



## Research and Development in Industry: 2004

Detