1.0	0.0	0.0	0.0
Newspaper, periodical, book, and database	5111	6.6	6.6	93.6	3.0	0.0	0.0	0.0
Software	5112	0.8	0.7	17.1	1.0	0.0	0.0	0.0
Broadcasting and telecommunications	513	28.0	28.0	0.0	3.2	0.0	0.0	0.0
Telecommunications	5133	28.6	28.6	0.0	3.2	0.0	0.0	0.0
Other broadcasting and telecommunications	other 513	15.2	15.2	0.0	0.0	0.0	0.0	0.0
Other information	other 51	4.3	4.4	0.0	5.6	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	9.1	9.1	0.0	0.0	0.0	0.0	0.0
Professional, scientific, and technical services	54	5.9	6.6	4.1	7.3	0.0	0.0	0.0
Architectural, engineering, and related services	5413	33.5	41.6	11.2	3.1	0.0	0.0	0.0
Computer systems design and related services	5415	3.5	3.8	0.8	20.1	0.0	0.0	0.0
Scientific R&D services	5417	4.4	4.8	6.4	8.4	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	13.7	14.1	0.0	14.6	0.0	0.0	0.0
Management of companies and enterprises	55	7.0	7.0	0.0	10.7	0.0	0.0	0.0
Health care services	621–23	30.4	31.1	81.4	1.2	0.0	0.0	0.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	18.0	18.8	0.0	61.1	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Development			Company funded R&D performed by other organizations			
		Total	Company funded	Federally funded	Total	For-profit company	University or college	Nonprofit organization
Company size (employees)								
All companies	na	1.0	1.1	0.9	2.1	0.0	0.0	0.0
5-24	na	33.0	35.9	36.7	36.4	0.0	0.0	0.0
25-49	na	21.0	21.8	20.5	32.8	0.0	0.0	0.0
50-99	na	5.9	6.2	8.1	10.9	0.0	0.0	0.0
100-249	na	4.1	4.3	3.6	4.5	0.0	0.0	0.0
250-499	na	6.8	7.1	9.4	1.7	0.0	0.0	0.0
500-999	na	3.2	3.4	0.0	11.5	0.0	0.0	0.0
1,000-4,999	na	0.9	0.9	0.0	0.1	0.0	0.0	0.0
5,000-9,999	na	0.0	0.0	0.0	0.4	0.0	0.0	0.0
10,000-24,999	na	0.1	0.1	0.0	0.0	0.0	0.0	0.0
25,000 or more	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Type of R&D expense					Company-funded R&D	Company-funded R&D projected for next year
		Wages and salaries	Fringe benefits	Materials and supplies	R&D depreciation	Other costs		
All industries	21–23, 31–33, 42, 44–81	1.0	1.0	1.0	1.0	1.0	1.1	1.1
Manufacturing industries	31–33	0.9	0.9	0.9	0.9	0.9	1.0	1.0
Food	311	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Beverage and tobacco products	312	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Textiles, apparel, and leather	313–16	4.8	4.8	4.8	4.8	4.8	4.8	5.3
Wood products	321	0.9	0.9	0.9	0.9	0.9	1.0	1.0
Paper, printing, and support activities	322, 323	6.9	6.9	6.9	6.9	6.9	6.9	7.6
Petroleum and coal products	324	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Chemicals	325	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Basic chemicals	3251	6.4	6.4	6.4	6.4	6.4	6.6	6.9
Resin, synthetic rubber, fibers, and filament	3252	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Pharmaceuticals and medicines	3254	0.4	0.4	0.4	0.4	0.4	0.4	0.6
Other chemicals	other 325	4.3	4.3	4.3	4.3	4.3	4.7	4.5
Plastics and rubber products	326	8.5	8.5	8.5	8.5	8.5	6.9	8.1
Nonmetallic mineral products	327	2.3	2.3	2.3	2.3	2.3	2.3	2.8
Primary metals	331	2.5	2.5	2.5	2.5	2.5	2.6	2.7
Fabricated metal products	332	3.5	3.5	3.5	3.5	3.5	3.7	3.4
Machinery	333	3.4	3.4	3.4	3.4	3.4	3.3	2.6
Computer and electronic products	334	0.3	0.3	0.3	0.3	0.3	0.4	0.4
Computers and peripheral equipment	3341	0.8	0.8	0.8	0.8	0.8	0.7	0.8
Communications equipment	3342	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Semiconductor and other electronic components	3344	0.9	0.9	0.9	0.9	0.9	0.9	1.0
Navigational, measuring, electromedical, and control instruments	3345	0.2	0.2	0.2	0.2	0.2	0.4	0.4
Other computer and electronic products	other 334	3.6	3.6	3.6	3.6	3.6	3.5	3.6
Electrical equipment, appliances, and components	335	4.1	4.1	4.1	4.1	4.1	4.2	5.8
Transportation equipment	336	2.9	2.9	2.9	2.9	2.9	3.8	3.7
Motor vehicles, trailers, and parts	3361–63	5.8	5.8	5.8	5.8	5.8	5.9	5.9
Aerospace products and parts	3364	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other transportation equipment	other 336	0.7	0.7	0.7	0.7	0.7	1.0	1.0
Furniture and related products	337	2.4	2.4	2.4	2.4	2.4	2.4	2.6
Miscellaneous manufacturing	339	0.5	0.5	0.5	0.5	0.5	0.5	0.6
Medical equipment and supplies	3391	0.5	0.5	0.5	0.5	0.5	0.5	0.6
Other miscellaneous manufacturing	other 339	2.2	2.2	2.2	2.2	2.2	2.2	2.6

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Type of R&D expense					Company-funded R&D	Company-funded R&D projected for next year
		Wages and salaries	Fringe benefits	Materials and supplies	R&D depreciation	Other costs		
Nonmanufacturing industries	21–23, 42, 44–81	2.2	2.2	2.2	2.2	2.2	2.2	2.3
Mining, extraction, and support activities	21	8.7	8.7	8.7	8.7	8.7	8.7	3.4
Utilities	22	1.1	1.1	1.1	1.1	1.1	1.3	0.9
Construction	23	34.0	34.0	34.0	34.0	34.0	32.5	32.2
Wholesale trade	42	1.6	1.6	1.6	1.6	1.6	1.6	1.5
Professional and commercial equipment and supplies, including computers	4214	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Electrical goods	4216	1.7	1.7	1.7	1.7	1.7	1.7	2.1
Drugs and druggists' sundries	4222	1.2	1.2	1.2	1.2	1.2	0.7	1.7
Other wholesale trade	other 42	12.4	12.4	12.4	12.4	12.4	12.4	9.2
Retail trade	44, 45	27.9	27.9	27.9	27.9	27.9	28.3	22.1
Transportation and warehousing	48, 49	6.3	6.3	6.3	6.3	6.3	6.3	6.9
Information	51	2.0	2.0	2.0	2.0	2.0	2.0	2.5
Publishing	511	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Newspaper, periodical, book, and database	5111	11.8	11.8	11.8	11.8	11.8	11.8	7.9
Software	5112	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Broadcasting and telecommunications	513	21.5	21.5	21.5	21.5	21.5	21.5	24.2
Telecommunications	5133	22.0	22.0	22.0	22.0	22.0	22.0	24.7
Other broadcasting and telecommunications	other 513	16.1	16.1	16.1	16.1	16.1	16.1	11.7
Other information	other 51	4.0	4.0	4.0	4.0	4.0	4.0	4.4
Finance, insurance, and real estate	52, 53	8.5	8.5	8.5	8.5	8.5	8.5	10.9
Professional, scientific, and technical services	54	5.3	5.3	5.3	5.3	5.3	6.2	6.2
Architectural, engineering, and related services	5413	26.9	26.9	26.9	26.9	26.9	41.6	38.4
Computer systems design and related services	5415	3.8	3.8	3.8	3.8	3.8	3.7	4.6
Scientific R&D services	5417	3.7	3.7	3.7	3.7	3.7	4.1	5.1
Other professional, scientific, and technical services	other 54	12.9	12.9	12.9	12.9	12.9	13.2	11.0
Management of companies and enterprises	55	6.1	6.1	6.1	6.1	6.1	6.1	7.8
Health care services	621–23	18.8	18.8	18.8	18.8	18.8	19.3	23.8
Other nonmanufacturing	56, 61, 624, 71, 72, 81	24.5	24.5	24.5	24.5	24.5	25.4	27.5

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Type of R&D expense					Company-funded R&D	Company-funded R&D projected for next year
		Wages and salaries	Fringe benefits	Materials and supplies	R&D depreciation	Other costs		
Company size (employees)								
All companies	na	1.0	1.0	1.0	1.0	1.0	1.1	1.1
5-24	na	26.7	26.7	26.7	26.7	26.7	30.4	32.0
25-49	na	17.6	17.6	17.6	17.6	17.6	19.9	19.1
50-99	na	6.5	6.5	6.5	6.5	6.5	6.2	7.4
100-249	na	3.8	3.8	3.8	3.8	3.8	4.0	3.4
250-499	na	6.1	6.1	6.1	6.1	6.1	6.5	8.1
500-999	na	2.4	2.4	2.4	2.4	2.4	2.6	2.8
1,000-4,999	na	0.9	0.9	0.9	0.9	0.9	0.9	0.9
5,000-9,999	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	na	0.1	0.1	0.1	0.1	0.1	0.1	0.1
25,000 or more	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	R&D area					Percentage of nanotechnology	Company-funded collaborative R&D	Net sales	Domestic employment
		Biotechnology	Software development	Materials synthesis and processing	Other areas					
All industries	21-23, 31-33, 42, 44-81	3.2	5.7	2.0	1.0	11.0	0.0	5.8	0.9	
Manufacturing industries	31-33	1.4	4.8	1.8	0.7	9.4	0.0	4.9	0.9	
Food	311	3.2	6.9	6.1	1.9	27.6	0.0	1.5	2.9	
Beverage and tobacco products	312	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.2	
Textiles, apparel, and leather	313-16	0.0	2.0	12.2	3.8	68.7	0.0	1.7	2.5	
Wood products	321	0.0	8.6	2.0	3.1	42.1	0.0	2.1	2.9	
Paper, printing, and support activities	322, 323	0.0	88.3	7.0	8.2	45.6	0.0	32.0	6.9	
Petroleum and coal products	324	0.0	0.0	6.1	1.7	44.4	0.0	0.0	0.3	
Chemicals	325	1.3	1.2	6.7	3.6	18.6	0.0	15.0	1.7	
Basic chemicals	3251	0.0	4.0	18.4	0.1	22.0	0.0	4.7	5.6	
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	1.3	0.9	21.7	0.0	0.8	0.3	
Pharmaceuticals and medicines	3254	1.4	0.5	3.4	2.3	47.2	0.0	31.6	0.5	
Other chemicals	other 325	2.8	1.4	1.0	14.4	21.1	0.0	4.8	4.7	
Plastics and rubber products	326	0.0	14.8	27.5	3.1	37.2	0.0	1.5	1.7	
Nonmetallic mineral products	327	0.0	6.4	8.5	5.8	51.7	0.0	25.4	25.0	
Primary metals	331	0.0	26.6	2.1	3.9	50.8	0.0	1.0	1.0	
Fabricated metal products	332	97.2	8.4	9.1	5.1	41.1	0.0	2.3	3.2	
Machinery	333	41.0	21.3	4.8	5.2	22.3	0.0	1.6	2.0	
Computer and electronic products	334	5.2	3.5	0.9	0.7	12.4	0.0	1.0	0.7	
Computers and peripheral equipment	3341	0.0	3.9	3.7	1.7	37.7	0.0	7.2	1.3	
Communications equipment	3342	2.2	1.2	1.9	0.4	37.0	0.0	0.8	1.4	
Semiconductor and other electronic components	3344	13.9	21.9	0.9	1.6	21.1	0.0	1.3	1.8	
Navigational, measuring, electromedical, and control instruments	3345	4.6	2.3	8.3	0.9	14.3	0.0	0.3	0.4	
Other computer and electronic products	other 334	0.0	10.3	29.5	5.4	10.0	0.0	0.9	1.3	
Electrical equipment, appliances, and components	335	53.1	57.7	15.7	1.4	24.7	0.0	19.8	1.1	
Transportation equipment	336	0.0	0.1	1.2	0.5	20.9	0.0	13.7	0.9	
Motor vehicles, trailers, and parts	3361-63	0.0	0.7	1.4	0.8	28.3	0.0	19.0	1.7	
Aerospace products and parts	3364	0.0	0.0	1.8	0.3	36.8	0.0	0.1	0.1	
Other transportation equipment	other 336	0.0	0.4	1.0	1.1	24.9	0.0	12.8	1.8	
Furniture and related products	337	0.0	43.3	6.4	4.9	63.0	0.0	2.3	3.3	
Miscellaneous manufacturing	339	10.7	3.5	4.9	2.6	32.8	0.0	19.7	1.4	
Medical equipment and supplies	3391	9.7	9.3	5.9	3.7	23.6	0.0	25.9	1.5	
Other miscellaneous manufacturing	other 339	79.2	3.7	1.4	3.6	50.5	0.0	2.1	2.6	

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	R&D area					Percentage of nanotechnology	Company-funded collaborative R&D	Net sales	Domestic employment
		Biotechnology	Software development	Materials synthesis and processing	Other areas					
Nonmanufacturing industries	21–23, 42, 44–81	5.1	6.9	6.4	3.3		18.8	0.0	12.5	1.9
Mining, extraction, and support activities	21	0.0	0.0	0.0	19.6		70.2	0.0	1.1	1.7
Utilities	22	0.0	0.0	0.0	1.6		0.0	0.0	1.6	2.3
Construction	23	96.1	32.8	28.1	16.0		51.1	0.0	8.8	13.5
Wholesale trade	42	7.1	2.3	3.2	4.6		34.5	0.0	40.7	3.0
Professional and commercial equipment and supplies, including computers	4214	63.2	2.7	0.0	9.7		83.5	0.0	1.5	1.2
Electrical goods	4216	93.4	1.2	1.4	3.3		76.5	0.0	3.3	4.7
Drugs and druggists' sundries	4222	3.9	0.0	7.2	0.6		22.1	0.0	1.4	1.0
Other wholesale trade	other 42	46.1	26.2	19.3	21.7		43.3	0.0	65.1	9.0
Retail trade	44, 45	0.0	58.4	19.4	51.1		65.3	0.0	5.1	5.7
Transportation and warehousing	48, 49	0.0	9.7	0.0	3.1		38.0	0.0	0.7	0.6
Information	51	26.5	4.1	3.4	6.2		46.1	0.0	0.4	1.9
Publishing	511	26.5	1.7	39.3	1.1		56.3	0.0	1.0	2.4
Newspaper, periodical, book, and database	5111	0.0	30.8	0.0	0.0		98.3	0.0	3.0	6.1
Software	5112	26.5	1.3	39.3	18.6		23.8	0.0	0.8	1.2
Broadcasting and telecommunications	513	0.0	73.0	0.0	3.5		32.1	0.0	0.4	3.1
Telecommunications	5133	0.0	74.0	0.0	0.0		0.0	0.0	0.4	3.1
Other broadcasting and telecommunications	other 513	0.0	25.1	0.0	60.1		69.7	0.0	18.4	11.0
Other information	other 51	0.0	2.8	0.0	12.3		59.8	0.0	1.7	2.3
Finance, insurance, and real estate	52, 53	43.8	14.2	0.9	11.3		65.0	0.0	4.7	2.7
Professional, scientific, and technical services	54	7.0	22.2	20.3	4.4		33.6	0.0	3.9	2.4
Architectural, engineering, and related services	5413	13.2	82.5	9.3	10.6		59.1	0.0	6.0	6.2
Computer systems design and related services	5415	0.0	10.1	0.0	3.4		64.6	0.0	9.5	2.4
Scientific R&D services	5417	7.5	17.9	23.2	3.8		17.8	0.0	2.1	2.7
Other professional, scientific, and technical services	other 54	20.1	5.3	0.0	78.4		63.4	0.0	3.8	6.8
Management of companies and enterprises	55	0.0	71.2	0.0	4.5		0.0	0.0	8.7	13.1
Health care services	621–23	20.7	77.2	96.0	60.9		47.3	0.0	16.9	11.1
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1.9	37.1	87.7	53.8		56.5	0.0	10.3	20.9

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	R&D area				Percentage of nanotechnology	Company-funded collaborative R&D	Net sales	Domestic employment
		Biotechnology	Software development	Materials synthesis and processing	Other areas				
Company size (employees)									
All companies	na	3.2	5.7	2.0	1.0	11.0	0.0	5.8	0.9
5-24	na	22.3	54.1	35.8	20.2	21.3	0.0	49.2	9.1
25-49	na	22.4	19.2	32.2	20.6	24.6	0.0	70.9	10.8
50-99	na	13.8	11.2	24.7	8.9	16.1	0.0	25.7	6.5
100-249	na	2.4	12.6	4.2	8.1	9.8	0.0	55.1	7.2
250-499	na	20.5	19.0	3.4	1.5	13.0	0.0	8.7	6.3
500-999	na	0.0	6.7	0.5	5.9	11.5	0.0	5.4	6.2
1,000-4,999	na	0.0	4.0	5.8	1.1	5.3	0.0	1.4	2.3
5,000-9,999	na	0.1	0.2	0.1	0.0	0.0	0.0	1.1	2.4
10,000-24,999	na	0.0	0.5	0.7	0.0	0.0	0.0	1.4	3.9
25,000 or more	na	0.0	0.0	0.0	0.0	6.9	0.0	0.1	0.6

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Location of company-funded R&D performed outside the 50 United States and D.C. by affiliated organizations							
		Total	Canada	Germany	France	Japan	United Kingdom	Puerto Rico	Other location
All industries	21-23, 31-33, 42, 44-81	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing industries	31-33	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food	311	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood products	321	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paper, printing, and support activities	322, 323	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum and coal products	324	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals	325	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Basic chemicals	3251	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resin, synthetic rubber, fibers, and filament	3252	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pharmaceuticals and medicines	3254	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other chemicals	other 325	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plastics and rubber products	326	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nonmetallic mineral products	327	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Primary metals	331	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fabricated metal products	332	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Machinery	333	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer and electronic products	334	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computers and peripheral equipment	3341	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Semiconductor and other electronic components	3344	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other computer and electronic products	other 334	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation equipment	336	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles, trailers, and parts	3361-63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aerospace products and parts	3364	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Medical equipment and supplies	3391	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other miscellaneous manufacturing	other 339	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Location of company-funded R&D performed outside the 50 United States and D.C. by affiliated organizations							
		Total	Canada	Germany	France	Japan	United Kingdom	Puerto Rico	Other location
Nonmanufacturing industries	21–23, 42, 44–81	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mining, extraction, and support activities	21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utilities	22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Professional and commercial equipment and supplies, including computers	4214	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electrical goods	4216	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Drugs and druggists' sundries	4222	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other wholesale trade	other 42	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail trade	44, 45	67.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Publishing	511	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Software	5112	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broadcasting and telecommunications	513	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Telecommunications	5133	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other information	other 51	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Professional, scientific, and technical services	54	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Architectural, engineering, and related services	5413	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer systems design and related services	5415	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scientific R&D services	5417	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Management of companies and enterprises	55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Health care services	621–23	70.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2002

(Percent)

Industry and company size	NAICS codes	Location of company-funded R&D performed outside the 50 United States and D.C. by affiliated organizations							
		Total	Canada	Germany	France	Japan	United Kingdom	Puerto Rico	Other location
Company size (employees)									
All companies	na	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-24	na	43.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	na	21.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-99	na	20.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-249	na	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250-499	na	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
500-999	na	26.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1,000-4,999	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5,000-9,999	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Federal R&D				Scientists and engineers by source of funds			
		All federal R&D	Department of Defense and other agencies	Department of Energy	NASA	All energy R&D	Total	Company funded	Federally funded
All industries	21-23, 31-33, 42, 44-81	1.9	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Manufacturing industries	31-33	0.4	0.0	0.0	0.0	0.0	1.1	0.0	0.0
Food	311	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
Textiles, apparel, and leather	313-16	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Wood products	321	2.9	0.0	0.0	0.0	0.0	10.9	0.0	0.0
Paper, printing, and support activities	322, 323	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0
Petroleum and coal products	324	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
Chemicals	325	0.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Basic chemicals	3251	0.5	0.0	0.0	0.0	0.0	7.9	0.0	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Pharmaceuticals and medicines	3254	10.9	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Other chemicals	other 325	0.3	0.0	0.0	0.0	0.0	2.5	0.0	0.0
Plastics and rubber products	326	90.3	0.0	0.0	0.0	0.0	3.7	0.0	0.0
Nonmetallic mineral products	327	49.4	0.0	0.0	0.0	0.0	3.8	0.0	0.0
Primary metals	331	1.7	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Fabricated metal products	332	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0
Machinery	333	10.7	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Computer and electronic products	334	0.2	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Computers and peripheral equipment	3341	17.3	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Communications equipment	3342	2.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Semiconductor and other electronic components	3344	12.3	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	0.2	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Other computer and electronic products	other 334	63.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0
Electrical equipment, appliances, and components	335	11.0	0.0	0.0	0.0	0.0	7.9	0.0	0.0
Transportation equipment	336	0.6	0.0	0.0	0.0	0.0	4.4	0.0	0.0
Motor vehicles, trailers, and parts	3361-63	39.0	0.0	0.0	0.0	0.0	6.6	0.0	0.0
Aerospace products and parts	3364	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0
Miscellaneous manufacturing	339	12.1	0.0	0.0	0.0	0.0	3.3	0.0	0.0
Medical equipment and supplies	3391	24.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Other miscellaneous manufacturing	other 339	13.4	0.0	0.0	0.0	0.0	8.7	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Federal R&D				Scientists and engineers by source of funds			
		All federal R&D	Department of Defense and other agencies	Department of Energy	NASA	All energy R&D	Total	Company funded	Federally funded
Nonmanufacturing industries	21-23, 42, 44-81	7.2	0.0	0.0	0.0	0.0	4.0	0.0	0.0
Mining, extraction, and support activities	21	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Utilities	22	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0
Construction	23	98.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0
Wholesale trade	42	36.1	0.0	0.0	0.0	0.0	2.3	0.0	0.0
Professional and commercial equipment and supplies, including computers	4214	1.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Electrical goods	4216	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
Drugs and druggists' sundries	4222	48.2	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Other wholesale trade	other 42	67.1	0.0	0.0	0.0	0.0	12.4	0.0	0.0
Retail trade	44, 45	68.1	0.0	0.0	0.0	0.0	23.2	0.0	0.0
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	37.9	0.0	0.0
Information	51	28.0	0.0	0.0	0.0	0.0	11.6	0.0	0.0
Publishing	511	40.3	0.0	0.0	0.0	0.0	14.7	0.0	0.0
Newspaper, periodical, book, and database	5111	93.6	0.0	0.0	0.0	0.0	22.2	0.0	0.0
Software	5112	40.4	0.0	0.0	0.0	0.0	15.5	0.0	0.0
Broadcasting and telecommunications	513	0.0	0.0	0.0	0.0	0.0	16.4	0.0	0.0
Telecommunications	5133	0.0	0.0	0.0	0.0	0.0	16.9	0.0	0.0
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	44.2	0.0	0.0
Other information	other 51	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0
Professional, scientific, and technical services	54	7.6	0.0	0.0	0.0	0.0	4.8	0.0	0.0
Architectural, engineering, and related services	5413	14.8	0.0	0.0	0.0	0.0	8.4	0.0	0.0
Computer systems design and related services	5415	16.7	0.0	0.0	0.0	0.0	4.3	0.0	0.0
Scientific R&D services	5417	8.6	0.0	0.0	0.0	0.0	3.2	0.0	0.0
Other professional, scientific, and technical services	other 54	0.0	0.0	0.0	0.0	0.0	37.4	0.0	0.0
Management of companies and enterprises	55	0.0	0.0	0.0	0.0	0.0	11.4	0.0	0.0
Health care services	621-23	81.4	0.0	0.0	0.0	0.0	48.4	0.0	0.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0.0	0.0	0.0	0.0	0.0	20.2	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Federal R&D				Scientists and engineers by source of funds			
		All federal R&D	Department of Defense and other agencies	Department of Energy	NASA	All energy R&D	Total	Company funded	Federally funded
Company size (employees)									
All companies	na	1.9	0.0	0.0	0.0	0.0	1.9	0.0	0.0
5-24	na	33.4	0.0	0.0	0.0	0.0	11.6	0.0	0.0
25-49	na	27.1	0.0	0.0	0.0	0.0	17.6	0.0	0.0
50-99	na	27.4	0.0	0.0	0.0	0.0	14.9	0.0	0.0
100-249	na	7.6	0.0	0.0	0.0	0.0	20.9	0.0	0.0
250-499	na	11.8	0.0	0.0	0.0	0.0	3.6	0.0	0.0
500-999	na	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
1,000-4,999	na	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
5,000-9,999	na	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0
10,000-24,999	na	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
25,000 or more	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

na = not applicable.

NOTES: The percentage (or relative) standard errors (RSE) in this table may be converted to standard errors of estimate by multiplying the percentages shown by the associated estimates. For example, the relative standard error of estimate for company-funded R&D performance by the wood products industry (NAICS 321) is shown as 1.0 percent, and the associated company-funded R&D estimate for this industry is shown as \$138 million in table 12. The standard error of estimate is 0.010 times \$138 million or \$1.4 million. A relative standard error of 0.0 either relates to an estimate of 0 or indicates that the RSE itself has been rounded to zero. Also, RSEs for data items only collected on the Form RD-1 from companies selected for the sample with certainty are equal to 0.0. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE A-3. Relative standard error for estimates of total R&D and percentage of estimates attributed to certainty companies, by state: 2003

State	All R&D (millions of dollars)	Relative standard errors	Percent of estimate from certainty companies
United States	204,004	1.0	90.8
Alabama	999	2.4	79.6
Alaska	36 E	18.1	28.2
Arizona	2,605	1.2	90.9
Arkansas	270	4.1	68.8
California	47,142	0.6	92.9
Colorado	3,544	1.2	91.2
Connecticut	5,834	0.5	95.2
Delaware	1,298	0.4	97.5
District of Columbia	235	5.1	64.4
Florida	3,181	2.7	78.8
Georgia	2,108	2.8	78.7
Hawaii	133	4.9	74.7
Idaho	745	0.8	94.2
Illinois	8,319	1.2	89.1
Indiana	3,658	3.4	88.2
Iowa	833	2.2	84.7
Kansas	1,675 S	1.1	92.0 S
Kentucky	601	5.4	74.1
Louisiana	295	8.3	53.3
Maine	200	2.9	78.3
Maryland	3,998	1.3	88.5
Massachusetts	11,094	0.7	91.9
Michigan	15,241	1.3	94.6
Minnesota	5,003	0.7	92.4
Mississippi	1,021	1.2	92.1
Missouri	1,742	2.1	84.4
Montana	65	5.5	64.9
Nebraska	363	2.7	80.5
Nevada	383	4.3	66.1
New Hampshire	1,349	1.1	91.1
New Jersey	11,401	0.6	93.0
New Mexico	349	2.5	81.9
New York	8,556	1.4	86.2
North Carolina	4,424	1.1	90.2
North Dakota	216	2.3	89.4
Ohio	6,260	1.8	88.2
Oklahoma	577	3.9	75.8
Oregon	2,973	0.8	93.1
Pennsylvania	7,091	1.2	89.1
Rhode Island	1,203 S	0.4	95.0 S
South Carolina	976	6.4	76.1
South Dakota	75	4.8	63.8
Tennessee	1,507	3.1	80.0
Texas	11,057	1.3	88.8
Utah	996	1.4	86.7
Vermont	360	0.9	93.4

TABLE A-3. Relative standard error for estimates of total R&D and percentage of estimates attributed to certainty companies, by state: 2003

State	All R&D (millions of dollars)	Relative standard errors	Percent of estimate from certainty companies
Virginia	4,152	1.9	85.3
Washington	9,222	0.7	95.3
West Virginia	219	3.9	80.2
Wisconsin	2,623	1.7	86.1
Wyoming	37	6.9	65.1
Undistributed funds	5,762	0.0	100.0

E = more than 50 percent of the cell value is imputed due to raking of state data.

S = more than 50 percent of the cell value is imputed.

NOTES: A description of the standard error of estimate is given in the technical notes in appendix A. The percentage (or relative) standard errors in this table may be converted to standard errors of estimate by multiplying the percentages shown by the associated estimates. For example, the relative standard error of estimate for United States, "all R&D" is shown as 1.0 percent, and the associated R&D estimate is shown as \$204.0 billion. The standard error of estimate is .01 times \$204.0 billion or \$2.0 billion. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
All industries	21-23, 31-33, 42, 44-81	30,923	25,174	81.4	25.8
Manufacturing industries	31-33	11,068	8,814	79.6	48.2
Food	311	581	486	83.6	41.2
Beverage and tobacco products	312	166	136	81.9	17.6
Textiles, apparel, and leather	313-16	511	377	73.8	34.5
Wood products	321	414	337	81.4	16.3
Paper, printing, and support activities	322, 323	566	457	80.7	21.9
Petroleum and coal products	324	116	86	74.1	50.0
Chemicals	325	1,077	866	80.4	67.0
Basic chemicals	3251	202	157	77.7	71.3
Resin, synthetic rubber, fibers, and filament	3252	119	98	82.4	58.2
Pharmaceuticals and medicines	3254	216	169	78.2	76.3
Other chemicals	other 325	540	442	81.9	63.8
Plastics and rubber products	326	668	569	85.2	55.2
Nonmetallic mineral products	327	431	332	77.0	26.5
Primary metals	331	351	292	83.2	35.6
Fabricated metal products	332	947	777	82.0	34.2
Machinery	333	902	730	80.9	60.8
Computer and electronic products	334	1,684	1,264	75.1	70.7
Computers and peripheral equipment	3341	262	196	74.8	67.9
Communications equipment	3342	303	217	71.6	77.4
Semiconductor and other electronic components	3344	418	312	74.6	62.8
Navigational, measuring, electromedical, and control instruments	3345	550	429	78.0	78.3
Other computer and electronic products	other 334	151	110	72.8	55.5
Electrical equipment, appliances, and components	335	483	387	80.1	63.0
Transportation equipment	336	759	606	79.8	49.3
Motor vehicles, trailers, and parts	3361-63	344	272	79.1	60.3
Aerospace products and parts	3364	204	168	82.4	36.3
Other transportation equipment	other 336	211	166	78.7	44.6
Furniture and related products	337	480	375	78.1	26.7
Miscellaneous manufacturing	339	913	727	79.6	50.2
Medical equipment and supplies	3391	411	327	79.6	59.3
Other miscellaneous manufacturing	other 339	502	400	79.7	42.8
Other manufacturing	other 31-33	19	10	52.6	0.0

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Nonmanufacturing industries	21–23, 42, 44–81	19,855	16,360	82.4	13.7
Mining, extraction, and support activities	21	268	221	82.5	14.0
Utilities	22	130	109	83.8	27.5
Construction	23	2,275	1,906	83.8	1.9
Wholesale trade	42	2,321	1,929	83.1	22.1
Professional and commercial equipment and supplies, including computers	4214	359	280	78.0	32.9
Electrical goods	4216	309	243	78.6	31.3
Drugs and druggists' sundries	4222	178	148	83.1	37.2
Other wholesale trade	other 42	1,475	1,258	85.3	16.2
Retail trade	44, 45	2,347	1,956	83.3	3.5
Transportation and warehousing	48, 49	680	553	81.3	3.3
Information	51	1,406	1,041	74.0	39.9
Publishing	511	796	611	76.8	53.0
Newspaper, periodical, book, and database	5111	260	218	83.8	11.0
Software	5112	536	393	73.3	76.3
Broadcasting and telecommunications	513	313	223	71.2	13.0
Telecommunications	5133	136	91	66.9	23.1
Other broadcasting and telecommunications	other 513	177	132	74.6	6.1
Other information	other 51	297	207	69.7	30.0
Finance, insurance, and real estate	52, 53	1,335	1,174	87.9	4.4
Professional, scientific, and technical services	54	3,477	2,844	81.8	35.0
Architectural, engineering, and related services	5413	727	614	84.5	25.4
Computer systems design and related services	5415	889	631	71.0	52.9
Scientific R&D services	5417	690	552	80.0	82.8
Other professional, scientific, and technical services	other 54	1,171	1,047	89.4	4.7
Management of companies and enterprises	55	142	115	81.0	12.2
Health care services	621–23	1,709	1,506	88.1	4.2
Other nonmanufacturing	56, 61, 624, 71, 72, 81	3,765	3,006	79.8	3.0

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Company size (employees)					
All companies	na	30,923	25,174	81.4	25.8
5-24	na	10,312	8,412	81.6	7.2
25-49	na	4,463	3,668	82.2	19.0
50-99	na	4,198	3,486	83.0	27.1
100-249	na	4,847	3,949	81.5	36.3
250-499	na	2,688	2,145	79.8	41.5
500-999	na	1,915	1,497	78.2	45.4
1,000-4,999	na	1,870	1,488	79.6	55.7
5,000-9,999	na	292	242	82.9	75.2
10,000-24,999	na	210	179	85.2	79.3
25,000 or more	na	128	108	84.4	83.3

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	Top 300 R&D-performing companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
All industries	21–23, 31–33, 42, 44–81	300	281	93.7	97.5
Manufacturing industries	31–33	177	170	96.0	98.8
Food	311	6	6	100.0	100.0
Beverage and tobacco products	312	0	0	0.0	0.0
Textiles, apparel, and leather	313–16	0	0	0.0	0.0
Wood products	321	0	0	0.0	0.0
Paper, printing, and support activities	322, 323	3	3	100.0	100.0
Petroleum and coal products	324	5	4	80.0	100.0
Chemicals	325	36	36	100.0	100.0
Basic chemicals	3251	5	5	100.0	100.0
Resin, synthetic rubber, fibers, and filament	3252	6	6	100.0	100.0
Pharmaceuticals and medicines	3254	20	20	100.0	100.0
Other chemicals	other 325	5	5	100.0	100.0
Plastics and rubber products	326	2	2	100.0	100.0
Nonmetallic mineral products	327	1	1	100.0	100.0
Primary metals	331	1	1	100.0	100.0
Fabricated metal products	332	1	1	100.0	100.0
Machinery	333	13	12	92.3	91.7
Computer and electronic products	334	60	56	93.3	100.0
Computers and peripheral equipment	3341	6	6	100.0	100.0
Communications equipment	3342	10	9	90.0	100.0
Semiconductor and other electronic components	3344	24	23	95.8	100.0
Navigational, measuring, electromedical, and control instruments	3345	18	16	88.9	100.0
Other computer and electronic products	other 334	2	2	100.0	100.0
Electrical equipment, appliances, and components	335	5	5	100.0	100.0
Transportation equipment	336	32	31	96.9	96.8
Motor vehicles, trailers, and parts	3361–63	16	15	93.8	100.0
Aerospace products and parts	3364	12	12	100.0	100.0
Other transportation equipment	other 336	4	4	100.0	75.0
Furniture and related products	337	0	0	0.0	0.0
Miscellaneous manufacturing	339	12	12	100.0	100.0
Medical equipment and supplies	3391	9	9	100.0	100.0
Other miscellaneous manufacturing	other 339	3	3	100.0	100.0
Other manufacturing	other 31-33	0	0	0.0	0.0

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	Top 300 R&D-performing companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Nonmanufacturing industries	21–23, 42, 44–81	123	111	90.2	95.5
Mining, extraction, and support activities	21	2	1	50.0	100.0
Utilities	22	0	0	0.0	0.0
Construction	23	0	0	0.0	0.0
Wholesale trade	42	37	34	91.9	100.0
Professional and commercial equipment and supplies, including computers	4214	13	13	100.0	100.0
Electrical goods	4216	10	9	90.0	100.0
Drugs and druggists' sundries	4222	12	10	83.3	100.0
Other wholesale trade	other 42	2	2	100.0	100.0
Retail trade	44, 45	2	2	100.0	50.0
Transportation and warehousing	48, 49	1	1	100.0	100.0
Information	51	30	26	86.7	96.2
Publishing	511	25	22	88.0	95.5
Newspaper, periodical, book, and database	5111	3	3	100.0	100.0
Software	5112	22	19	86.4	94.7
Broadcasting and telecommunications	513	2	1	50.0	100.0
Telecommunications	5133	2	1	50.0	100.0
Other broadcasting and telecommunications	other 513	0	0	0.0	0.0
Other information	other 51	3	3	100.0	100.0
Finance, insurance, and real estate	52, 53	4	3	75.0	100.0
Professional, scientific, and technical services	54	45	43	95.6	93.0
Architectural, engineering, and related services	5413	7	7	100.0	100.0
Computer systems design and related services	5415	12	12	100.0	75.0
Scientific R&D services	5417	23	22	95.7	100.0
Other professional, scientific, and technical services	other 54	3	2	66.7	100.0
Management of companies and enterprises	55	0	0	0.0	0.0
Health care services	621–23	1	0	0.0	0.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1	1	100.0	100.0

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	Top 300 R&D-performing companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Company size (employees)					
All companies	na	300	281	93.7	97.5
5-24	na	0	0	0.0	0.0
25-49	na	0	0	0.0	0.0
50-99	na	0	0	0.0	0.0
100-249	na	2	2	100.0	50.0
250-499	na	10	9	90.0	100.0
500-999	na	21	20	95.2	100.0
1,000-4,999	na	101	95	94.1	95.8
5,000-9,999	na	40	38	95.0	97.4
10,000-24,999	na	65	61	93.8	98.4
25,000 or more	na	61	56	91.8	100.0

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Form RD-1					
All industries	21-23, 31-33, 42, 44-81	2,551	2,123	83.2	94.0
Manufacturing industries	31-33	1,331	1,138	85.5	96.0
Food	311	47	43	91.5	97.7
Beverage and tobacco products	312	7	7	100.0	100.0
Textiles, apparel, and leather	313-16	23	21	91.3	95.2
Wood products	321	6	6	100.0	100.0
Paper, printing, and support activities	322, 323	32	30	93.8	100.0
Petroleum and coal products	324	8	7	87.5	100.0
Chemicals	325	199	169	84.9	98.2
Basic chemicals	3251	58	47	81.0	97.9
Resin, synthetic rubber, fibers, and filament	3252	24	22	91.7	95.5
Pharmaceuticals and medicines	3254	63	52	82.5	98.1
Other chemicals	other 325	54	48	88.9	100.0
Plastics and rubber products	326	62	53	85.5	96.2
Nonmetallic mineral products	327	17	15	88.2	86.7
Primary metals	331	23	21	91.3	95.2
Fabricated metal products	332	54	49	90.7	98.0
Machinery	333	148	125	84.5	94.4
Computer and electronic products	334	398	326	81.9	94.8
Computers and peripheral equipment	3341	57	45	78.9	91.1
Communications equipment	3342	95	74	77.9	91.9
Semiconductor and other electronic components	3344	107	92	86.0	98.9
Navigational, measuring, electromedical, and control instruments	3345	124	101	81.5	95.0
Other computer and electronic products	other 334	15	14	93.3	92.9
Electrical equipment, appliances, and components	335	81	70	86.4	98.6
Transportation equipment	336	108	97	89.8	96.9
Motor vehicles, trailers, and parts	3361-63	64	57	89.1	98.2
Aerospace products and parts	3364	29	26	89.7	100.0
Other transportation equipment	other 336	15	14	93.3	85.7
Furniture and related products	337	12	11	91.7	100.0
Miscellaneous manufacturing	339	106	88	83.0	93.2
Medical equipment and supplies	3391	71	57	80.3	91.2
Other miscellaneous manufacturing	other 339	35	31	88.6	96.8
Other manufacturing	other 31-33	0	0	0.0	0.0

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Nonmanufacturing industries	21–23, 42, 44–81	1,220	985	80.7	91.7
Mining, extraction, and support activities	21	14	13	92.9	100.0
Utilities	22	11	8	72.7	87.5
Construction	23	7	6	85.7	83.3
Wholesale trade	42	132	116	87.9	94.0
Professional and commercial equipment and supplies, including computers	4214	43	36	83.7	94.4
Electrical goods	4216	30	25	83.3	88.0
Drugs and druggists' sundries	4222	25	23	92.0	95.7
Other wholesale trade	other 42	34	32	94.1	96.9
Retail trade	44, 45	20	18	90.0	88.9
Transportation and warehousing	48, 49	6	6	100.0	100.0
Information	51	259	199	76.8	91.0
Publishing	511	201	160	79.6	90.6
Newspaper, periodical, book, and database	5111	12	10	83.3	100.0
Software	5112	189	150	79.4	90.0
Broadcasting and telecommunications	513	17	12	70.6	100.0
Telecommunications	5133	15	11	73.3	100.0
Other broadcasting and telecommunications	other 513	2	1	50.0	100.0
Other information	other 51	41	27	65.9	88.9
Finance, insurance, and real estate	52, 53	41	32	78.0	96.9
Professional, scientific, and technical services	54	684	553	80.8	91.7
Architectural, engineering, and related services	5413	83	73	88.0	94.5
Computer systems design and related services	5415	224	169	75.4	87.6
Scientific R&D services	5417	352	292	83.0	93.8
Other professional, scientific, and technical services	other 54	25	19	76.0	84.2
Management of companies and enterprises	55	5	5	100.0	60.0
Health care services	621–23	15	8	53.3	87.5
Other nonmanufacturing	56, 61, 624, 71, 72, 81	26	21	80.8	85.7

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Company size (employees)					
All companies	na	2,551	2,123	83.2	94.0
5-24	na	33	28	84.8	64.3
25-49	na	117	94	80.3	89.4
50-99	na	218	181	83.0	91.7
100-249	na	437	330	75.5	93.6
250-499	na	362	291	80.4	92.8
500-999	na	360	302	83.9	94.7
1,000-4,999	na	636	549	86.3	95.6
5,000-9,999	na	160	141	88.1	95.7
10,000-24,999	na	134	124	92.5	97.6
25,000 or more	na	94	83	88.3	98.8

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Form RD-1A					
All industries	21-23, 31-33, 42, 44-81	28,372	23,051	81.2	19.5
Manufacturing industries	31-33	9,737	7,676	78.8	41.1
Food	311	534	443	83.0	35.7
Beverage and tobacco products	312	159	129	81.1	13.2
Textiles, apparel, and leather	313-16	488	356	73.0	30.9
Wood products	321	408	331	81.1	14.8
Paper, printing, and support activities	322, 323	534	427	80.0	16.4
Petroleum and coal products	324	108	79	73.1	45.6
Chemicals	325	878	697	79.4	59.4
Basic chemicals	3251	144	110	76.4	60.0
Resin, synthetic rubber, fibers, and filament	3252	95	76	80.0	47.4
Pharmaceuticals and medicines	3254	153	117	76.5	66.7
Other chemicals	other 325	486	394	81.1	59.4
Plastics and rubber products	326	606	516	85.1	51.0
Nonmetallic mineral products	327	414	317	76.6	23.7
Primary metals	331	328	271	82.6	31.0
Fabricated metal products	332	893	728	81.5	29.9
Machinery	333	754	605	80.2	53.9
Computer and electronic products	334	1,286	938	72.9	62.4
Computers and peripheral equipment	3341	205	151	73.7	60.9
Communications equipment	3342	208	143	68.8	69.9
Semiconductor and other electronic components	3344	311	220	70.7	47.7
Navigational, measuring, electromedical, and control instruments	3345	426	328	77.0	73.2
Other computer and electronic products	other 334	136	96	70.6	50.0
Electrical equipment, appliances, and components	335	402	317	78.9	55.2
Transportation equipment	336	651	509	78.2	40.3
Motor vehicles, trailers, and parts	3361-63	280	215	76.8	50.2
Aerospace products and parts	3364	175	142	81.1	24.6
Other transportation equipment	other 336	196	152	77.6	40.8
Furniture and related products	337	468	364	77.8	24.5
Miscellaneous manufacturing	339	807	639	79.2	44.3
Medical equipment and supplies	3391	340	270	79.4	52.6
Other miscellaneous manufacturing	other 339	467	369	79.0	38.2
Other manufacturing	other 31-33	19	10	52.6	0.0

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Nonmanufacturing industries	21–23, 42, 44–81	18,635	15,375	82.5	8.7
Mining, extraction, and support activities	21	254	208	81.9	8.7
Utilities	22	119	101	84.9	22.8
Construction	23	2,268	1,900	83.8	1.7
Wholesale trade	42	2,189	1,813	82.8	17.5
Professional and commercial equipment and supplies, including computers	4214	316	244	77.2	23.8
Electrical goods	4216	279	218	78.1	24.8
Drugs and druggists' sundries	4222	153	125	81.7	26.4
Other wholesale trade	other 42	1,441	1,226	85.1	14.1
Retail trade	44, 45	2,327	1,938	83.3	2.7
Transportation and warehousing	48, 49	674	547	81.2	2.2
Information	51	1,147	842	73.4	27.8
Publishing	511	595	451	75.8	39.7
Newspaper, periodical, book, and database	5111	248	208	83.9	6.7
Software	5112	347	243	70.0	67.9
Broadcasting and telecommunications	513	296	211	71.3	8.1
Telecommunications	5133	121	80	66.1	12.5
Other broadcasting and telecommunications	other 513	175	131	74.9	5.3
Other information	other 51	256	180	70.3	21.1
Finance, insurance, and real estate	52, 53	1,294	1,142	88.3	1.8
Professional, scientific, and technical services	54	2,793	2,291	82.0	21.3
Architectural, engineering, and related services	5413	644	541	84.0	16.1
Computer systems design and related services	5415	665	462	69.5	40.3
Scientific R&D services	5417	338	260	76.9	70.4
Other professional, scientific, and technical services	other 54	1,146	1,028	89.7	3.2
Management of companies and enterprises	55	137	110	80.3	10.0
Health care services	621–23	1,694	1,498	88.4	3.8
Other nonmanufacturing	56, 61, 624, 71, 72, 81	3,739	2,985	79.8	2.4

TABLE A-4. Unit response rates, companies that responded to the survey, and percentage of companies that performed R&D, by industry and type of survey form: 2003

Industry and company size	NAICS codes	All companies			
		Companies that received a questionnaire	Companies that responded to the survey	Percent of companies that responded to the survey	Percent of responding companies that reported R&D
Company size (employees)					
All companies	na	28,372	23,051	81.2	19.5
5-24	na	10,279	8,384	81.6	7.0
25-49	na	4,346	3,574	82.2	17.1
50-99	na	3,980	3,305	83.0	23.5
100-249	na	4,410	3,619	82.1	31.1
250-499	na	2,326	1,854	79.7	33.4
500-999	na	1,555	1,195	76.8	32.9
1,000-4,999	na	1,234	939	76.1	32.4
5,000-9,999	na	132	101	76.5	46.5
10,000-24,999	na	76	55	72.4	38.2
25,000 or more	na	34	25	73.5	32.0

na = not applicable.

NOTES: The calculation of the percent of companies that responded to the survey was based on all companies that responded to the survey including those that reported they were out-of-scope, out-of-business, or had merged with another company. It excludes companies for which total R&D expenditure data were imputed. Mathematically, the percentage was calculated by dividing the number of companies that received a questionnaire (indicated in the previous column) into the number of companies that returned a response or questionnaire regardless of the data or information supplied in the response or on the questionnaire. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	All R&D	Basic research			Applied research		
			Total	Company funded	Federally funded	Total	Company funded	Federally funded
All industries	21-23, 31-33, 42, 44-81	7.8	12.1	13.2	7.1	11.8	12.2	8.6
Manufacturing industries	31-33	6.6	15.0	15.3	9.6	15.4	15.7	10.7
Food	311	2.0	10.3	10.3	0.0	2.4	2.4	0.0
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	7.7	8.8	8.8	0.0	16.6	17.0	0.0
Wood products	321	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paper, printing, and support activities	322, 323	0.0	69.9	69.9	0.0	62.6	62.6	0.0
Petroleum and coal products	324	11.2	0.0	0.0	0.0	33.6	33.6	0.0
Chemicals	325	3.0	10.1	9.8	51.6	17.2	16.5	49.4
Basic chemicals	3251	12.4	10.8	10.9	0.0	10.7	11.7	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.8	6.5	6.5	0.0	15.4	15.5	0.0
Pharmaceuticals and medicines	3254	1.7	8.1	8.1	0.0	13.7	13.7	0.0
Other chemicals	other 325	6.4	40.3	36.4	92.7	35.7	31.2	96.4
Plastics and rubber products	326	3.8	16.4	16.4	0.0	10.8	11.6	0.0
Nonmetallic mineral products	327	18.0	26.0	25.7	100.0	10.5	10.7	0.0
Primary metals	331	6.5	0.8	0.8	0.0	6.7	6.7	0.0
Fabricated metal products	332	7.1	0.0	0.0	0.0	2.5	2.5	0.0
Machinery	333	9.9	13.0	13.0	100.0	2.3	2.5	0.0
Computer and electronic products	334	12.1	37.7	38.9	15.5	13.7	13.8	0.0
Computers and peripheral equipment	3341	6.5	49.5	51.2	0.0	6.2	6.5	0.0
Communications equipment	3342	35.7	80.6	80.7	0.0	57.8	58.6	0.0
Semiconductor and other electronic components	3344	3.6	0.0	0.0	61.3	3.6	3.7	0.0
Navigational, measuring, electromedical, and control instruments	3345	5.2	20.7	22.3	2.6	2.5	2.6	0.0
Other computer and electronic products	other 334	12.7	0.0	0.0	0.0	23.2	25.1	0.0
Electrical equipment, appliances, and components	335	8.1	33.5	0.0	91.2	7.2	9.0	0.0
Transportation equipment	336	3.3	15.1	20.4	0.1	10.2	11.3	6.9
Motor vehicles, trailers, and parts	3361-63	2.0	0.4	0.4	0.0	0.5	0.5	0.0
Aerospace products and parts	3364	2.3	23.1	32.5	0.1	20.4	32.6	7.6
Other transportation equipment	other 336	27.6	0.0	0.0	0.0	9.4	10.1	0.0
Furniture and related products	337	2.9	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	4.4	17.0	14.6	80.8	27.2	27.7	0.0
Medical equipment and supplies	3391	4.0	21.5	18.6	80.8	34.3	34.7	0.0
Other miscellaneous manufacturing	other 339	7.1	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	All R&D	Basic research			Applied research		
			Total	Company funded	Federally funded	Total	Company funded	Federally funded
Nonmanufacturing industries	21-23, 42, 44-81	9.6	7.6	8.3	6.5	6.7	6.8	7.1
Mining, extraction, and support activities	21	38.3	0.0	0.0	0.0	0.0	0.0	0.0
Utilities	22	14.2	21.8	21.8	0.0	6.4	6.4	0.0
Construction	23	11.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	3.5	4.8	5.4	0.0	2.3	2.3	0.0
Professional and commercial equipment and supplies, including computers	4214	1.8	13.3	14.8	0.0	14.2	14.4	0.0
Electrical goods	4216	10.9	1.2	1.2	0.0	0.8	0.8	0.0
Drugs and druggists' sundries	4222	3.0	0.0	0.9	0.0	0.0	0.0	0.0
Other wholesale trade	other 42	0.6	17.2	17.2	0.0	6.1	6.1	0.0
Retail trade	44, 45	11.4	0.2	0.2	0.0	0.2	0.2	0.0
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	10.4	12.9	12.9	0.0	14.6	14.8	0.0
Publishing	511	8.7	0.0	0.0	0.0	4.0	4.1	0.0
Newspaper, periodical, book, and database	5111	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Software	5112	9.0	0.0	0.0	0.0	4.1	4.2	0.0
Broadcasting and telecommunications	513	27.1	74.6	74.6	0.0	66.6	66.6	0.0
Telecommunications	5133	27.0	76.9	76.9	0.0	69.4	69.4	0.0
Other broadcasting and telecommunications	other 513	28.4	0.0	0.0	0.0	0.0	0.0	0.0
Other information	other 51	9.8	1.5	1.5	0.0	22.5	22.5	0.0
Finance, insurance, and real estate	52, 53	19.9	0.0	0.0	0.0	24.8	24.8	0.0
Professional, scientific, and technical services	54	12.3	9.3	12.6	6.7	8.5	9.2	7.6
Architectural, engineering, and related services	5413	3.2	40.1	0.1	60.5	2.2	8.0	0.0
Computer systems design and related services	5415	10.0	7.8	37.9	0.0	11.0	10.5	0.0
Scientific R&D services	5417	17.3	5.0	8.0	1.1	9.7	9.0	13.7
Other professional, scientific, and technical services	other 54	17.5	60.2	62.4	0.0	9.6	9.7	0.0
Management of companies and enterprises	55	10.7	0.0	0.0	0.0	0.0	0.0	0.0
Health care services	621-23	46.0	42.7	61.9	6.2	1.3	1.1	23.3
Other nonmanufacturing	56, 61, 624, 71, 72, 81	7.8	2.3	2.4	0.0	0.8	0.8	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	All R&D	Basic research			Applied research		
			Total	Company funded	Federally funded	Total	Company funded	Federally funded
Company size (employees)								
All companies	na	7.8	12.1	13.2	7.1	11.8	12.2	8.6
5-24	na	1.1	0.2	0.2	0.0	0.1	0.1	0.0
25-49	na	2.9	0.0	2.9	0.0	0.9	1.2	0.2
50-99	na	7.4	13.2	13.2	12.3	1.5	1.8	0.5
100-249	na	17.3	15.5	17.9	6.6	11.2	11.5	13.9
250-499	na	15.8	28.2	15.8	57.4	8.2	6.7	17.6
500-999	na	17.6	19.4	27.4	0.0	12.8	12.7	13.6
1,000-4,999	na	10.1	16.3	16.3	16.7	6.0	6.2	0.2
5,000-9,999	na	7.3	37.2	37.4	0.0	23.3	24.2	0.0
10,000-24,999	na	4.5	0.5	0.6	0.1	5.2	5.3	0.0
25,000 or more	na	5.8	10.3	10.6	7.1	20.8	21.1	18.2

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Development			Company funded R&D performed by other organizations			
		Total	Company funded	Federally funded	Total	For-profit company	University or college	Nonprofit organization
All industries	21-23, 31-33, 42, 44-81	11.4	11.4	11.8	10.4	0.0	0.0	0.0
Manufacturing industries	31-33	13.4	13.3	16.5	4.9	0.0	0.0	0.0
Food	311	2.9	2.9	0.0	5.2	0.0	0.0	0.0
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	18.3	17.5	100.0	4.9	0.0	0.0	0.0
Wood products	321	0.0	0.0	0.0	90.5	0.0	0.0	0.0
Paper, printing, and support activities	322, 323	57.0	57.0	0.0	0.0	0.0	0.0	0.0
Petroleum and coal products	324	24.3	24.5	0.0	50.7	0.0	0.0	0.0
Chemicals	325	10.9	10.0	83.4	4.1	0.0	0.0	0.0
Basic chemicals	3251	5.2	5.3	0.0	33.4	0.0	0.0	0.0
Resin, synthetic rubber, fibers, and filament	3252	12.7	12.2	63.4	2.7	0.0	0.0	0.0
Pharmaceuticals and medicines	3254	5.5	5.5	0.0	3.9	0.0	0.0	0.0
Other chemicals	other 325	52.7	47.9	95.7	1.1	0.0	0.0	0.0
Plastics and rubber products	326	23.8	24.0	0.0	1.7	0.0	0.0	0.0
Nonmetallic mineral products	327	21.1	21.4	0.0	53.6	0.0	0.0	0.0
Primary metals	331	3.6	3.7	0.0	7.6	0.0	0.0	0.0
Fabricated metal products	332	8.4	3.5	79.1	1.2	0.0	0.0	0.0
Machinery	333	2.5	2.5	0.0	1.4	0.0	0.0	0.0
Computer and electronic products	334	16.1	16.7	0.7	9.2	0.0	0.0	0.0
Computers and peripheral equipment	3341	3.4	3.5	0.0	4.1	0.0	0.0	0.0
Communications equipment	3342	59.5	62.8	0.0	4.2	0.0	0.0	0.0
Semiconductor and other electronic components	3344	1.6	1.6	0.0	13.4	0.0	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	7.2	7.9	0.9	11.6	0.0	0.0	0.0
Other computer and electronic products	other 334	37.6	37.6	0.0	0.0	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	2.3	2.3	0.0	6.3	0.0	0.0	0.0
Transportation equipment	336	11.9	11.3	17.1	3.4	0.0	0.0	0.0
Motor vehicles, trailers, and parts	3361-63	2.9	2.9	0.0	0.4	0.0	0.0	0.0
Aerospace products and parts	3364	22.0	21.5	24.5	19.3	0.0	0.0	0.0
Other transportation equipment	other 336	3.3	6.6	0.0	0.0	0.0	0.0	0.0
Furniture and related products	337	3.7	3.7	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	16.4	16.5	0.0	10.1	0.0	0.0	0.0
Medical equipment and supplies	3391	17.8	17.8	0.0	12.1	0.0	0.0	0.0
Other miscellaneous manufacturing	other 339	6.1	6.4	0.0	5.5	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Development			Company funded R&D performed by other organizations			
		Total	Company funded	Federally funded	Total	For-profit company	University or college	Nonprofit organization
Nonmanufacturing industries	21-23, 42, 44-81	8.4	8.6	4.7	16.0	0.0	0.0	0.0
Mining, extraction, and support activities	21	0.0	0.0	0.0	76.6	0.0	0.0	0.0
Utilities	22	12.5	15.5	0.0	0.0	0.0	0.0	0.0
Construction	23	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	5.9	5.9	4.3	16.1	0.0	0.0	0.0
Professional and commercial equipment and supplies, including computers	4214	10.9	10.9	0.0	1.3	0.0	0.0	0.0
Electrical goods	4216	5.6	5.6	100.0	0.0	0.0	0.0	0.0
Drugs and druggists' sundries	4222	0.0	0.0	0.0	19.4	0.0	0.0	0.0
Other wholesale trade	other 42	1.2	1.2	0.0	1.4	0.0	0.0	0.0
Retail trade	44, 45	2.1	2.2	0.0	1.6	0.0	0.0	0.0
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	11.7	11.6	0.0	33.5	0.0	0.0	0.0
Publishing	511	10.0	9.9	0.0	5.8	0.0	0.0	0.0
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	6.7	0.0	0.0	0.0
Software	5112	10.9	10.7	0.0	5.7	0.0	0.0	0.0
Broadcasting and telecommunications	513	43.8	43.8	0.0	87.1	0.0	0.0	0.0
Telecommunications	5133	43.6	43.6	0.0	87.1	0.0	0.0	0.0
Other broadcasting and telecommunications	other 513	52.0	52.0	0.0	0.0	0.0	0.0	0.0
Other information	other 51	2.8	2.8	0.0	4.9	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	17.3	17.3	0.0	2.1	0.0	0.0	0.0
Professional, scientific, and technical services	54	9.7	10.6	5.1	10.0	0.0	0.0	0.0
Architectural, engineering, and related services	5413	29.6	37.4	6.7	14.0	0.0	0.0	0.0
Computer systems design and related services	5415	5.5	5.9	1.9	2.4	0.0	0.0	0.0
Scientific R&D services	5417	7.2	7.8	8.1	10.5	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	20.5	20.9	0.0	11.6	0.0	0.0	0.0
Management of companies and enterprises	55	15.9	15.9	0.0	0.0	0.0	0.0	0.0
Health care services	621-23	5.9	5.3	72.5	13.3	0.0	0.0	0.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	3.8	3.8	0.0	0.0	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Development			Company funded R&D performed by other organizations			
		Total	Company funded	Federally funded	Total	For-profit company	University or college	Nonprofit organization
Company size (employees)								
All companies	na	11.4	11.4	11.8	10.4	0.0	0.0	0.0
5-24	na	0.2	0.3	0.8	0.3	0.0	0.0	0.0
25-49	na	0.9	0.9	0.0	12.5	0.0	0.0	0.0
50-99	na	2.7	2.0	11.6	7.7	0.0	0.0	0.0
100-249	na	6.6	6.7	4.9	13.4	0.0	0.0	0.0
250-499	na	8.6	8.8	15.8	8.2	0.0	0.0	0.0
500-999	na	8.3	8.5	6.0	3.1	0.0	0.0	0.0
1,000-4,999	na	10.2	10.3	4.0	12.3	0.0	0.0	0.0
5,000-9,999	na	13.1	12.8	50.0	2.2	0.0	0.0	0.0
10,000-24,999	na	8.8	9.4	0.0	0.1	0.0	0.0	0.0
25,000 or more	na	15.7	15.4	20.6	19.6	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Type of R&D expense					Company-funded R&D	Company-funded R&D projected for next year
		Wages and salaries	Fringe benefits	Materials and supplies	R&D depreciation	Other costs		
All industries	21–23, 31–33, 42, 44–81	29.6	38.1	32.2	30.6	24.1	8.4	37.6
Manufacturing industries	31–33	33.3	42.9	33.3	31.8	29.1	7.5	38.6
Food	311	20.5	19.4	20.1	24.8	16.9	2.0	39.1
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	7.6
Textiles, apparel, and leather	313–16	33.5	42.3	36.1	46.4	24.3	7.0	35.2
Wood products	321	73.7	73.2	84.2	75.9	80.7	0.0	62.0
Paper, printing, and support activities	322, 323	3.1	15.4	2.9	4.4	2.0	0.0	68.6
Petroleum and coal products	324	66.1	66.1	66.1	66.1	66.1	11.2	64.2
Chemicals	325	26.2	32.5	27.1	29.7	21.8	3.1	34.3
Basic chemicals	3251	20.2	24.8	26.9	27.4	13.4	12.8	0.0
Resin, synthetic rubber, fibers, and filament	3252	16.7	36.6	18.4	15.1	16.1	0.8	20.4
Pharmaceuticals and medicines	3254	31.5	36.7	30.6	34.9	23.6	1.7	38.1
Other chemicals	other 325	14.2	15.1	12.4	14.4	17.2	6.9	48.5
Plastics and rubber products	326	16.1	12.8	14.4	16.3	14.7	3.9	28.6
Nonmetallic mineral products	327	49.9	63.5	49.1	64.1	35.4	18.1	39.3
Primary metals	331	10.1	36.6	23.5	20.2	27.9	6.6	67.6
Fabricated metal products	332	12.2	10.5	8.1	22.1	12.1	7.3	23.1
Machinery	333	21.6	24.2	18.1	15.7	19.8	9.9	26.6
Computer and electronic products	334	30.4	30.9	23.5	28.3	28.2	14.4	51.5
Computers and peripheral equipment	3341	14.8	15.3	14.9	19.3	15.8	6.0	57.8
Communications equipment	3342	78.7	78.4	78.1	76.2	76.3	36.7	77.9
Semiconductor and other electronic components	3344	12.7	16.2	9.6	10.4	8.7	3.6	44.9
Navigational, measuring, electromedical, and control instruments	3345	14.5	13.6	13.7	17.6	12.2	9.2	32.1
Other computer and electronic products	other 334	37.9	61.6	59.8	53.6	43.5	12.8	44.8
Electrical equipment, appliances, and components	335	23.0	20.3	23.6	31.9	14.1	8.2	29.3
Transportation equipment	336	48.5	66.6	48.7	57.0	53.0	4.1	20.2
Motor vehicles, trailers, and parts	3361–63	46.8	52.0	44.2	63.8	60.9	2.0	9.9
Aerospace products and parts	3364	51.0	88.3	58.6	64.7	51.9	3.7	37.0
Other transportation equipment	other 336	44.8	43.7	22.1	12.5	20.3	41.3	45.0
Furniture and related products	337	56.7	52.7	43.2	48.4	31.7	2.9	25.6
Miscellaneous manufacturing	339	28.0	48.0	28.0	38.9	6.6	4.4	59.4
Medical equipment and supplies	3391	30.5	57.5	29.2	40.9	6.1	3.9	64.7
Other miscellaneous manufacturing	other 339	21.5	27.7	21.9	30.7	18.4	7.3	26.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Type of R&D expense					Company-funded R&D	Company-funded R&D projected for next year
		Wages and salaries	Fringe benefits	Materials and supplies	R&D depreciation	Other costs		
Nonmanufacturing industries	21–23, 42, 44–81	23.4	29.2	28.5	28.4	16.5	9.8	36.1
Mining, extraction, and support activities	21	45.5	53.5	47.6	48.0	22.8	38.3	46.1
Utilities	22	11.7	7.4	7.1	20.8	32.8	16.8	26.7
Construction	23	3.8	7.3	0.3	4.2	0.3	14.4	60.6
Wholesale trade	42	18.3	20.2	17.7	18.3	9.3	3.5	23.0
Professional and commercial equipment and supplies, including computers	4214	18.5	18.7	18.6	19.0	13.1	1.8	33.1
Electrical goods	4216	18.8	35.8	19.7	20.0	6.7	10.9	24.2
Drugs and druggists' sundries	4222	16.1	15.8	15.6	16.8	7.5	3.0	13.5
Other wholesale trade	other 42	22.0	23.3	14.0	11.9	26.8	0.6	19.0
Retail trade	44, 45	40.4	21.8	31.2	38.4	24.3	11.6	23.8
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	82.5
Information	51	18.5	22.5	24.8	28.5	16.1	9.2	56.5
Publishing	511	15.3	13.3	16.0	16.3	13.7	7.2	61.3
Newspaper, periodical, book, and database	5111	5.1	5.2	12.3	12.3	0.9	1.3	4.6
Software	5112	15.8	13.6	16.0	16.4	14.1	7.5	63.8
Broadcasting and telecommunications	513	88.2	89.9	90.9	92.0	77.2	27.1	66.4
Telecommunications	5133	88.5	89.9	90.8	92.2	77.7	27.0	66.3
Other broadcasting and telecommunications	other 513	70.0	83.2	96.9	78.7	45.6	28.4	70.4
Other information	other 51	9.1	18.6	15.6	24.3	14.6	9.9	15.0
Finance, insurance, and real estate	52, 53	21.3	36.6	44.6	38.0	16.5	19.9	26.5
Professional, scientific, and technical services	54	31.3	40.5	33.0	36.2	27.2	14.4	34.3
Architectural, engineering, and related services	5413	22.1	20.5	20.2	26.2	19.4	4.3	28.6
Computer systems design and related services	5415	30.3	48.9	35.5	42.4	27.3	11.2	33.5
Scientific R&D services	5417	34.9	41.0	36.5	34.3	27.0	19.7	38.2
Other professional, scientific, and technical services	other 54	47.8	60.0	49.4	46.7	53.6	18.0	20.4
Management of companies and enterprises	55	9.8	7.6	9.5	10.9	32.3	10.7	11.0
Health care services	621–23	85.6	94.0	75.9	59.7	85.6	48.2	75.7
Other nonmanufacturing	56, 61, 624, 71, 72, 81	32.6	39.6	42.5	48.3	27.5	5.4	20.6

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Type of R&D expense					Company-funded R&D	Company-funded R&D projected for next year
		Wages and salaries	Fringe benefits	Materials and supplies	R&D depreciation	Other costs		
Company size (employees)								
All companies	na	29.6	38.1	32.2	30.6	24.1	8.4	37.6
5-24	na	29.1	24.9	29.2	24.2	39.7	1.3	8.9
25-49	na	44.4	52.1	49.7	47.2	31.1	3.3	31.7
50-99	na	32.8	37.8	35.9	36.6	29.8	7.4	19.4
100-249	na	41.2	46.4	39.3	42.2	39.1	18.1	32.0
250-499	na	34.1	34.9	29.9	35.7	24.0	16.5	29.4
500-999	na	32.3	28.4	25.0	40.1	21.8	18.8	34.8
1,000-4,999	na	25.5	25.4	26.1	26.0	23.5	9.5	37.5
5,000-9,999	na	30.5	44.9	32.0	35.4	24.0	7.9	36.1
10,000-24,999	na	11.1	12.4	11.6	7.5	4.0	4.8	22.0
25,000 or more	na	35.3	49.6	39.7	34.7	30.9	6.7	48.8

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	R&D area					Company-funded collaborative R&D	Net sales	Domestic employment
		Biotechnology	Software development	Materials synthesis and processing	Other areas	Percentage of nanotechnology			
All industries	21-23, 31-33, 42, 44-81	0.0	1.6	0.9	4.6	0.0	0.0	8.4	9.4
Manufacturing industries	31-33	0.0	8.5	1.2	6.3	0.0	0.0	4.5	5.3
Food	311	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.0
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	0.0	0.0	0.0	0.0	0.0	0.0	2.8	5.6
Wood products	321	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Paper, printing, and support activities	322, 323	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Petroleum and coal products	324	0.0	0.0	0.0	0.0	0.0	0.0	9.9	7.0
Chemicals	325	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.2
Basic chemicals	3251	0.0	0.0	0.0	0.0	0.0	0.0	20.2	14.3
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.0
Pharmaceuticals and medicines	3254	0.0	0.0	0.0	0.0	0.0	0.0	1.5	4.6
Other chemicals	other 325	0.0	0.0	0.0	0.0	0.0	0.0	7.6	5.5
Plastics and rubber products	326	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7
Nonmetallic mineral products	327	0.0	0.0	0.0	0.0	0.0	0.0	12.5	11.6
Primary metals	331	0.0	0.0	0.0	0.0	0.0	0.0	14.5	16.8
Fabricated metal products	332	0.0	0.0	0.0	0.0	0.0	0.0	3.3	2.9
Machinery	333	0.0	0.0	0.0	0.0	0.0	0.0	9.2	10.8
Computer and electronic products	334	1.0	20.5	2.7	20.0	0.0	0.0	3.9	5.5
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	0.0	3.2	6.8
Communications equipment	3342	57.8	56.3	56.9	57.8	0.0	0.0	2.8	6.9
Semiconductor and other electronic components	3344	0.0	0.0	0.0	0.0	0.0	0.0	4.2	5.7
Navigational, measuring, electromedical, and control instruments	3345	0.0	0.0	0.0	0.0	0.0	0.0	4.1	4.4
Other computer and electronic products	other 334	0.0	0.0	0.0	0.0	0.0	0.0	10.8	9.9
Electrical equipment, appliances, and components	335	0.0	0.0	0.0	0.0	0.0	0.0	3.5	5.5
Transportation equipment	336	0.0	0.0	0.0	0.0	0.0	0.0	2.3	5.1
Motor vehicles, trailers, and parts	3361-63	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.0
Aerospace products and parts	3364	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.7
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	0.0	19.8	32.6
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5
Miscellaneous manufacturing	339	0.0	0.0	0.0	0.0	0.0	0.0	6.5	5.8
Medical equipment and supplies	3391	0.0	0.0	0.0	0.0	0.0	0.0	8.0	7.6
Other miscellaneous manufacturing	other 339	0.0	0.0	0.0	0.0	0.0	0.0	1.5	3.1

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	R&D area					Percentage of nanotechnology	Company-funded collaborative R&D	Net sales	Domestic employment
		Biotechnology	Software development	Materials synthesis and processing	Other areas					
Nonmanufacturing industries	21–23, 42, 44–81	0.0	0.1	0.0	0.1	0.0	0.0	14.4	15.1	
Mining, extraction, and support activities	21	0.0	0.0	0.0	0.0	0.0	0.0	16.9	14.9	
Utilities	22	0.0	0.0	0.0	0.0	0.0	0.0	16.6	13.3	
Construction	23	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.9	
Wholesale trade	42	0.0	0.4	0.0	0.2	0.0	0.0	2.4	6.7	
Professional and commercial equipment and supplies, including computers	4214	0.0	0.0	0.0	0.0	0.0	0.0	4.2	12.4	
Electrical goods	4216	0.0	0.0	0.0	0.0	0.0	0.0	6.4	6.6	
Drugs and druggists' sundries	4222	0.0	0.0	0.0	0.0	0.0	0.0	8.3	3.5	
Other wholesale trade	other 42	0.0	7.0	0.0	1.5	0.0	0.0	0.2	0.7	
Retail trade	44, 45	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6	
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Information	51	0.0	0.0	0.0	0.0	0.0	0.0	25.0	24.7	
Publishing	511	0.0	0.0	0.0	0.0	0.0	0.0	6.6	5.8	
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	
Software	5112	0.0	0.0	0.0	0.0	0.0	0.0	8.9	9.1	
Broadcasting and telecommunications	513	0.0	0.0	0.0	0.0	0.0	0.0	36.7	37.8	
Telecommunications	5133	0.0	0.0	0.0	0.0	0.0	0.0	36.9	38.0	
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.8	
Other information	other 51	0.0	0.0	0.0	0.0	0.0	0.0	6.8	12.3	
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	0.0	22.8	39.4	
Professional, scientific, and technical services	54	0.0	0.0	0.0	0.0	0.0	0.0	31.8	17.8	
Architectural, engineering, and related services	5413	0.0	0.0	0.0	0.0	0.0	0.0	5.5	8.7	
Computer systems design and related services	5415	0.0	0.0	0.0	0.0	0.0	0.0	10.5	9.7	
Scientific R&D services	5417	0.0	0.0	0.0	0.0	0.0	0.0	70.2	24.1	
Other professional, scientific, and technical services	other 54	0.0	0.0	0.0	0.0	0.0	0.0	44.6	31.8	
Management of companies and enterprises	55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	
Health care services	621–23	0.0	0.0	0.0	0.0	0.0	0.0	35.6	22.2	
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0.0	0.0	0.0	0.0	0.0	0.0	11.6	7.1	

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	R&D area				Percentage of nanotechnology	Company-funded collaborative R&D	Net sales	Domestic employment
		Biotechnology	Software development	Materials synthesis and processing	Other areas				
Company size (employees)									
All companies	na	0.0	1.6	0.9	4.6	0.0	0.0	8.4	9.4
5-24	na	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
25-49	na	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4
50-99	na	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.3
100-249	na	0.0	0.0	0.0	0.0	0.0	0.0	7.5	3.9
250-499	na	0.0	0.0	0.0	0.0	0.0	0.0	7.6	6.9
500-999	na	0.0	0.8	0.0	0.4	0.0	0.0	7.4	7.1
1,000-4,999	na	0.0	0.0	0.0	0.0	0.0	0.0	10.8	11.1
5,000-9,999	na	0.0	0.0	0.0	0.0	0.0	0.0	10.2	10.4
10,000-24,999	na	0.0	0.0	0.0	0.0	0.0	0.0	9.7	8.2
25,000 or more	na	0.1	7.0	1.9	15.9	0.0	0.0	8.6	11.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Location of company-funded R&D performed outside the 50 United States and D.C. by affiliated organizations							
		Total	Canada	Germany	France	Japan	United Kingdom	Puerto Rico	Other location
All industries	21-23, 31-33, 42, 44-81	0.9	0.7	0.3	0.9	1.2	2.7	0.0	1.7
Manufacturing industries	31-33	1.5	1.1	0.4	1.1	1.7	4.5	0.0	3.5
Food	311	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood products	321	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paper, printing, and support activities	322, 323	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum and coal products	324	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals	325	0.0	2.7	5.1	1.6	5.4	12.4	0.0	0.0
Basic chemicals	3251	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pharmaceuticals and medicines	3254	0.0	3.0	6.8	1.7	6.7	15.1	0.0	0.0
Other chemicals	other 325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plastics and rubber products	326	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nonmetallic mineral products	327	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Primary metals	331	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fabricated metal products	332	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Machinery	333	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer and electronic products	334	8.4	8.1	0.0	0.0	0.0	0.0	0.0	13.7
Computers and peripheral equipment	3341	0.0	27.8	0.0	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	21.6	0.0	0.0	0.0	0.0	0.0	0.0	89.8
Semiconductor and other electronic components	3344	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other computer and electronic products	other 334	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation equipment	336	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles, trailers, and parts	3361-63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aerospace products and parts	3364	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Medical equipment and supplies	3391	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Other miscellaneous manufacturing	other 339	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003

(Percent)

Industry and company size	NAICS codes	Location of company-funded R&D performed outside the 50 United States and D.C. by affiliated organizations							
		Total	Canada	Germany	France	Japan	United Kingdom	Puerto Rico	Other location
Nonmanufacturing industries	21–23, 42, 44–81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mining, extraction, and support activities	21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utilities	22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Professional and commercial equipment and supplies, including computers	4214	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electrical goods	4216	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Drugs and druggists' sundries	4222	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other wholesale trade	other 42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail trade	44, 45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Publishing	511	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Software	5112	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Broadcasting and telecommunications	513	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Telecommunications	5133	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other information	other 51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Professional, scientific, and technical services	54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Architectural, engineering, and related services	5413	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer systems design and related services	5415	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scientific R&D services	5417	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Management of companies and enterprises	55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Health care services	621–23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other nonmanufacturing	56, 61, 624, 71, 72, 81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Location of company-funded R&D performed outside the 50 United States and D.C. by affiliated organizations							
		Total	Canada	Germany	France	Japan	United Kingdom	Puerto Rico	Other location
Company size (employees)									
All companies	na	0.9	0.7	0.3	0.9	1.2	2.7	0.0	1.7
5-24	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-99	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-249	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250-499	na	0.0	12.4	0.0	0.0	0.0	0.0	0.0	1.1
500-999	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1,000-4,999	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1
5,000-9,999	na	0.0	9.1	6.8	27.5	13.8	25.3	0.0	0.0
10,000-24,999	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	na	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	All federal R&D	Federal R&D				Scientists and engineers by source of funds		
			Department of Defense and other agencies	Department of Energy	NASA	All energy R&D	Total	Company funded	Federally funded
All industries	21-23, 31-33, 42, 44-81	1.3	36.9	58.8	51.5	0.0	33.6	29.4	49.4
Manufacturing industries	31-33	0.6	42.4	61.5	72.3	0.0	41.0	35.9	77.7
Food	311	0.0	0.0	0.0	0.0	0.0	20.8	19.9	0.0
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	19.1	19.1	0.0
Textiles, apparel, and leather	313-16	79.4	0.0	0.0	0.0	0.0	13.1	3.2	35.3
Wood products	321	0.0	0.0	0.0	0.0	0.0	51.3	44.4	40.5
Paper, printing, and support activities	322, 323	0.0	0.0	0.0	0.0	0.0	30.3	28.7	100.0
Petroleum and coal products	324	0.0	0.0	0.0	0.0	0.0	59.9	58.3	0.0
Chemicals	325	0.0	3.5	3.3	2.0	0.0	27.7	27.4	46.0
Basic chemicals	3251	0.0	5.2	1.6	100.0	0.0	19.6	19.7	2.4
Resin, synthetic rubber, fibers, and filament	3252	0.0	47.0	0.0	0.0	0.0	21.2	20.8	69.1
Pharmaceuticals and medicines	3254	0.9	14.4	100.0	29.5	0.0	28.1	28.6	4.5
Other chemicals	other 325	0.0	0.2	100.0	0.2	0.0	37.0	33.0	85.7
Plastics and rubber products	326	0.0	0.0	0.0	0.0	0.0	32.4	30.1	0.0
Nonmetallic mineral products	327	1.8	5.8	0.0	0.0	0.0	61.4	59.8	26.9
Primary metals	331	0.0	0.0	0.0	0.0	0.0	69.1	68.4	23.9
Fabricated metal products	332	0.0	77.9	88.9	0.0	0.0	23.3	22.6	0.0
Machinery	333	4.2	8.2	6.1	0.0	0.0	39.8	38.6	1.9
Computer and electronic products	334	0.3	12.4	28.1	46.6	0.0	52.8	46.1	94.7
Computers and peripheral equipment	3341	55.0	81.0	100.0	100.0	0.0	23.5	22.8	37.1
Communications equipment	3342	0.0	100.0	100.0	100.0	0.0	74.1	73.9	77.8
Semiconductor and other electronic components	3344	0.0	10.9	0.0	85.1	0.0	36.4	35.8	36.7
Navigational, measuring, electromedical, and control instruments	3345	0.1	9.1	27.7	33.3	0.0	59.2	38.5	97.1
Other computer and electronic products	other 334	0.0	0.0	0.0	0.0	0.0	42.1	42.4	0.0
Electrical equipment, appliances, and components	335	5.6	47.6	32.4	71.2	0.0	20.9	18.5	23.7
Transportation equipment	336	0.7	70.5	76.5	82.2	0.0	42.7	35.5	51.1
Motor vehicles, trailers, and parts	3361-63	0.0	9.7	3.7	31.9	0.0	44.9	37.1	9.1
Aerospace products and parts	3364	0.8	76.4	79.0	82.3	0.0	31.9	23.5	52.5
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	70.9	63.8	99.8
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	35.1	30.3	0.0
Miscellaneous manufacturing	339	4.1	11.0	0.0	0.0	0.0	28.2	27.9	8.0
Medical equipment and supplies	3391	11.7	38.6	0.0	0.0	0.0	38.2	37.9	10.7
Other miscellaneous manufacturing	other 339	0.0	1.2	0.0	0.0	0.0	9.4	9.1	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Federal R&D					Scientists and engineers by source of funds		
		All federal R&D	Department of Defense and other agencies	Department of Energy	NASA	All energy R&D	Total	Company funded	Federally funded
Nonmanufacturing industries	21-23, 42, 44-81	3.1	12.3	44.7	6.6	0.0	24.0	21.2	9.7
Mining, extraction, and support activities	21	0.0	0.0	0.0	0.0	0.0	49.9	48.6	0.0
Utilities	22	0.0	0.0	0.0	0.0	0.0	45.5	42.0	0.0
Construction	23	0.0	0.0	0.0	0.0	0.0	71.5	55.9	100.0
Wholesale trade	42	0.0	67.7	0.0	0.0	0.0	25.0	20.6	4.8
Professional and commercial equipment and supplies, including computers	4214	0.0	0.0	0.0	0.0	0.0	19.8	13.0	0.0
Electrical goods	4216	0.0	100.0	0.0	0.0	0.0	18.9	19.4	100.0
Drugs and druggists' sundries	4222	0.0	96.7	0.0	0.0	0.0	43.5	40.3	0.6
Other wholesale trade	other 42	0.0	0.0	0.0	0.0	0.0	26.9	24.8	10.1
Retail trade	44, 45	0.0	0.0	0.0	0.0	0.0	21.7	22.6	0.0
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	8.4	8.5	0.0
Information	51	11.5	27.1	0.0	0.0	0.0	20.4	18.8	12.2
Publishing	511	16.5	59.8	0.0	0.0	0.0	16.7	15.5	15.8
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	0.0	0.0	3.5	1.3	100.0
Software	5112	16.6	59.8	0.0	0.0	0.0	17.5	16.3	14.8
Broadcasting and telecommunications	513	0.0	0.0	0.0	0.0	0.0	53.0	52.7	0.0
Telecommunications	5133	0.0	0.0	0.0	0.0	0.0	54.2	53.9	0.0
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	13.2	13.2	0.0
Other information	other 51	0.0	0.0	0.0	0.0	0.0	21.7	17.5	0.0
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	40.0	40.0	0.0
Professional, scientific, and technical services	54	2.2	9.5	51.5	6.7	0.0	23.3	19.6	8.9
Architectural, engineering, and related services	5413	1.3	7.5	11.7	4.2	0.0	19.2	12.6	5.6
Computer systems design and related services	5415	1.2	3.2	31.7	1.2	0.0	19.2	18.1	2.4
Scientific R&D services	5417	3.8	16.6	54.3	18.9	0.0	27.0	24.6	16.7
Other professional, scientific, and technical services	other 54	0.0	0.0	0.0	0.0	0.0	37.6	24.1	7.0
Management of companies and enterprises	55	0.0	0.0	0.0	0.0	0.0	8.3	7.7	0.0
Health care services	621-23	4.7	54.3	0.0	0.0	0.0	17.7	17.7	0.3
Other nonmanufacturing	56, 61, 624, 71, 72, 81	74.3	92.3	100.0	0.0	0.0	31.8	27.7	91.4

TABLE A-5. Imputation rates for survey items, by industry and company size: 2003
(Percent)

Industry and company size	NAICS codes	Federal R&D				Scientists and engineers by source of funds			
		All federal R&D	Department of Defense and other agencies	Department of Energy	NASA	All energy R&D	Total	Company funded	Federally funded
Company size (employees)									
All companies	na	1.3	36.9	58.8	51.5	0.0	33.6	29.4	49.4
5-24	na	0.0	0.0	0.0	0.0	0.0	34.8	30.4	4.4
25-49	na	0.1	18.4	26.5	2.9	0.0	27.8	12.8	1.9
50-99	na	7.3	25.2	18.1	21.7	0.0	14.7	9.4	15.3
100-249	na	7.2	18.2	76.0	46.6	0.0	20.0	14.3	13.0
250-499	na	6.2	9.6	29.0	3.5	0.0	19.7	16.4	15.1
500-999	na	2.9	22.3	72.4	3.2	0.0	29.2	29.7	17.6
1,000-4,999	na	5.1	20.0	27.4	3.5	0.0	31.4	29.1	25.6
5,000-9,999	na	0.0	75.4	60.6	86.6	0.0	38.9	34.0	66.5
10,000-24,999	na	0.0	8.9	30.6	25.3	0.0	39.9	35.1	58.8
25,000 or more	na	0.5	42.6	67.6	86.0	0.0	39.6	36.6	82.2

na = not applicable.

NOTES: The figures in this table represent the percentage of the value in a given table cell in the detailed statistical tables that has been imputed. In those tables, cells for which more than 50 percent of the value is imputed are noted with S. Cells in this table that contain 0.0 indicate that no imputation was performed or, if performed, imputation accounted for less than 0.1 percent of the estimate for the indicated item. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE A-6. Percentage of R&D-performing companies that reported non-zero data for major survey items: 2003

(Percent)

Survey item	Form RD-1	Form RD-1A	Survey item	Form RD-1	Form RD-1A
All R&D	100.0	100.0	Company and other nonfederally funded R&D projected for next year	74.7	86.4
Wages and salaries ^a	83.7	0.1	Federal R&D	14.8	5.5
Fringe benefits ^a	69.7	na	Department of Energy ^a	2.7	na
Materials and supplies ^a	74.8	na	NASA ^a	3.1	na
R&D depreciation ^a	61.6	na	Basic research	17.9	10.4
Other costs ^a	77.3	na	Company funded	16.4	10.0
Costs by technology area:	87.1	90.4	Federally funded	3.6	0.8
Biotechnology	13.1	6.0	Applied research	40.1	36.6
Software development	29.6	24.0	Company funded	38.4	35.8
Materials synthesis and processing	17.3	24.0	Federally funded	6.6	2.5
Other technology areas	40.7	50.7	Development	80.2	78.8
Percentage of nanotechnology	22.7	22.3	Company funded	78.7	78.1
Company and other nonfederally funded R&D	98.4	98.7	Federally funded	7.5	2.3
Company funded collaborative R&D ^a	14.1	na	Energy R&D ^a	4.8	na
Company funded R&D performed by other organizations, total ^a	26.5	na	Net sales	97.6	99.9
For-profit company ^a	25.8	na	Total employment	100.0	100.0
University or college ^a	8.7	na	Number of scientists and engineers	89.5	95.9
Nonprofit organization ^a	2.4	na	Company funded ^a	89.2	na
Company funded R&D performed outside of the 50 United States and D.C. by affiliated organizations	33.5	8.8	Federally funded ^a	25.4	na
Canada ^a	10.0	na			
Germany ^a	9.0	na			
France ^a	7.4	na			
Japan ^a	5.8	na			
United Kingdom ^a	13.5	na			
Puerto Rico ^a	1.1	na			
Other countries ^a	19.3	na			

na = not applicable.

^a Data not collected on the Form RD-1A.

NOTES: Percentages are based on reported data for companies that reported any R&D expenditures. Imputed data are not included. Companies that reported they were out-of-scope, out-of-business, merged with another company, or had no R&D expenditures for 2003 were excluded from the calculations. For descriptions of the survey forms and more information, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	All industrial R&D				Basic research			
		Companies	All funds	Federal	Company and other	Companies	All funds	Federal	Company and other
All industries	21-23, 31-33, 42, 44-81	37,843	204,004	20,699	183,305	3,624	6,659	1,083	5,576
Manufacturing industries	31-33	16,362	123,384	15,305	108,079	1,848	4,090	192	3,898
Food	311	598	D	D	1,987	104	D	D	D
Beverage and tobacco products	312	38	173	0	173	2	D	0	D
Textiles, apparel, and leather	313-16	516	D	D	309	137	22	0	22
Wood products	321	217	D	D	138	6	D	0	D
Paper, printing, and support activities	322, 323	547	D	D	2,909	174	D	0	D
Petroleum and coal products	324	101	D	D	1,308	16	D	0	D
Chemicals	325	1,624	23,001	307	22,693	270	2,564	19 S	2,545
Basic chemicals	3251	206	2,061	70	1,991	55	198	D	D
Resin, synthetic rubber, fibers, and filament	3252	84	2,406	16	2,390	20	203	0	203
Pharmaceuticals and medicines	3254	299	D	D	15,949	50	D	D	D
Other chemicals	other 325	1,035	D	D	2,364	145	D	D	D
Plastics and rubber products	326	1,144	1,764	35	1,729	86	73	0	73
Nonmetallic mineral products	327	400	474	4	470	19	D	D	D
Primary metals	331	268	530	12	518	57	8	*	8
Fabricated metal products	332	1,707	1,374	45	1,329	70	13	0	13
Machinery	333	3,048	6,304	80	6,224	221	D	D	D
Computer and electronic products	334	2,434	39,001	6,506	32,495	245	523	D	D
Computers and peripheral equipment	3341	284	2,587	27 S	2,561	41	12	D	D
Communications equipment	3342	439	9,198	266	8,932	49	199 S	D	D
Semiconductor and other electronic components	3344	592	12,635	28	12,607	60	159	4 S	156
Navigational, measuring, electromedical, and control instruments	3345	973	14,014	6,180	7,834	80	149	12	137
Other computer and electronic products	other 334	146	566	6	560	16	4	0	4
Electrical equipment, appliances, and components	335	675	2,073	71	2,002	105	12	4 S	7
Transportation equipment	336	1,169	34,273	8,162	26,111	65	572	D	D
Motor vehicles, trailers, and parts	3361-63	751	D	D	16,874	39	D	D	D
Aerospace products and parts	3364	170	15,731	7,528	8,203	14	371	108	263
Other transportation equipment	other 336	248	D	D	1,034	13	D	D	D
Furniture and related products	337	424	D	D	275	63	D	0	D
Miscellaneous manufacturing	339	1,453	7,455	47	7,408	206	83	D	D
Medical equipment and supplies	3391	713	6,386	17	6,370	150	D	D	D
Other miscellaneous manufacturing	other 339	740	1,069	31	1,038	56	D	0	D

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	All industrial R&D				Basic research			
		Companies	All funds	Federal	Company and other	Companies	All funds	Federal	Company and other
Nonmanufacturing industries	21-23, 42, 44-81	21,481	80,620	5,394	75,226	1,776	2,569	891	1,678
Mining, extraction, and support activities	21	100	D	D	750	20	D	D	D
Utilities	22	136	D	D	128	5	D	0	D
Construction	23	1,001	333	79	254	309	4	0	4
Wholesale trade	42	6,088	25,092	122	24,970	495	697	D	D
Professional and commercial equipment and supplies, including computers	4214	898	D	D	9,679	33	D	D	D
Electrical goods	4216	745	D	D	3,701	8	D	0	D
Drugs and druggists' sundries	4222	190	D	D	9,494	26	D	D	D
Other wholesale trade	other 42	4,254	2,099	2	2,097	428	48	0	48
Retail trade	44, 45	1,886	1,488	26	1,462	7	D	0	D
Transportation and warehousing	48, 49	222	272	*	272	3	D	0	D
Information	51	2,272	D	D	19,811	109	D	D	D
Publishing	511	1,499	D	D	15,760	77	D	D	D
Newspaper, periodical, book, and database	5111	347	665	*	665	1	D	0	D
Software	5112	1,153	D	D	15,095	76	D	D	D
Broadcasting and telecommunications	513	137	1,663	0	1,663	6	D	0	D
Telecommunications	5133	122	1,625	0	1,625	2	D	0	D
Other broadcasting and telecommunications	other 513	14	38	0	38	4	1	0	1
Other information	other 51	636	D	D	2,388	26	D	0	D
Finance, insurance, and real estate	52, 53	667	1,455	0	1,455	41	48	0	48
Professional, scientific, and technical services	54	5,446	28,721	4,966	23,755	498	1,508	D	D
Architectural, engineering, and related services	5413	1,048	5,159	1,898	3,261	160	134	D	D
Computer systems design and related services	5415	2,079	9,786	1,148	8,638	120	496	398	98
Scientific R&D services	5417	1,387	12,460	1,886	10,574	212	870	382	489
Other professional, scientific, and technical services	other 54	933	1,316	34	1,283	6	7 S	D	D
Management of companies and enterprises	55	36	67	0	67	0	0	0	0
Health care services	621-23	1,506	717	36	681	7	8	3	5
Other nonmanufacturing	56, 61, 624, 71, 72, 81	2,120	1,679	60 S	1,619	282	30	D	D

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	All industrial R&D				Basic research			
		Companies	All funds	Federal	Company and other	Companies	All funds	Federal	Company and other
Company size (employees)									
All companies	na	37,843	204,004	20,699	183,305	3,624	6,659	1,083	5,576
5-24	na	17,383	5,578	754	4,824	1,604	174	26	148
25-49	na	8,271	6,449	910	5,540	792	470	367	104
50-99	na	4,228	4,829	559	4,271	357	159	45	114
100-249	na	3,987	9,559	636	8,924	357	424	99	325
250-499	na	1,561	9,536	668	8,869	151	297	88 S	208
500-999	na	933	10,383	759	9,624	100	504	148	357
1,000-4,999	na	1,001	30,484	1,088	29,396	160	D	D	791
5,000-9,999	na	211	15,434	1,101	14,333	36	D	D	329
10,000-24,999	na	166	27,571	1,995	25,576	32	D	D	645
25,000 or more	na	100	84,180	12,231	71,949	34	2,725	170	2,555

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Applied research				Development			
		Companies	All funds	Federal	Company and other	Companies	All funds	Federal	Company and other
All industries	21-23, 31-33, 42, 44-81	13,984	27,035	2,527	24,508	28,499	110,974	4,726	106,248
Manufacturing industries	31-33	6,458	15,842	1,018	14,824	13,238	65,225	2,840	62,385
Food	311	261	D	D	D	489	1,464	0	1,464
Beverage and tobacco products	312	8	D	0	D	31	87	0	87
Textiles, apparel, and leather	313-16	193	D	D	D	482	246	D	D
Wood products	321	21	D	0	D	201	53	D	D
Paper, printing, and support activities	322, 323	326	D	D	D	496	1,282 S	0	1,282
Petroleum and coal products	324	31	D	0	D	69	359	D	D
Chemicals	325	778	5,706	122	5,583	1,325	12,533	156 S	12,377
Basic chemicals	3251	109	561	D	D	151	982	15	967
Resin, synthetic rubber, fibers, and filament	3252	41	1,121	D	D	70	951	D	D
Pharmaceuticals and medicines	3254	141	3,113	5	3,108	223	D	D	D
Other chemicals	other 325	487	910	D	D	882	D	D	1,162
Plastics and rubber products	326	352	346	23	322	955	1,194	11	1,183
Nonmetallic mineral products	327	118	D	D	D	364	159	D	D
Primary metals	331	117	55	0	55	184	403	12	392
Fabricated metal products	332	824	161	D	D	1,421	683	D	D
Machinery	333	1,086	D	D	D	2,510	4,306	D	D
Computer and electronic products	334	967	3,964	D	D	1,861	19,730	811	18,919
Computers and peripheral equipment	3341	123	112	D	D	236	1,344	D	D
Communications equipment	3342	115	736 S	D	D	331	4,092 S	D	D
Semiconductor and other electronic components	3344	240	1,748	8	1,740	427	8,390	9	8,380
Navigational, measuring, electromedical, and control instruments	3345	449	1,316	26	1,291	730	5,498	581	4,917
Other computer and electronic products	other 334	39	52	4	48	139	407	0	407
Electrical equipment, appliances, and components	335	261	259	53	206	554	1,383	13	1,370
Transportation equipment	336	446	2,772	D	D	917	15,401	1,728	13,673
Motor vehicles, trailers, and parts	3361-63	220	1,362	D	D	635	D	D	7,122
Aerospace products and parts	3364	58	1,303	637	666	130	7,296	1,207	6,088
Other transportation equipment	other 336	168	108	D	D	152	D	D	462
Furniture and related products	337	64	D	0	D	393	220	D	D
Miscellaneous manufacturing	339	604	575	D	D	983	5,723	33	5,690
Medical equipment and supplies	3391	327	D	D	D	523	5,050	D	D
Other miscellaneous manufacturing	other 339	277	D	D	D	460	673	D	D

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Applied research				Development			
		Companies	All funds	Federal	Company and other	Companies	All funds	Federal	Company and other
Nonmanufacturing industries	21-23, 42, 44-81	7,526	11,193	1,510	9,684	15,261	45,748	1,886	43,863
Mining, extraction, and support activities	21	80	D	0	D	55	257	0	257
Utilities	22	15	D	0	D	127	122	D	D
Construction	23	581	87	0	87	993	199	79	120
Wholesale trade	42	1,366	3,633	66	3,567	4,878	18,784	D	D
Professional and commercial equipment and supplies, including computers	4214	71	D	D	D	830	D	D	8,730
Electrical goods	4216	249	D	0	D	475	D	D	2,529
Drugs and druggists' sundries	4222	128	2,303	D	D	92	D	D	D
Other wholesale trade	other 42	918	294	1	293	3,482	1,463	0	1,463
Retail trade	44, 45	456	D	0	D	1,017	624	26	598
Transportation and warehousing	48, 49	193	D	D	D	33	64	D	D
Information	51	857	D	D	D	1,935	9,832	D	D
Publishing	511	570	D	D	D	1,260	7,043	D	D
Newspaper, periodical, book, and database	5111	262	D	0	D	323	567	0	567
Software	5112	308	D	D	1,264	936	6,476	D	D
Broadcasting and telecommunications	513	16	D	0	D	116	884	0	884
Telecommunications	5133	12	D	0	D	106	863	0	863
Other broadcasting and telecommunications	other 513	4	10	0	10	9	21 S	0	21
Other information	other 51	271	D	0	D	559	1,905	D	D
Finance, insurance, and real estate	52, 53	565	72	0	72	609	1,284	0	1,284
Professional, scientific, and technical services	54	2,481	4,612	1,417	3,196	3,502	13,204	D	D
Architectural, engineering, and related services	5413	387	847	D	D	644	1,488	D	D
Computer systems design and related services	5415	996	544	19	526	1,176	5,889	709	5,179
Scientific R&D services	5417	775	3,089	781	2,308	807	5,144	589	4,554
Other professional, scientific, and technical services	other 54	323	132	D	D	874	684	D	D
Management of companies and enterprises	55	7	8	0	8	30	45	0	45
Health care services	621-23	264	121	D	D	400	203	D	D
Other nonmanufacturing	56, 61, 624, 71, 72, 81	659	411	D	D	1,681	1,131	D	D

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Applied research				Development			
		Companies	All funds	Federal	Company and other	Companies	All funds	Federal	Company and other
Company size (employees)									
All companies	na	13,984	27,035	2,527	24,508	28,499	110,974	4,726	106,248
5-24	na	6,985	1,327	258	1,069	12,565	1,814	204	1,610
25-49	na	2,882	1,262	367	895	6,560	3,350	134	3,216
50-99	na	1,554	1,471	252	1,220	3,092	2,661	188	2,474
100-249	na	1,145	1,688	179	1,509	3,179	5,526	311	5,216
250-499	na	529	1,414	204	1,210	1,231	5,300	236	5,064
500-999	na	292	1,726	330	1,396	736	6,503	258	6,245
1,000-4,999	na	389	D	D	3,979	785	20,444	334	20,109
5,000-9,999	na	74	D	D	2,796	159	7,749	70	7,679
10,000-24,999	na	81	D	D	3,851	119	14,435	969	13,466
25,000 or more	na	52	7,181	598	6,583	73	43,191	2,022	41,169

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Companies	Expenditures not distributed		
			All funds	Federal	Company and other
All industries	21-23, 31-33, 42, 44-81	4,351	59,336	12,363	46,973
Manufacturing industries	31-33	1,254	38,227	11,255	26,972
Food	311	29	113	0	113
Beverage and tobacco products	312	5	14	0	14
Textiles, apparel, and leather	313-16	8	20	0	20
Wood products	321	9	D	D	44
Paper, printing, and support activities	322, 323	5	D	D	1,114
Petroleum and coal products	324	31	764	1	763
Chemicals	325	129	2,199	10	2,189
Basic chemicals	3251	35	320	7	312
Resin, synthetic rubber, fibers, and filament	3252	5	131	0	131
Pharmaceuticals and medicines	3254	23	1,535	3	1,532
Other chemicals	other 325	66	213	0	213
Plastics and rubber products	326	92	151	1	151
Nonmetallic mineral products	327	22	174	1	174
Primary metals	331	44	63	0	63
Fabricated metal products	332	58	518	0	518
Machinery	333	195	1,176	4	1,172
Computer and electronic products	334	249	14,783	5,625	9,158
Computers and peripheral equipment	3341	30	1,120	15	1,105
Communications equipment	3342	59	4,171	41	4,131
Semiconductor and other electronic components	3344	53	2,339	7	2,331
Navigational, measuring, electromedical, and control instruments	3345	101	7,050	5,561	1,489
Other computer and electronic products	other 334	5	103	2	102
Electrical equipment, appliances, and components	335	49	419	1	418
Transportation equipment	336	122	15,528	5,583	9,945
Motor vehicles, trailers, and parts	3361-63	87	8,309	8	8,301
Aerospace products and parts	3364	13	6,761	5,575	1,186
Other transportation equipment	other 336	22	458	0	458
Furniture and related products	337	23	43	0	43
Miscellaneous manufacturing	339	184	1,075	2	1,073
Medical equipment and supplies	3391	44	814	2	813
Other miscellaneous manufacturing	other 339	140	261	*	260

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Companies	Expenditures not distributed		
			All funds	Federal	Company and other
Nonmanufacturing industries	21-23, 42, 44-81	3,096	21,109	1,108	20,001
Mining, extraction, and support activities	21	9	294	*	294
Utilities	22	5	16	0	16
Construction	23	6	43	0	43
Wholesale trade	42	489	1,978	*	1,978
Professional and commercial equipment and supplies, including computers	4214	33	372	0	372
Electrical goods	4216	56	426	0	426
Drugs and druggists' sundries	4222	9	886	0	886
Other wholesale trade	other 42	392	294	*	294
Retail trade	44, 45	606	497	*	497
Transportation and warehousing	48, 49	1	145	0	145
Information	51	231	8,180	23	8,157
Publishing	511	173	7,402	23	7,378
Newspaper, periodical, book, and database	5111	22	52	*	52
Software	5112	151	7,349	23	7,326
Broadcasting and telecommunications	513	12	509	0	509
Telecommunications	5133	7	503	0	503
Other broadcasting and telecommunications	other 513	5	7	0	7
Other information	other 51	45	269	0	269
Finance, insurance, and real estate	52, 53	22	51	0	51
Professional, scientific, and technical services	54	748	9,396	1,009	8,387
Architectural, engineering, and related services	5413	356	2,690	835	1,856
Computer systems design and related services	5415	161	2,856	21	2,835
Scientific R&D services	5417	223	3,357	134	3,223
Other professional, scientific, and technical services	other 54	8	493	20	473
Management of companies and enterprises	55	1	14	0	14
Health care services	621-23	855	386	30	355
Other nonmanufacturing	56, 61, 624, 71, 72, 81	123	107	45	63

TABLE A-7. Funds for and number of companies that performed industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2003

(Millions of dollars)

Industry and company size	NAICS codes	Expenditures not distributed			Company and other
		Companies	All funds	Federal	
Company size (employees)					
All companies	na	4,351	59,336	12,363	46,973
5-24	na	1,901	2,263	266	1,997
25-49	na	1,029	1,367	42	1,325
50-99	na	473	538	75	463
100-249	na	376	1,921	46	1,874
250-499	na	193	2,526	139	2,387
500-999	na	120	1,650	23	1,627
1,000-4,999	na	146	5,126	610	4,516
5,000-9,999	na	42	4,445	916	3,528
10,000-24,999	na	45	8,418	805	7,614
25,000 or more	na	25	31,083	9,441	21,642

* = data less than \$500,000; D = data withheld to avoid disclosing operations of individual companies; na = not applicable;

S = more than 50 percent of cell value is imputed.

^a The amounts of undistributed R&D are distributed among basic research, applied research, and development in table 34.

NOTES: Excludes data for federally funded research and development centers. For definitions and more information about year-to-year comparability of the statistics, see technical notes and survey methodology.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2003.

Survey Definitions

Employment, FTE R&D scientists and engineers. Number of people employed in the 50 U.S. states and DC by R&D-performing companies who were engaged in scientific or engineering work at a level that required knowledge, gained either formally or by experience, of engineering or of the physical, biological, mathematical, statistical, or computer sciences equivalent to at least that acquired through completion of a 4-year college program with a major in one of those fields. The statistics show full-time-equivalent (FTE) employment of persons employed by the company during the January following the survey year who were assigned full time to R&D, plus a prorated number of employees who worked on R&D only part of the time.

Employment, total. Number of people employed in the 50 U.S. states and DC by R&D-performing companies in all activities during the pay period that included the 12th of March of the study year (March 12 is the date most employers use when paying first quarter employment taxes to the Internal Revenue Service).

Federally funded R&D centers (FFRDCs). R&D-performing organizations administered by industrial, academic, or other institutions on a nonprofit basis and exclusively or substantially financed by the federal government. To avoid the possibility of disclosing company-specific information and therefore violating the confidentiality provisions of Title 13 of the United States Code, beginning in 2001 data for industry-administered FFRDCs are now collected through NSF's annual academic R&D expenditure survey, the Survey of Research and Development Expenditures at Universities and Colleges, as are data from FFRDCs administered by academic institutions and nonprofit organizations. More information about this survey is available from NSF's Division of Science Resources Statistics website at <http://www.nsf.gov/statistics/rdexpenditures/>. For current lists of FFRDCs, visit <http://www.nsf.gov/statistics/ffrdc/>.

Funds for R&D, company and other nonfederal. The cost of R&D performed within the company and funded by the company itself or by other nonfederal sources in the 50 U.S. states and DC; does not include the cost of R&D funded by the company but contracted to outside organizations such as research institutions, universities and colleges, nonprofit organizations, or—to avoid double-counting—other companies.

Funds for R&D, federal. The cost of R&D performed within the company in the 50 U.S. states and DC funded by federal R&D contracts, subcontracts, R&D portions of federal procurement contracts and subcontracts, grants, or other arrangements; does not include the cost of R&D supported by the federal government but contracted to outside organizations such as research institutions, universities and colleges, nonprofit organizations, or other companies.

Funds for R&D, total. The cost of R&D performed within the company in its own laboratories or in other company-owned or company-operated facilities in the 50 U.S. states and DC, including expenses for wages and salaries, fringe benefits for R&D personnel, materials and supplies, property and other taxes, maintenance and repairs, depreciation, and an appropriate share of overhead; does not include capital expenditures or the cost of R&D contracted to outside organizations such as research institutions, universities and colleges, nonprofit organizations, or—to avoid double-counting—other companies.

Funds per R&D scientist or engineer. All costs associated with the performance of

industrial R&D (salaries, wages, and fringe benefits paid to R&D personnel; materials and supplies used for R&D; depreciation on capital equipment and facilities used for R&D; and any other R&D costs) divided by the number of R&D scientists and engineers employed in the 50 U.S. states and DC. To obtain a per person cost of R&D for a given year, the total R&D expenditures of that year were divided by an approximation of the number of full-time-equivalent (FTE) scientists and engineers engaged in the performance of R&D for that year. For accuracy, this approximation was the mean of the numbers of such FTE R&D-performing scientists and engineers as reported in January for the year in question and the subsequent year. For example, the mean of the numbers of FTE R&D scientists and engineers in January 2002 and January 2003 was divided into total 2002 R&D expenditures for a total cost per R&D scientist or engineer in 2002.

Net sales and receipts. Dollar values for goods sold or services rendered by R&D-performing companies to customers outside the company, including the federal government, less such items as returns, allowances, freight, charges, and excise taxes. Domestic intracompany transfers and sales by foreign subsidiaries were excluded, but transfers to foreign subsidiaries and export sales to foreign companies were included.

R&D and industrial R&D. R&D is the planned, systematic pursuit of new knowledge or understanding toward general application (basic research); the acquisition of knowledge or understanding to meet a specific, recognized need (applied research); or the application of knowledge or understanding toward the production or improvement of a product, service, process, or method (development). *Basic research* analyzes properties, structures, and relationships toward formulating and testing hypotheses, theories, or laws; *applied research* is undertaken either to determine possible uses for the findings of basic research or to determine new ways of achieving specific, predetermined objectives; and *development* draws on research findings or other scientific knowledge for the purpose of producing new or significantly improving products, services, processes, or methods. As used in this survey, industrial *basic research* is the pursuit of new scientific knowledge or understanding that does not have specific immediate commercial objectives, although it may be in fields of present or potential commercial interest; industrial *applied research* is investigation that may use findings of basic research toward discovering new scientific knowledge that has specific commercial objectives with respect to new products, services, processes, or methods; and industrial *development* is the systematic use of the knowledge or understanding gained from research or practical experience directed toward the production or significant improvement of useful products, services, processes, or methods, including the design and development of prototypes, materials, devices, and systems. The survey covers industrial R&D performed by people trained, either formally or by experience, in engineering or in the physical, biological, mathematical, statistical, or computer sciences and employed by a publicly or privately owned firm engaged in for-profit activity in the United States. Specifically excluded from the survey are quality control, routine product testing, market research, sales promotion, sales service, and other nontechnological activities; routine technical services; and research in the social sciences or psychology.

Footnotes

[4] In the Survey of Industrial Research and Development and in the publications presenting statistics resulting from the survey, the terms *firm*, *company*, and *enterprise* are used interchangeably. *Industry* refers to the 2-, 3-, or 4-digit North

American Industrial Classification System (NAICS) codes or group of NAICS codes used to publish statistics resulting from the survey.

[5] The 1999 survey was the first year that companies were classified using NAICS. Prior to 1999, the Standard Industrial Classification (SIC) system was used. The two systems are discussed later under Comparability of Statistics.

[6] Form RD-1 is a revised version of the Form RD-1L, formerly used to collect data from large R&D performers for odd-numbered years. For even-numbered years, an abbreviated questionnaire, Form RD-1S was used. Beginning in 1998 the Form RD-1L was streamlined, renamed Form RD-1, and the odd/even-numbered year cycle abandoned.

[7] For detailed discussions on the sources, control, and measurement of error resulting from item nonresponse, see U.S. Bureau of the Census (1994b).

[8] For detailed descriptions and analyses of the imputation methods and algorithms used, see U.S. Bureau of the Census (1994c).

[9] Annual sampling also remedies the cyclical deterioration of the statistics that results from changes in a company's payroll composition because of product line and corporate structural changes.

Appendix B. Survey Documents

National Science Foundation Cover Letter

NATIONAL SCIENCE FOUNDATION
4201 Wilson Boulevard
Arlington, Virginia 22230

OFFICE OF THE DIRECTOR

FROM THE DIRECTOR
NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) requests your company's participation in the 2003 Survey of Industrial Research and Development that the Bureau of the Census is conducting for us. This annual survey is the only source of detailed information on U.S. industry's research and development (R&D) performance.

Your company's participation is vital to the accuracy of the resulting information. Because R&D expenditures are concentrated in relatively few companies, a completed response is needed from each surveyed firm—*there is no substitute for the information that you can provide*. Your company can be assured of complete confidentiality. Survey data will be released only in aggregate form so that responses of individual companies cannot be identified.

If you have questions concerning the operation of this survey, please direct them to the Census Bureau at (301) 763-5162. Survey results are made available in an annual report entitled *Research and Development in Industry*. The most recent report, historical reports, and descriptive information about the survey are available on the NSF website at <http://www.nsf.gov/statistics/industry/>.

Thank you for your assistance in this important effort.

Sincerely,



Rita R. Colwell
Director

Bureau of the Census Cover Letter

RD-1-CL



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
Washington, DC 20233-0001
OFFICE OF THE DIRECTOR

FROM THE DIRECTOR
U.S. CENSUS BUREAU

The U.S. Census Bureau is conducting a survey of industrial research and development (R&D).

The information developed from the survey can serve a number of useful purposes. For example, the survey provides information that can be used for examining tax credits. Some businesses are able to use R&D tax credits to reduce their federal tax burden. The data also assists public officials in allocating research funding by state, which may benefit companies like yours. Analysts also use the results to compare R&D spending in this country with other countries to ensure that the U.S. businesses are not at a competitive disadvantage.

We have enclosed your company's report form and instructions for the 2003 Survey of Industrial Research and Development. We have also included instructions for completing a downloadable Computer Self-Administered Questionnaire that you may use as an alternative option for reporting. If you have any questions about installing or using the electronic format, please contact the Electronic Reporting Staff on 1-800-838-2640.

The downloadable format and Form RD-1 contain information from the previous report for your company. **Please review the instructions, complete the electronic format or the form, and return it within 60 days.** Information you report should cover the domestic operations of your consolidated enterprise for the calendar year 2003. **For this survey year, federal law (Sections 182 and 225 of Title 13) requires your response to items 2A, 2B, 4D (columns 1 and 3) and 11.**

We recognize that providing this information is a burden, and we have worked hard to minimize it. For example, if you do not have book figures for any item, **you may provide carefully prepared estimates.** The law authorizes that this survey (Title 13, United States Code) requires that we keep your report in full confidence. It may be seen only by persons sworn to uphold the confidentiality of Census Bureau information and may be used only for statistical purposes.

This survey is a joint project between the U.S. Census Bureau and the National Science Foundation (NSF). We have enclosed a letter from the Director of the NSF encouraging your response to the survey. If you have any questions, please call my staff on (301) 763-5162. Thank you in advance for your cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Kincannon". The signature is fluid and cursive, with a large initial "C" and a long, sweeping tail.

Charles Louis Kincannon

Enclosures



U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

FORM
RD-1 (02-13-2004)

2003 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT

OMB No. 3145-0027: Approval Expires 01/31/2005

Mail your completed form to	U.S. CENSUS BUREAU 1201 East 10th Street Jeffersonville, IN 47132-0001
<p>Please read the accompanying instructions before answering the questions. Need help or have questions about filling out this form? Visit our Web site at www.census.gov/econhelp/rd To speak with an analyst, call 1-800-851-2014, option "0" between 8:00 a.m. and 5:00 p.m., Eastern time, Monday through Friday.</p> <p style="text-align: center;">- OR -</p> <p>Write to the address above. Include your 11-digit Identification Number (ID) printed in the mailing address.</p>	
<p>YOUR RESPONSE IS REQUIRED BY LAW. Title 13, United States Code, requires businesses and other organizations that receive this questionnaire to answer the questions and return the report to the U. S. Census Bureau. By the same law, YOUR CENSUS REPORT IS CONFIDENTIAL. It may be seen only by persons sworn to uphold the confidentiality of Census Bureau information and may be used only for statistical purposes. Further, copies retained in respondents' files are immune from legal process.</p> <p>You will satisfy the mandatory reporting requirements for this survey if you answer ②, lines A and B; ④, line D, columns (1) and (3); and ①, columns (1) and (2).</p>	
Name of person who supplied 2002 data	

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(Please correct any errors in this mailing address.)

Except as noted, this report covers your entire consolidated domestic enterprise, including all U.S. subsidiaries, affiliates, and branches. Reasonable estimates are acceptable.

① Was this company owned or controlled by another company on December 31, 2003?

001 Yes - See instructions. No - Go to ②.

HOW TO REPORT DOLLAR FIGURES

Dollar figures should be **rounded to thousands** of dollars.

If a figure is **\$1,025,628.79:**

Report →

2003		
\$ Bil.	Mil.	Thou.
	1 0 2 6	

② **A.** What was the amount of your company's domestic sales, shipments, operating receipts, or revenues, net of returns and allowances? (EXCLUDE domestic intracompany transfers and sales by foreign subsidiaries. INCLUDE receipts for sales of products and services provided to other companies, individuals, U.S. Government agencies, and foreign countries.) 102

B. How many employees worked in the United States for your company on March 12, 2003? (Include number of full- and part-time employees whose payroll was reported on Internal Revenue Service Form 941, Employer's Quarterly Federal Tax Return.) 112

2003			2002
\$ Bil.	Mil.	Thou.	\$ Thou.
Number			Number

3 What was the number of full-time equivalent (FTE) scientists and engineers employed by your company as of January 1, 2004 who worked on the following types of R&D?
(See instructions for the definition of FTE scientists and engineers.)

January 1, 2004	January 1, 2003
Number of FTEs	Number of FTEs

- A.** Federally-funded R&D 204
- B.** Nonfederal R&D funded by your company and other nonfederal sources 205
- C. TOTAL** *(Sum lines A and B)* 206

4 What was the cost of R&D performed within your company in the 50 United States and D.C.?
(Please report R&D performed for each source of funding.)

	2003									2002		
	Federal funds			Company and other			Total (Columns (1)+(2))			Federal funds	Company and other	Total (Columns (4)+(5))
	(1)			(2)			(3)			(4)	(5)	(6)
	\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Thou.	\$ Thou.	\$ Thou.
A. Basic research (Research for the advancement of scientific knowledge without specific immediate commercial objectives.)	304			305			306					
B. Applied research (Research directed primarily towards a specific commercial or practical objective.)	314			315			316					
C. Development (Activity translating research into new or improved goods, services or processes.)	324			325			326					
D. TOTAL <i>(Sum lines A through C)</i>	344			345			346					

5 For 2004 what is your projected cost for company-funded R&D performed by your company in the 50 United States and D.C.?

2004		
\$ Bil.	Mil.	Thou.

(Comparable to the 2003 figure reported in 4, line D, column (2).) 401

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If not shown, please enter your 11-digit Identification Number (ID) from the mailing address.

6 A. What was the cost of R&D performed by others for your company in the 50 United States and D.C.?

2003									2002		
Federal funds (1)			Company and other (2)			Total (Columns (1)+(2)) (3)			Federal funds (4)	Company and other (5)	Total (Columns (4)+(5)) (6)
\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Thou.	\$ Thou.	\$ Thou.
354			355			356					

(Please report R&D performed for each source of funding.)

B. What was the cost of company-funded R&D performed by others for your company in the 50 United States and D.C. by the following types of organizations?

- 1. For-profit companies
- 2. Universities or colleges
- 3. Other nonprofit organizations
- 4. **TOTAL** (Sum lines 1 through 3. The sum should equal the total reported in line A, column (2).)

Key code	2003 (1)			2002 (2)
	\$ Bil.	Mil.	Thou.	\$ Thou.
8				
11				
21				
31				
41				

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7 A. What was the cost of your company-funded R&D performed outside of the 50 United States and D.C. by your subsidiaries, affiliates, or branches, or by other organizations in which your company owns the following percentages of voting stock or equivalent interest?

- 1. 0% 363
- 2. More than 0% but less than 10%. 364
- 3. 10%-50%. 365
- 4. More than 50%. 366
- 5. **TOTAL** (Sum lines 1 through 4.). 369

2003			2002
Company and other (2)			Company and other (5)
\$ Bil.	Mil.	Thou.	\$ Thou.

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B. What was the cost of your company-funded R&D that was performed outside the 50 United States and D.C. by your subsidiaries, affiliates, or branches, or by other organizations in which your company owns more than 50% of the voting stock or equivalent interest in the following countries and Puerto Rico?

- 1. Canada 01
- 2. Germany 02
- 3. France 03
- 4. Japan 04
- 5. United Kingdom 05
- 6. Puerto Rico. 06
- 7. Other - Specify ↴
 1209 07
- 8. **TOTAL** (Sum lines 1 through 7. The sum should equal the amount reported in line A4.). 10

Key code	2003 (1)			2002 (2)
	\$ Bil.	Mil.	Thou.	\$ Thou.
12				
01				
02				
03				
04				
05				
06				
07				
10				

If not shown, please enter your 11-digit Identification Number (ID) from the mailing address.

8 What was the cost of the Federally-funded R&D your company performed in the 50 United States and D.C. for each of these Federal agencies?

Key code	2003 (1)			2002 (2)
	\$ Bil.	Mil.	Thou.	\$ Thou.
5				
A. Department of Defense (DoD)	11			
B. National Aeronautics and Space Administration (NASA)	21			
C. Department of Energy (DOE)	31			
D. Other Federal agencies	41			
E. TOTAL (Sum lines A through D. The sum should equal the total reported in 4, line D, column (1).)	51			

9 What was the cost relating to the total R&D performed within your company in the 50 United States and D.C. for the following types of expenses?

Key code	2003 (1)			2002 (2)
	\$ Bil.	Mil.	Thou.	\$ Thou.
6				
A. Wages and salaries of R&D personnel (Include scientists and engineers, technicians, secretaries, and other personnel.)	11			
B. Fringe benefits of R&D personnel (Include taxable and nontaxable benefits, 401K plans, employers' contribution to health plans.)	21			
C. Materials and supplies consumed (Include the cost of all purchased materials consumed.)	31			
D. Depreciation on R&D property and equipment (Include depreciation and amortization costs for property and equipment used for R&D during the year.)	41			
E. All other R&D expenses (Include R&Ds share of company overhead and other expenses such as utilities, books and periodicals, and property and other taxes.)	51			
F. TOTAL (Sum lines A through E. The sum should equal the total reported in 4, line D, column (3).)	61			

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10 A. What was the cost relating to total R&D performed within your company in the 50 United States and D.C. for the following types of technologies?

- 1. Biotechnology (The use of scientific and engineering data and techniques for the study and solution of problems concerning living organisms.)
- 2. Software development (The formulation of programs, applications, routines, etc., for computers, excluding those used exclusively for internal company operations.)
- 3. Materials synthesis and processing (The use of scientific and engineering data and techniques for the formulation and manipulation of new materials.)
- 4. Other areas
- 5. **TOTAL** (Sum lines 1 through 4. The sum should equal the total reported in **4**, line D, column (3).)

Key code	2003 (1)			2002 (3)
	\$ Bil.	Mil.	Thou.	\$ Thou.
7				
11				
21				
31				
41				
51				

B. What percentage of the R&D costs reported in **10A** are attributable to nanotechnology for each of the following types of technologies?

(Nanotechnology is defined as the creation and utilization of materials, devices, and systems through the control of matter on the nanometer scale, at the level of atoms and molecules in the range of 1 to 100 nanometers.)

- 1. Biotechnology (The use of scientific and engineering data and techniques for the study and solution of problems concerning living organisms.)
- 2. Software development (The formulation of programs, applications, routines, etc., for computers, excluding those used exclusively for internal company operations.)
- 3. Materials synthesis and processing (The use of scientific and engineering data and techniques for the formulation and manipulation of new materials.)
- 4. Other areas

Key code	2003 (2)		2002 (4)	
	Whole percents		Whole percents	
7				
11		%		%
21		%		%
31		%		%
41		%		%

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11 What was the cost of the R&D your company performed in each of the fifty States and the District of Columbia?

(Please report R&D performed for each source of funding.) - Continued

Key code 9	State	2003						2002				Key code 9	State	2003						2002			
		Federal funds (1)			Total funds (2)			Federal funds (3)		Total funds (4)				Federal funds (1)			Total funds (2)			Federal funds (3)		Total funds (4)	
		\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Thou.		\$ Thou.				\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Thou.		\$ Thou.	
37	OK										45	UT											
38	OR										46	VT											
39	PA										47	VA											
40	RI										48	WA											
41	SC										49	WV											
42	SD										50	WI											
43	TN										51	WY											
44	TX																						
												954											
TOTAL (Sum of lines 1 through 51. The sum should equal the totals reported in 4, line D, columns (1) and (3).)																							

12 What was the cost of the energy-related R&D your company performed in the 50 United States and D.C. during 2003?

(Include the portion of project cost incurred for the purpose of increasing energy resources or capabilities for each source of funding. These expenditures should also be included as part of the information reported in 4, line D, columns (1) and (3).)

- A. Nuclear
- B. Fossil fuels
- C. Geothermal and solar
- D. All other energy sources
- E. **TOTAL** (Sum lines A through D)

Key code	2003						2002			
	Federal funds (1)			Total funds (2)			Federal funds (3)		Total funds (4)	
	\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Thou.		\$ Thou.	
10										
11										
21										
31										
41										
51										

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If not shown, please enter your 11-digit Identification Number (ID) from the mailing address.

13 What was the cost of the R&D performed by your company in the 50 United States and D.C. company-funded in collaboration with the type of R&D partner listed below?
(These expenditures should also be included as part of the information reported in 4, line D, column (2).)

Key code	2003			2002
	(1)			(2)
11	\$ Bil.	Mil.	Thou.	\$ Thou.
A. For-profit companies	01			
B. Federal laboratories	02			
C. Universities or colleges.	03			
D. Other nonprofit organizations.	04			
E. TOTAL (Sum lines A through D)	10			

14 **A.** Do the R&D expenditures reported on this form cover the entire fully consolidated enterprise, including all subsidiaries, affiliates, or branches located in the 50 United States and D.C.? *(Mark "X" only ONE box.)*

- 1301 Yes
- No - Please explain in the "REMARKS" section.

B. Was your company publicly or privately owned? *(Mark "X" only ONE box.)*

- 1302 Publicly owned
- Privately owned

C. Other than the parent company, how many subsidiaries, affiliates, or branches located in the 50 United States and D.C. owned or controlled by your company (by means of voting stock or other equivalent interest) are included in this report? *(Mark "X" only ONE box.)*

- 1303 None
- 1304 1
- 1305 2-5
- 1306 More than 5

D. Other than the parent company, how many subsidiaries, affiliates, or branches located outside the 50 United States and D.C. owned or controlled by your company (by means of voting stock or other equivalent interest) are included in this report? *(Mark "X" only ONE box.)*

- 1307 None
- 1308 1
- 1309 2-5
- 1310 More than 5

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14 E. What percent of your company was owned or controlled (by means of voting stock or other equivalent interest) by one or more companies located in the 50 United States and D.C.? (Mark "X" only ONE box.)

- 1311 0%
- 1312 More than 0% but less than 10%
- 1313 10%-50%
- 1314 More than 50%

F. What percent of your company was owned or controlled (by means of voting stock or other equivalent interest) by one or more companies located outside the 50 United States and D.C.? (Mark "X" only ONE box.)

- 1315 0%
- 1316 More than 0% but less than 10%
- 1317 10%-50%
- 1318 More than 50%

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15 CONTACT INFORMATION

Is the time period covered by this report a calendar year?

0078 Yes

0079 No - Enter time period covered →

FROM 0070	Month	Year	TO 0071	Month	Year

0072 Name of person to contact regarding this report

0073 Title

Telephone 0074	Area code	Number		Extension	Fax 0075	Area code	Number	
			-					-

0076 Internet e-mail address

Date completed 0069	Month	Day	Year

REMARKS (Please use this space for any explanations that may help us in understanding your reported data.)

Thank you for completing your 2003 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT form.

PLEASE PHOTOCOPY THIS FORM FOR YOUR RECORDS AND RETURN THE ORIGINAL.

2003 Survey of Industrial Research and Development

Form RD-1

Instructions

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2003 Survey of Industrial Research and Development

Form RD-1

General Instructions

Changes from 2002 to 2003 R&D survey year

1) Some item headings and numbers have changed. The five mandatory items are now as follows:

- Question 2, line A
- Question 2, line B
- Question 4D, column 1
- Question 4D, column 3
- Question 11

2) The categories for energy in Question 12 are changed so that conservation and utilization are now reported under "All other energy."

How this information is used

Information about corporate research and development (R&D) activities is important in assessing our nation's scientific and technological resources. Your survey answers help us to provide national data on industrial R&D. This information is not available from any other source. Your participation is appreciated so that we can produce timely and comprehensive data.

Who fills out this survey?

U.S. publicly traded and privately owned, nonfarm business firms

This survey does **not** include:

- Operations owned by Federal, state, or local governments
- Nonprofit organizations
- Trust or pension plans performing only investments

If you received this form in error, please explain in the Remarks section on page 10 of the survey form and return the form.

Which company operations should you include in your survey answers?

Report all domestic operations of your **entire consolidated domestic enterprise**, including all U.S. subsidiaries, affiliates, and branches.

Report all parts of the company located in the 50 United States and the District of Columbia (D.C.), except where indicated differently.

For holding companies, report for all U.S. subsidiaries, affiliates, and branches under the ownership and control of the holding company.

EXCEPTION: If you report separately for a component of this company based upon an arrangement with the Census Bureau, please continue to do so.

Reporting period for your survey answers

Please provide calendar year 2003 information, if possible. If not, please use your fiscal year ending between September 2003 and March 2004

Comparing your 2002 and 2003 responses

If your company reported for 2002, entries from that form are preprinted on this form. (If you would like to correct these figures, please do so.) If your answers for 2003 are substantially higher or lower than your 2002 answers, you may comment on the reasons in the Remarks section on page 10 of the survey form." Such reasons may include new government contracts, a revised accounting method, or an R&D unit that was acquired or disposed of during 2002 or 2003.

How to report tax incentives for R&D

The Federal government and many states offer incentives for research and development activity. For purposes of this survey, please report your total R&D expenditures regardless of any tax incentives.

For further information on the Federal research tax credit please go to:

<http://www.irs.gov/businesses/>

For further information on state tax incentives, please contact the Comptroller of the Treasury in your state.

To request more time to complete your form or additional copies of the form

Please provide your 11-digit identification number (ID) as printed on the form above your address when you contact us.

For more time, call the Census Touchtone Data Entry System: 1-800-851-2014.

For official copies of the form, call (812) 218-3331.

OR

Write: U.S. Census Bureau
1201 East 10th Street
Jeffersonville, IN 47132-0001

To obtain a sample copy of the form, please visit the following web site. However, that sample copy cannot be used to submit your survey response because it lacks the appropriate labeling.

<http://help.econ.census.gov/econhelp/rd/>

For answers to your questions regarding this form

Write:

U.S. Census Bureau, Manufacturing and Construction Division
ATTN: Special Studies Branch
Room 2135/4
Washington, DC 20233-6900

Phone:

1-800-851-2014 (option "0")

Use our web site at <http://help.econ.census.gov/econhelp/rd/>

- Submit e-mail via our secure server to encrypt your message and to keep your survey participation confidential
- See answers to frequently asked questions

Electronic alternative for reporting

An electronic questionnaire may be used to report your responses. This electronic alternative potentially saves time for you and helps us to reduce processing costs. If you use the electronic alternative, please do **not** mail in the paper form. For questions about installing or using the electronic questionnaire, please call the Electronic Reporting Staff at 800-838-2640.

System Requirements

1. Microsoft Windows 98 or higher.
2. Microsoft Internet Explorer or Netscape Navigator 4.0 or above (128-bit encryption).
3. If you set your screen display for 16-bit color or higher, the forms will be easier to read. The forms are harder to read with 256-color display.

Have your username (UID) and password (PW) handy. ***The username and password are case sensitive.***

1. Go to the following Business Help Site at: www.census.gov/econhelp/rd
2. Click on Electronic Reporting
3. Follow the instructions for downloading software.

Transmitting your data

You may transmit your completed data to the Census Bureau electronically via Internet, or by mail.

Burden hour estimate

Public reporting burden for this collection of information is estimated to average 18 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimates or any other aspects of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
National Science Foundation
4201 Wilson Boulevard, Room 485
Arlington, VA 22230.

Survey Definitions of R&D

R&D includes the following:

- the planned, systematic pursuit of new knowledge or understanding toward general application (basic research);
- the acquisition of knowledge or understanding to meet a specific, recognized need (applied research); and
- the application of knowledge or understanding toward the production or improvement of a product, service, process, or method (development).

This survey covers industrial R&D performed by people who are

- 1) trained—either formally or by experience—in engineering or in the physical, biological, mathematical, statistical, or computer sciences, and
- 2) employed by a publicly or privately owned firm engaged in for-profit activity in the 50 U.S. states or D.C. (This also includes R&D they may perform **outside** of the 50 states and D.C.)

This survey specifically **excludes** quality control, routine product testing, market research, sales promotion, sales service, and other nontechnological activities; routine technical services; and research in the social sciences or psychology.

This survey defines basic research, applied research, and development as follows:

Basic research is the pursuit of new scientific knowledge or understanding that does not have specific immediate commercial objectives, although it may be in fields of present or potential commercial interest.

Applied research applies the findings of basic research or other existing knowledge toward discovering new scientific knowledge that has specific commercial objectives with respect to new products, services, processes, or methods.

Development is the systematic use of the knowledge or understanding gained from research or practical experience directed toward the production or significant improvement of useful products, services, processes, or methods, including the design and development of prototypes, materials, devices, and systems.

Survey Definitions of R&D (continued)

Types of R&D activities to consider for this survey

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none"> • Activities that incorporate: <ul style="list-style-type: none"> – Basic and applied research in the sciences and engineering – Design and development of new products and processes – Enhancement of existing products and processes • Activities carried on by persons trained, either formally or by experience, in: <ul style="list-style-type: none"> – Biological sciences (e.g., medicine) – Computer science – Engineering – Mathematical and statistical sciences – Physical sciences (e.g., chemistry and physics) • Activities that take place in: <ul style="list-style-type: none"> – Separate R&D organizational units of the company – Company laboratories – Technical groups not part of an R&D organization. 	<ul style="list-style-type: none"> • R&D from acquired companies prior to acquisition (in-process R&D) • Amortization above the actual cost of property and equipment related to your R&D activities • Test and evaluation once a prototype becomes a production model • Routine product testing • Geological and geophysical exploration activities • Technical services such as: <ul style="list-style-type: none"> – Quality and quantity control – Technical plant sanitation control – Troubleshooting in connection with breakdowns in full-scale production • Advertising programs to promote or demonstrate new products or processes • Assistance in preparation of speeches and publications for persons not engaged in R&D • Social science R&D including: <ul style="list-style-type: none"> – Personnel R&D – Economic R&D – Artificial intelligence and expert systems R&D – Consumer, market, and opinion R&D – Engineering psychology R&D – Management and organization R&D – Actuarial and demographic R&D – Educational processes and applications R&D – R&D in law

Question-by-Question Instructions

Question 1

Question 1 asks about your company's ownership as of December 31, 2003.

If "yes," your company was owned or controlled by another company on December 31, 2003, follow the instructions below:

Your situation	Action to take
Your company was purchased by another company after March 31, 2003	Note the new owner and purchase date under the Remarks section on page 10 of the form. Complete the rest of the form for the months prior to the purchase of your company.
Your company was purchased by another company on or prior to March 31, 2003	Note the new owner and purchase date under the Remarks section on page 10 of the form and return the form without completing the rest of it.

If you have questions, please call the R&D Survey staff at 1-800-851-2014 (option "0") to determine whether you are required to complete the form.

Question 2A

Question 2A covers domestic company sales. Report only the parts of your company located **within** the 50 United States or D.C.

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none"> • Sales, operating receipts, and revenues from all domestic operations of the company, net of returns and allowances • Receipts from sales of products and services provided to other companies, individuals, U.S. Government agencies, and foreign countries • Net selling value of shipments, f.o.b. plant, after discounts and allowances minus freight charges and excise taxes • Revenue from investments, rents, and royalties only if it is the principal business of the company • Interest, dividends, commissions, and rental income as part of revenues only if you are a finance, insurance, or real estate company • Value of assets sold under a capital lease agreement • Export transfers to your foreign subsidiaries, affiliates, and branches. 	<ul style="list-style-type: none"> • Sales and other taxes collected and paid directly to government taxing agencies • Domestic intracompany transfers • Receipts from sale of products and services provided by your foreign subsidiaries, affiliates, and branches. • Receipts from sale of products and services provided by your subsidiaries, affiliates, and branches in Puerto Rico and other U.S. territories outside the 50 United States and D.C. • Income from interest, dividends, and commissions (Exception: Companies in the finance, insurance, and real estate industries) • Other nonoperating income (e.g., royalties)

Question 2B

Question 2B covers domestic company employment. Report only the parts of your company located **within** the 50 states or D.C.

INCLUDE:

- Full- and part-time employees of the company as defined on Treasury Form 941, Employer's Quarterly Federal Tax Return, and Circular E, Employer's Tax Guide, if filed for the entire company
- Number of employees in all activities **within** the 50 United States or D.C. during the pay period that includes March 12, 2003
- Persons on paid sick leave, paid holidays, and paid vacations during the pay period that includes March 12, 2003.

Question 3

Question 3 covers the scientists and engineers who are employees of your company and perform R&D activities. It asks for the number of full-time equivalent (FTE) scientists and engineers who work on your company's R&D **within** the 50 United States or D.C.

There are two steps to calculate the number of FTEs for R&D scientists and engineers:

1. For company laboratories performing only research and development, count the number of scientists and engineers employed in January 2004.
2. For employees whose activities are not solely devoted to R&D, use the proportion of their time that is devoted to R&D to compute the number of full-time equivalent R&D scientists and engineers. For example, if a company had 60 scientists and engineers in January 2004 and one-fourth of their time was charged to R&D projects, then that company would have 15 full-time equivalent R&D scientists and engineers. Add these full-time equivalents to the count from the previous step.

INCLUDE:

- All persons engaged in scientific or engineering work at a level that requires knowledge of physical or life sciences or engineering or mathematics
- Persons with experience equivalent to completion of a 4-year college course with majors in these fields, regardless of whether they actually hold degrees in the fields

Question 4

Question 4 covers the R&D that is performed both (1) **within** your company and (2) **within** the 50 United States or D.C.

How to decide which expenditures to include as R&D costs

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none">• Wages, salaries, and related costs• Materials and supplies consumed• R&D depreciation• Cost of computer software used in R&D activities• Utilities, such as telephone, telex, electricity, water, and gas• Travel costs and professional dues• Property taxes and other taxes (except income taxes) incurred on account of the R&D organization or the facilities they use• Insurance expenses• Maintenance and repair, including maintenance of buildings and grounds• Company overhead including: personnel, accounting, procurement and inventory, and salaries of research executives not on the payroll of the R&D organization	<ul style="list-style-type: none">• R&D from acquired companies prior to acquisition (in-process R&D)• Capital expenditures• Test and evaluation once a prototype becomes a production model• Patent expenses• Income taxes and interest

Question 4 (continued)

How to decide which category of R&D

<p>1. Basic research</p>	<p>Projects that pursue new scientific knowledge or understanding that does not have specific immediate commercial objectives, although it may be in fields of present or potential commercial interest</p>	
<p>2. Applied research</p>	<p>Projects that apply the findings of basic research or other existing knowledge toward discovering new scientific knowledge that has specific commercial objectives with respect to new products, services, processes, or methods</p>	
<p>3. Development</p>	<p>Projects that are directed toward the systematic use of the knowledge or understanding gained from research or practical experience directed toward the production or significant improvement of useful products, services, processes, or methods, including the design and development of prototypes, materials, devices, and systems</p>	
	<p>INCLUDE:</p>	<p>EXCLUDE:</p>
	<ul style="list-style-type: none"> • Expenditures for designing and conducting clinical trials of drugs, pharmaceuticals, or other products that have not been marketed • Software development <ul style="list-style-type: none"> – Designing and/or adapting software if the application has commercial value (exclude software development for internal use) – Beta version of software being developed that has potential commercial application – Design and operation of pilot plants and semiwork plants • Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements • Design, construction, and testing of prototypes and models including test models for defense contracts • Designs for special manufacturing equipment and tools • Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals 	<ul style="list-style-type: none"> • Software development intended for <i>within</i> company use only • Routine technical services to customers • Tool making and tool tryout • Production of detailed construction drawings and manufacturing blueprints

Question 4 (continued)

How to decide which category to use for sources of R&D funding

Source of R&D	INCLUDE:	EXCLUDE:
Federal funds	<ul style="list-style-type: none"> • Federally funded R&D performed within the company. Include only the amount of work done on Federal R&D contracts or subcontracts in the current year. • R&D portion of procurement contracts or subcontracts 	<ul style="list-style-type: none"> • Federally funded R&D contracted or subcontracted to or otherwise performed by others outside of your company. (Report such funds in Question 6, line A.) • Expenditures for independent research and development (IR&D). (Report in column 2, Company funds.)
Company and other	<ul style="list-style-type: none"> • R&D from company and other nonfederal sources that is performed within the company. <p>NOTE that “company and other funds” and “company funded” are used interchangeably in the Form RD-1.</p> <ul style="list-style-type: none"> • R&D your company performs under contracts you have with non-Federal sources • Costs for independent research and development (IR&D). We define IR&D funds as R&D performed by the company for which you anticipate reimbursement by the government through indirect charges for the purchase of products or services. Qualified projects usually have potential interest to the Department of Defense or other agencies of the Federal government. These IR&D funds are excluded from federal funds received for federally sponsored research and development contracts. 	<ul style="list-style-type: none"> • R&D from nonfederal sources that is contracted to or otherwise performed by others outside of your company (Report such funds in Question 6, line A.)

Question 5

Question 5 asks for an estimate or projection of the cost of R&D your company expects to perform in 2004 in the 50 United States or D.C. that will be funded by company and other non-Federal sources.

Question 6A

Question 6A covers the R&D that was **both** performed for your company (1) by **others outside your company** such as contractors, and (2) **within** the 50 United States or D.C.

Include payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, educational institutions, or other organizations.

Question 6B

Question 6B asks for the type of organizations that performed the portion of your answer to question 6A for company and other nonfederal sources of R&D funding.

Definitions for types of organizations	
For-profit companies	A company that is organized to pursue profit
Universities and colleges	A degree-granting institution of higher learning, having facilities for teaching and research
Other nonprofit organizations	An organization that is not organized to pursue profit. However, universities and colleges are reported in another category.

Question 7A

Question 7A covers R&D performed **outside** the 50 United States and D.C. including R&D performed in Puerto Rico.

For Question 7A, line 1, report payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, educational institutions, or other organizations.

Question 7B

Question 7B provides more detail for your answer to Question 7A, line 4. If a country is not listed, please include the R&D in the "Other" category.

Question 8

Question 8 covers domestic federally funded R&D by agency.

Question 9

Question 9 covers R&D by type of expense

A. Wages and salaries of R&D personnel

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none">• Gross earnings paid in calendar year 2003 to employees engaged in R&D (follow the definition of salaries and wages that is used for calculating withholding tax)• Salaries of officers in the research establishment(s) of a corporation	<ul style="list-style-type: none">• Payments to proprietor or partners if an unincorporated concern• Employee fringe benefits (Report under "B. Fringe benefits.")

B. Fringe benefits of R&D personnel

A **fringe benefit** is an employment benefit granted by an employer that has monetary value but does not affect basic wage rates. It includes any benefits given in addition to wages.

INCLUDE:
<ul style="list-style-type: none">• Disability benefits• Life and medical insurance• Paid holidays• Retirement benefits, pension, and social security contributions• Stock options• Time-off benefits• Vacation, annual, sick, and maternity leave

C. Materials and supplies consumed

Report the delivered cost for all purchased materials consumed.

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none">• Materials and supplies that were:<ul style="list-style-type: none">– Received from other companies– Withdrawn from inventory– Received from other establishments of this company• All work done for your laboratories and other technical units by noncompany organizations; for example: Model construction by a non-company model shop	<ul style="list-style-type: none">• Purchases from other R&D organizations

Question 9 (continued)

D. Depreciation on R&D property and equipment

INCLUDE:

- Depreciation and amortization charged during the year against property and equipment related to your R&D activities
- Depreciation and amortization against property and equipment acquired since the beginning of the year that was ***sold or retired*** during the year and not in service at the end of the year
- Depreciated amounts no higher than the actual cost of property and equipment

E. All other R&D expenses

INCLUDE:

- Books and periodicals
- Company overhead
- Property and other taxes
- Utilities

Question 10A

Question 10A covers R&D by selected technology area.

A. Biotechnology

Definition of biotechnology for this survey:

Biotechnology is the application of science and technology to living organisms, as well as parts, products, and models thereof, to alter living or nonliving materials for the production of knowledge, goods, and services.

INCLUDE:

- DNA technologies such as:
 - Genetics
 - Pharmacogenetics
 - Gene probes
 - DNA sequencing/synthesis/simplification
 - Genetic engineering
- Protein and molecular technologies such as:
 - Protein/peptide sequencing/synthesis
 - Lipid/protein glycoengineering
 - Proteomics
 - Hormones
 - Growth factors
 - Cell receptors/signaling/pheromonics
- Cell and tissue culture and engineering including:
 - Cell/tissue culture
 - Tissue engineering
 - Hybridization
 - Cellular fusion
 - Vaccine/immune stimulants
 - Embryo manipulation
- Process biotechnologies such as:
 - Bioreactors
 - Fermentation
 - Bioprocessing
 - Bioleaching
 - Biopulping
 - Biobleaching
 - Biodesulphurization
 - Bioremediation
 - Biofiltration
- Subcellular organism research including:
 - Gene therapy
 - Viral vectors
- Other biotechnology areas such as:
 - Bioinformatics
 - Nanobiotechnologies

Question 10A (continued)

B. Software development

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none">• Application development tools and environments• Applications software• Computer-aided design tools and methods• Computer systems software	<ul style="list-style-type: none">• Software programming or engineering used exclusively for internal company operations such as financial management or human resources

C. Materials synthesis and processing

Formulation and manipulation of new or improved materials using the data and techniques of science and engineering

INCLUDE:
<ul style="list-style-type: none">• Advanced structural materials in the industrial machinery, medical, building, and construction industries• Higher performance semiconductors and photonic devices in the semiconductor industry• Ceramics and alloys designed to withstand extreme temperatures and stresses for use in engine and structural parts in the aerospace and automotive industries• Composite materials for use in sporting goods• New and significantly improved synthesis and production techniques for existing materials

D. Other areas

Report the remainder of R&D costs so that the total for this question matches Question 4, line D, column 3.

Question 10B

Question 10B asks for the nanotechnology proportion of the R&D expenditures provided in Question 10A.

For example, if about a fourth of your biotechnology R&D expenditures was devoted to nanotechnology projects, report 25% in Question 10B.

Nanotechnology is the creation and utilization of materials, devices, and systems through the control of matter on the nanometer-length scale, that is, at the level of atoms and molecules in the range of 1 to 100 nanometers.

INCLUDE:
<ul style="list-style-type: none">Materials and systems that exhibit novel and significantly improved physical, chemical, and biological properties; phenomena; and processes because of their size

Question 11

Question 11 covers R&D for each state location where your company has research and development laboratories or facilities.

It is not necessary to calculate separately individual assignments made outside the home state of a particular research staff.

Question 12

Question 12 covers R&D by type of energy source.

The types of R&D projects that are included:

INCLUDE:
<ul style="list-style-type: none">R&D to increase energy resources or capabilitiesDevelopment of energy equipmentProducts and processes for exploration, extraction, transportation, processing, storage, generation (including conversion), distribution, conservationPresent, new, or improved forms of energy

How to estimate if the project is for joint or multiple purposes

Estimate the portion of the cost incurred for energy purposes.

Include the total cost of the R&D energy spending if the primary purpose of the project is energy R&D and costs cannot be apportioned.

Exclude costs if the project is not primarily for energy research and development and the costs cannot be apportioned.

Question 12 (continued)

What is included for each type of energy:

Type of energy	INCLUDE:
Nuclear	<ul style="list-style-type: none"> • Fission and fusion
Fossil fuels	<ul style="list-style-type: none"> • Oil • Gas • Shale • Coal <ul style="list-style-type: none"> – Including synthetic fuels designed to convert coal to gaseous and liquid products – Including equipment and techniques to improve the productivity and recovery rates of coal mining
Geothermal and solar	<ul style="list-style-type: none"> • Geothermal heat pumps • Geothermal power plant generators • Photovoltaic technology • Solar water-heating systems
All other energy sources	<ul style="list-style-type: none"> • Conservation and utilization R&D to reduce consumption either at the point of energy use or in the transmission, transportation, storage, and conversion of energy including such activities as: <ul style="list-style-type: none"> – Reduce fuel consumption in manufacturing – Improve the efficiency of transportation of energy products – Produce an end product that is more efficient in energy consumption • Wind, waste, hydroelectric • Other energy R&D that cannot be classified above

Question 13

Question 13 covers your share of R&D expenditures funded by company and other nonfederal sources for collaborative R&D by type of R&D partner. These joint activities may or may not be organized as alliances, partnerships, or joint ventures.

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none">• Activities performed jointly with other organizations including legally distinct business units, universities, government agencies, or nonprofit organizations• Alliances• Partnerships• Joint ventures	<ul style="list-style-type: none">• Purchasing, funding, or financing relationships that do not involve joint or collaborative R&D

Definitions of types of R&D partners

For-profit companies	A company that is organized to pursue profit
Federal laboratories	An organization of the U.S. government
Universities and colleges	A degree-granting institution of higher learning, having facilities for teaching and research
Other nonprofit organizations	An organization that is not organized to pursue profit. However, universities and colleges are reported in another category.

Question 14

Question 14 asks for information on the time period that your survey responses cover. It also asks about your company organization.

Question 15

Question 15 provides space for your contact information. Please give the name and telephone number of the person in your company to contact regarding this report.

Remarks

The Remarks section provides space for your comments and explanations.

WARNING CONCERNING ELECTRONIC MAIL: The Internet is not a secure means of transmitting information unless it is encrypted. If you choose to communicate with the Census Bureau via electronic mail, the Census Bureau cannot guarantee the privacy of the information while transmitted, but will safeguard it in accordance with Title 13. Be advised that making inquiries regarding this survey via electronic mail may divulge your participation in this survey.



2003 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT

OMB No. 3145-0027: Approval Expires 01/31/2005

Mail your completed form to:

**U.S. CENSUS BUREAU
1201 East 10th Street
Jeffersonville, IN 47132-0001**

Please read the accompanying information sheet(s) before answering the questions.

Need help or have questions about filling out this form?

Visit our Web site at www.census.gov/econhelp/rd

To speak with an analyst call 1-800-851-2014, option "0" between 8:00 a.m. and 5:00 p.m., Eastern time, Monday through Friday.

- OR -

Write to the address above. Include your 11-digit Identification Number (ID) printed in the mailing address.

**INFORMATION COPY
DO NOT USE TO REPORT**

(Please correct any errors in this mailing address.)

You will satisfy the mandatory reporting requirements for this survey if you answer **2**, lines A and B; and **4**, line D, columns (1) and (3).

YOUR RESPONSE IS REQUIRED BY LAW. Title 13, United States Code, requires businesses and other organizations that receive this questionnaire to answer the questions and return the report to the U.S. Census Bureau. By the same law, **YOUR CENSUS REPORT IS CONFIDENTIAL.** It may be seen only by persons sworn to uphold the confidentiality of Census Bureau information and may be used only for statistical purposes. Further, copies retained in respondents' files are immune from legal process.

RESEARCH AND DEVELOPMENT (R&D)

R&D includes basic and applied research in the sciences and engineering. It also includes design and development of new products and processes and enhancement of existing products and processes.

R&D includes activities carried on by persons trained, either formally or by experience, in the physical sciences such as chemistry and physics, the biological sciences such as medicine, and engineering and computer science. R&D includes these activities if the purpose is to do one or more of the following things:

1. Pursue a planned search for **new scientific knowledge** or understanding that does not have specific immediate commercial objectives, although it may be in fields of present or potential commercial interest. (Basic research)
2. Apply the findings of basic research or other **existing knowledge** toward discovering **new scientific knowledge** that has specific commercial objectives, including work required to evaluate possible uses, with respect to new products, services, processes, or methods. (Applied research)

3. Systematically use the knowledge or understanding gained from research and **practical experience** in the production or **significant improvement** of products, services, processes, or methods, including the design and development of prototypes, materials, devices, and systems. (Development)

Research and development includes the activities described above whether assigned to separate R&D organizational units of the company or carried out by company laboratories and technical groups not part of an R&D organization. Reporting the R&D activities of such latter groups may require the use of estimates for some of your responses.

Activities to be **excluded** from R&D are as follows: research in social sciences or psychology, routine product testing, geological and geophysical exploration activities and technical services.

See instructions for more detail.

1 Did your company conduct R&D in 2003? (Mark "X" only ONE box.)

201 Yes - Complete form, enter zeros where applicable, and return this form.

203 No - Either call TDE to report (1-800-851-2014) OR mark the 203 box and mail the form.

NOTE - After reviewing **1** if you need further assistance please call 1-800-851-2014, option "0".

HOW TO REPORT DOLLAR FIGURES

Dollar figures should be **rounded to thousands** of dollars.

If a figure is **\$1,025,628.79: Report** →

2003		
\$ Bil.	Mil.	Thou.
	1 0 2	6

- 2** **A.** What was the amount of your company's domestic sales, shipments, operating receipts, or revenues, net of returns and allowances? (*EXCLUDE domestic intracompany transfers and sales by foreign subsidiaries. INCLUDE receipts for sales of products and services provided to other companies, individuals, U.S. Government agencies, and foreign countries.*) 102
- B.** How many employees worked in the United States for your company on March 12, 2003? (*Include number of full- and part-time employees whose payroll was reported on Internal Revenue Service Form 941, Employer's Quarterly Federal Tax Return.*) 112

2003		
\$ Bil.	Mil.	Thou.

Number

- 3** What was the number of full-time equivalent (FTE) scientists and engineers employed by your company as of January 1, 2004?

(*See instructions for the definition of FTE scientists and engineers.*) 206

January 1, 2004
Number of FTEs

- 4** What was the cost of R&D performed within your company in the 50 United States and D.C.?

(*Please report R&D performed for each source of funding.*)
- A.** Basic research (Research for the advancement of scientific knowledge without specific immediate commercial objectives.)
- B.** Applied research (Research directed primarily towards a specific commercial or practical objective.)
- C.** Development (Activity translating research into new or improved goods, services or processes.)
- D. TOTAL** (Sum lines A through C).

2003								
Federal funds (1)			Company and other (2)			Total (Columns (1)+(2)) (3)		
\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.
304			305			306		
314			315			316		
324			325			326		
344			345			346		

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- 5** For 2004 what is your projected cost for company-funded R&D performed by your company in the 50 United States and D.C.?

(*Comparable to the 2003 figure reported in 4, line D, column (2).*) 401

2004		
\$ Bil.	Mil.	Thou.

- 6** What was the cost of R&D performed by others for your company in the 50 United States and D.C.?

(*Please report R&D performed for each source of funding.*)

2003								
Federal funds (1)			Company and other (2)			Total (Columns (1)+(2)) (3)		
\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.	\$ Bil.	Mil.	Thou.
354			355			356		

If not shown, please enter your 11-digit Identification Number (ID) from the mailing address.

7 What was the cost of your company-funded R&D performed outside of the 50 United States and D.C. by your subsidiaries, affiliates, or branches, or by other organizations in which your company owns the following percentages of voting stock or equivalent interest?

2003		
Company and other (2)		
\$ Bil.	Mil.	Thou.

- A. 0% 363
- B. More than 0% but less than 10% 364
- C. 10% - 50% 365
- D. More than 50% 366
- E. **TOTAL** (Sum lines A through D.) 369

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8-9 Not Applicable.

10 A. What was the cost relating to total R&D performed within your company in the 50 United States and D.C. for the following types of technologies?

Key code	2003 (1)		
	\$ Bil.	Mil.	Thou.
7			
11			
21			
31			
41			
51			

- 1. Biotechnology (The use of scientific and engineering data and techniques for the study and solution of problems concerning living organisms.)
- 2. Software development (The formulation of programs, applications, routines, etc., for computers, excluding those used exclusively for internal company operations.)
- 3. Materials synthesis and processing (The use of scientific and engineering data and techniques for the formulation and manipulation of new materials.)
- 4. Other areas
- 5. **TOTAL** (Sum lines 1 through 4. The sum should equal the total reported in **4**, line D, column (3).)

B. What percentage of the R&D costs reported in **10A** are attributable to nanotechnology for each of the following types of technologies? (Nanotechnology is defined as the creation and utilization of materials, devices, and systems through the control of matter on the nanometer scale, at the level of atoms and molecules in the range of 1 to 100 nanometers.)

Key code	2003 (2)	
	Whole percents	
7		
11		%
21		%
31		%
41		%

- 1. Biotechnology (The use of scientific and engineering data and techniques for the study and solution of problems concerning living organisms.)
- 2. Software development (The formulation of programs, applications, routines, etc., for computers, excluding those used exclusively for internal company operations.)
- 3. Materials synthesis and process (The use of scientific and engineering data and techniques for the formulation and manipulation of new materials.)
- 4. Other areas

11-13 Not Applicable.

14 A. Do the R&D expenditures reported on this form cover the entire fully consolidated enterprise including all subsidiaries, affiliates, or branches located in the 50 United States and D.C.?

1301 Yes No - Please explain in "REMARKS" below.

B. Was this company owned or controlled by another company on December 31, 2003?

001 Yes - Give date acquired at right AND enter new owner name and mailing address below No

Month	Year

0018

6030 Name of new owner or operator			
6031 Mailing address (Number and street, P.O. box, etc.)			
6032 City, town, village, etc.	6033 State	6034 ZIP Code	

CHECK ITEM

Please complete the check list below BEFORE returning this form. By checking these items you will reduce the likelihood of our calling you to resolve an error or inconsistency.

In **2A:**

1. Sales is reported in **thousands** of dollars

In **2B:**

2. Your answer describes the number of **employees**, NOT company payroll

In **4:**

3. Verify that **Federal funds** (column (1)) plus **Company funds** (column (2)) equals **Total funds** (column (3)) for:

Basic research (**4A**), applied research (**4B**), development(**4C**), total research and development (**4D**)

Yes	No

IF THE ANSWER TO ANY OF THE ABOVE CHECKS IS "NO," PLEASE MAKE THE NECESSARY CORRECTIONS IN THE APPROPRIATE ITEM(S) OR PROVIDE AN EXPLANATION IN THE "REMARKS" SECTION.

15 CONTACT INFORMATION

Is the time period covered by this report a calendar year?

0078 Yes 0079 No - Enter time period covered →

FROM 0070	Month	Year	TO 0071	Month	Year

0072 Name of person to contact regarding this report				0073 Title				
Telephone 0074		Area code	Number	Extension	Fax 0075			
0076 Internet e-mail address					Date completed 0069	Month	Day	Year

REMARKS (Please use this space for any explanations that may help us in understanding your reported data.)

**INFORMATION COPY
DO NOT USE TO REPORT**

Thank you for completing your 2003 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT form.

PLEASE PHOTOCOPY THIS FORM FOR YOUR RECORDS AND RETURN THE ORIGINAL.

2003 Survey of Industrial Research and Development Form RD-1A Instructions

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2003 Survey of Industrial Research and Development

Form RD-1A

General Instructions

Changes from 2002 to 2003 R&D survey year

Some item headings and numbers have changed. The five mandatory items are now as follows:

- Question 2, line A
- Question 2, line B
- Question 4D, column 1
- Question 4D, column 3

How this information is used

Information about corporate research and development (R&D) activities is important in assessing our nation's scientific and technological resources. Your survey answers help us to provide national data on industrial R&D. This information is not available from any other source. Your participation is appreciated so that we can produce timely and comprehensive data.

Who fills out this survey?

U.S. publicly traded and privately owned, nonfarm business firms.

This survey does **not** include:

- Operations owned by Federal, state, or local governments
- Nonprofit organizations
- Trust or pension plans performing only investments

If you received this form in error, please explain in the Remarks section on page 4 of the survey form and return the form.

Which company operations should you include in your survey answers?

Report all domestic operations of your **entire consolidated domestic enterprise**, including all U.S. subsidiaries, affiliates, and branches.

Report all parts of the company located in the 50 United States and the District of Columbia (D.C.), except where indicated differently.

For holding companies, report for all U.S. subsidiaries, affiliates, and branches under the ownership and control of the holding company.

EXCEPTION: If you report separately for a component of this company based upon an arrangement with the Census Bureau, please continue to do so.

Reporting period for your survey answers

Please provide calendar year 2003 information, if possible. If not, please use your fiscal year ending between September 2003 and March 2004

How to report tax incentives for R&D

The Federal government and many states offer incentives for research and development activity. For purposes of this survey, please report your total R&D expenditures regardless of any tax incentives.

For further information on the Federal research tax credit please go to:

<http://www.irs.gov/businesses/>

For further information on state tax incentives, please contact the Comptroller of the Treasury in your state.

To request more time to complete your form or additional copies of the form

Please provide your 11-digit identification number (ID) as printed on the form above your address when you contact us.

For more time, call the Census Touchtone Data Entry System: 1-800-851-2014.

For official copies of the form, call (812) 218-3331.

OR

Write: U.S. Census Bureau
1201 East 10th Street
Jeffersonville, IN 47132-0001

To obtain a sample copy of the form, please visit the following web site. However, that sample copy cannot be used to submit your survey response because it lacks the appropriate labeling.

<http://help.econ.census.gov/econhelp/rd/>

For answers to your questions regarding this form

Write:

U.S. Census Bureau, Manufacturing and Construction Division
ATTN: Special Studies Branch
Room 2135/4
Washington, DC 20233-6900

Phone:

1-800-851-2014 (option "0")

Use our web site at <http://help.econ.census.gov/econhelp/rd/>

- Submit e-mail via our secure server to encrypt your message and to keep your survey participation confidential
- See answers to frequently asked questions

Electronic alternative for reporting

An electronic questionnaire may be used to report your responses. This electronic alternative potentially saves time for you and helps us to reduce processing costs. If you use the electronic alternative, please do **not** mail in the paper form. For questions about installing or using the electronic questionnaire, please call the Electronic Reporting Staff at 800-838-2640.

System Requirements

1. Microsoft Windows 98 or higher.
2. Microsoft Internet Explorer or Netscape Navigator 4.0 or above (128-bit encryption).
3. If you set your screen display for 16-bit color or higher, the forms will be easier to read. The forms are harder to read with 256-color display.

Have your username (UID) and password (PW) handy. ***The username and password are case sensitive.***

1. Go to the following Business Help Site at: www.census.gov/econhelp/rd
2. Click on Electronic Reporting
3. Follow the instructions for downloading software.

Transmitting your data

You may transmit you completed data to the Census Bureau electronically via Internet, or by mail.

Burden hour estimate

Public reporting burden for this collection of information is estimated to average 1 hour per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimates or any other aspects of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
National Science Foundation
4201 Wilson Boulevard, Room 485
Arlington, VA 22230.

Survey Definitions of R&D

R&D includes the following:

- the planned, systematic pursuit of new knowledge or understanding toward general application (basic research);
- the acquisition of knowledge or understanding to meet a specific, recognized need (applied research); and
- the application of knowledge or understanding toward the production or improvement of a product, service, process, or method (development).

This survey covers industrial R&D performed by people who are

- 1) trained—either formally or by experience—in engineering or in the physical, biological, mathematical, statistical, or computer sciences, and
- 2) employed by a publicly or privately owned firm engaged in for-profit activity in the 50 U.S. states or D.C. (This also includes R&D they may perform **outside** of the 50 states and D.C.)

This survey specifically **excludes** quality control, routine product testing, market research, sales promotion, sales service, and other nontechnological activities; routine technical services; and research in the social sciences or psychology.

This survey defines basic research, applied research, and development as follows:

Basic research is the pursuit of new scientific knowledge or understanding that does not have specific immediate commercial objectives, although it may be in fields of present or potential commercial interest.

Applied research applies the findings of basic research or other existing knowledge toward discovering new scientific knowledge that has specific commercial objectives with respect to new products, services, processes, or methods.

Development is the systematic use of the knowledge or understanding gained from research or practical experience directed toward the production or significant improvement of useful products, services, processes, or methods, including the design and development of prototypes, materials, devices, and systems.

Survey Definitions of R&D (continued)

Types of R&D activities to consider for this survey

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none"> • Activities that incorporate: <ul style="list-style-type: none"> – Basic and applied research in the sciences and engineering – Design and development of new products and processes – Enhancement of existing products and processes • Activities carried on by persons trained, either formally or by experience, in: <ul style="list-style-type: none"> – Biological sciences (e.g., medicine) – Computer science – Engineering – Mathematical and statistical sciences – Physical sciences (e.g., chemistry and physics) • Activities that take place in: <ul style="list-style-type: none"> – Separate R&D organizational units of the company – Company laboratories – Technical groups not part of an R&D organization. 	<ul style="list-style-type: none"> • R&D from acquired companies prior to acquisition (in-process R&D) • Amortization above the actual cost of property and equipment related to your R&D activities • Test and evaluation once a prototype becomes a production model • Routine product testing • Geological and geophysical exploration activities • Technical services such as: <ul style="list-style-type: none"> – Quality and quantity control – Technical plant sanitation control – Troubleshooting in connection with breakdowns in full-scale production • Advertising programs to promote or demonstrate new products or processes • Assistance in preparation of speeches and publications for persons not engaged in R&D • Social science R&D including: <ul style="list-style-type: none"> – Personnel R&D – Economic R&D – Artificial intelligence and expert systems R&D – Consumer, market, and opinion R&D – Engineering psychology R&D – Management and organization R&D – Actuarial and demographic R&D – Educational processes and applications R&D – R&D in law

Question-by-Question Instructions

Question 1

Question 1 asks whether your company conducted R&D in 2003.

If “yes,” your company conducted R&D in 2003, continue to fill out the rest of the survey form.

If “no,” your company did not conduct R&D in 2003, either call our Touchtone service to report this (1-800-851-2014) **or** mark “no” and mail the form.

If you have questions, please call the R&D Survey staff at 1-800-851-2014 (option “0”) to determine whether you are required to complete the form.

Question 2A

Question 2A covers domestic company sales. Report only the parts of your company located **within** the 50 United States or D.C.

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none">• Sales, operating receipts, and revenues from all domestic operations of the company, net of returns and allowances• Receipts from sales of products and services provided to other companies, individuals, U.S. Government agencies, and foreign countries• Net selling value of shipments, f.o.b. plant, after discounts and allowances minus freight charges and excise taxes• Revenue from investments, rents, and royalties only if it is the principal business of the company• Interest, dividends, commissions, and rental income as part of revenues only if you are a finance, insurance, or real estate company• Value of assets sold under a capital lease agreement• Export transfers to your foreign subsidiaries, affiliates, and branches.	<ul style="list-style-type: none">• Sales and other taxes collected and paid directly to government taxing agencies• Domestic intracompany transfers• Receipts from sale of products and services provided by your foreign subsidiaries, affiliates, and branches.• Receipts from sale of products and services provided by your subsidiaries, affiliates, and branches in Puerto Rico and other U.S. territories outside the 50 United States and D.C.• Income from interest, dividends, and commissions (Exception: Companies in the finance, insurance, and real estate industries)• Other nonoperating income (e.g., royalties)

Question 2B

Question 2B covers domestic company employment. Report only the parts of your company located **within** the 50 states or D.C.

INCLUDE:

- Full- and part-time employees of the company as defined on Treasury Form 941, Employer's Quarterly Federal Tax Return, and Circular E, Employer's Tax Guide, if filed for the entire company
- Number of employees in all activities **within** the 50 United States or D.C. during the pay period that includes March 12, 2003
- Persons on paid sick leave, paid holidays, and paid vacations during the pay period that includes March 12, 2003.

Question 3

Question 3 covers the scientists and engineers who are employees of your company and perform R&D activities. It asks for the number of full-time equivalent (FTE) scientists and engineers who work on your company's R&D **within** the 50 United States or D.C.

There are two steps to calculate the number of FTEs for R&D scientists and engineers:

1. For company laboratories performing only research and development, count the number of scientists and engineers employed in January 2004.
2. For employees whose activities are not solely devoted to R&D, use the proportion of their time that is devoted to R&D to compute the number of full-time equivalent R&D scientists and engineers. For example, if a company had 60 scientists and engineers in January 2004 and one-fourth of their time was charged to R&D projects, then that company would have 15 full-time equivalent R&D scientists and engineers. Add these full-time equivalents to the count from the previous step.

INCLUDE:

- All persons engaged in scientific or engineering work at a level that requires knowledge of physical or life sciences or engineering or mathematics
- Persons with experience equivalent to completion of a 4-year college course with majors in these fields, regardless of whether they actually hold degrees in the fields

Question 4

Question 4 covers the R&D that is performed both (1) **within** your company and (2) **within** the 50 United States or D.C.

How to decide which expenditures to include as R&D costs

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none">• Wages, salaries, and related costs• Materials and supplies consumed• R&D depreciation• Cost of computer software used in R&D activities• Utilities, such as telephone, telex, electricity, water, and gas• Travel costs and professional dues• Property taxes and other taxes (except income taxes) incurred on account of the R&D organization or the facilities they use• Insurance expenses• Maintenance and repair, including maintenance of buildings and grounds• Company overhead including: personnel, accounting, procurement and inventory, and salaries of research executives not on the payroll of the R&D organization	<ul style="list-style-type: none">• R&D from acquired companies prior to acquisition (in-process R&D)• Capital expenditures• Test and evaluation once a prototype becomes a production model• Patent expenses• Income taxes and interest

Question 4 (continued)

How to decide which category of R&D

<p>1. Basic research</p>	<p>Projects that pursue new scientific knowledge or understanding that does not have specific immediate commercial objectives, although it may be in fields of present or potential commercial interest</p>	
<p>2. Applied research</p>	<p>Projects that apply the findings of basic research or other existing knowledge toward discovering new scientific knowledge that has specific commercial objectives with respect to new products, services, processes, or methods</p>	
<p>3. Development</p>	<p>Projects that are directed toward the systematic use of the knowledge or understanding gained from research or practical experience directed toward the production or significant improvement of useful products, services, processes, or methods, including the design and development of prototypes, materials, devices, and systems</p>	
	<p>INCLUDE:</p>	<p>EXCLUDE:</p>
	<ul style="list-style-type: none"> • Expenditures for designing and conducting clinical trials of drugs, pharmaceuticals, or other products that have not been marketed • Software development <ul style="list-style-type: none"> – Designing and/or adapting software if the application has commercial value (exclude software development for internal use) – Beta version of software being developed that has potential commercial application – Design and operation of pilot plants and semiwork plants • Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements • Design, construction, and testing of prototypes and models including test models for defense contracts • Designs for special manufacturing equipment and tools • Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals 	<ul style="list-style-type: none"> • Software development intended for <i>within</i> company use only • Routine technical services to customers • Tool making and tool tryout • Production of detailed construction drawings and manufacturing blueprints

Question 4 (continued)

How to decide which category to use for sources of R&D funding

Source of R&D	INCLUDE:	EXCLUDE:
Federal funds	<ul style="list-style-type: none"> • Federally funded R&D performed within the company. Include only the amount of work done on Federal R&D contracts or subcontracts in the current year. • R&D portion of procurement contracts or subcontracts 	<ul style="list-style-type: none"> • Federally funded R&D contracted or subcontracted to or otherwise performed by others outside of your company. (Report such funds in Question 6, line A.) • Expenditures for independent research and development (IR&D). (Report in column 2, Company funds.)
Company and other	<ul style="list-style-type: none"> • R&D from company and other nonfederal sources that is performed within the company. <p>NOTE that “company and other funds” and “company funded” are used interchangeably in the Form RD-1A.</p> <ul style="list-style-type: none"> • R&D your company performs under contracts you have with non-Federal sources • Costs for independent research and development (IR&D). We define IR&D funds as R&D performed by the company for which you anticipate reimbursement by the government through indirect charges for the purchase of products or services. Qualified projects usually have potential interest to the Department of Defense or other agencies of the Federal government. These IR&D funds are excluded from Federal funds received for federally sponsored research and development contracts. 	<ul style="list-style-type: none"> • R&D from nonfederal sources that is contracted to or otherwise performed by others outside of your company (Report such funds in Question 6, line A.)

Question 5

Question 5 asks for an estimate or projection of the cost of R&D your company expects to perform in 2004 in the 50 United States or D.C. that will be funded by company and other non-Federal sources.

Question 6

Question 6 covers the R&D that was **both** performed for your company (1) **by others outside your company** such as contractors, and (2) **within** the 50 United States or D.C.

Include payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, educational institutions, or other organizations.

Question 7

Question 7 covers R&D performed **outside** the 50 United States and D.C. including R&D performed in Puerto Rico.

For Question 7, **line 1**, report payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, educational institutions, or other organizations.

Question 8

Question 8 is not applicable to this form.

Question 9

Question 9 is not applicable to this form.

Question 10A

Question 10A covers R&D by selected technology area.

A. Biotechnology

Definition of biotechnology for this survey:

Biotechnology is the application of science and technology to living organisms, as well as parts, products, and models thereof, to alter living or nonliving materials for the production of knowledge, goods, and services.

INCLUDE:	
<ul style="list-style-type: none"> • DNA technologies such as: <ul style="list-style-type: none"> – Genetics – Pharmacogenetics – Gene probes – DNA sequencing/synthesis/simplification – Genetic engineering • Protein and molecular technologies such as: <ul style="list-style-type: none"> – Protein/peptide sequencing/synthesis – Lipid/protein glycoengineering – Proteomics – Hormones – Growth factors – Cell receptors/signaling/pheromonics • Cell and tissue culture and engineering including: <ul style="list-style-type: none"> – Cell/tissue culture – Tissue engineering – Hybridization – Cellular fusion – Vaccine/immune stimulants – Embryo manipulation 	<ul style="list-style-type: none"> • Process biotechnologies such as: <ul style="list-style-type: none"> – Bioreactors – Fermentation – Bioprocessing – Bioleaching – Biopulping – Biobleaching – Biodesulphurization – Bioremediation – Biofiltration • Subcellular organism research including: <ul style="list-style-type: none"> – Gene therapy – Viral vectors • Other biotechnology areas such as: <ul style="list-style-type: none"> – Bioinformatics – Nanobiotechnologies

B. Software development

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none"> • Application development tools and environments • Applications software • Computer-aided design tools and methods • Computer systems software 	<ul style="list-style-type: none"> • Software programming or engineering used exclusively for internal company operations such as financial management or human resources

Question 10A (continued)

C. Materials synthesis and processing

Formulation and manipulation of new or improved materials using the data and techniques of science and engineering

INCLUDE:
<ul style="list-style-type: none">• Advanced structural materials in the industrial machinery, medical, building, and construction industries• Higher performance semiconductors and photonic devices in the semiconductor industry• Ceramics and alloys designed to withstand extreme temperatures and stresses for use in engine and structural parts in the aerospace and automotive industries• Composite materials for use in sporting goods• New and significantly improved synthesis and production techniques for existing materials

D. Other areas

Report the remainder of R&D costs so that the total for this question matches Question 4, line D, column 3.

Question 10B

Question 10B asks for the nanotechnology proportion of the R&D expenditures provided in Question 10A.

For example, if about a fourth of your biotechnology R&D expenditures was devoted to nanotechnology projects, report 25% in Question 10B.

Nanotechnology is the creation and utilization of materials, devices, and systems through the control of matter on the nanometer-length scale, that is, at the level of atoms and molecules in the range of 1 to 100 nanometers.

INCLUDE:
Materials and systems that exhibit novel and significantly improved physical, chemical, and biological properties; phenomena; and processes because of their size

Question 11

Question 11 is not applicable to this form.

Question 12

Question 12 is not applicable to this form.

Question 13

Question 13 is not applicable to this form.

Question 14A

Question 14A asks for information on whether your survey responses cover your entire organization.

Question 14B

Question 14B asks about your company's ownership as of December 31, 2003.

Question 15

Question 15 asks for information on the time period that your survey responses cover. Question 15 also provides space for your contact information. Please give the name and telephone number of the person in your company to contact regarding this report.

Remarks

The Remarks section provides space for your comments and explanations.

WARNING CONCERNING ELECTRONIC MAIL: The Internet is not a secure means of transmitting information unless it is encrypted. If you choose to communicate with the Census Bureau via electronic mail, the Census Bureau cannot guarantee the privacy of the information while transmitted, but will safeguard it in accordance with Title 13. Be advised that making inquiries regarding this survey via electronic mail may divulge your participation in this survey.

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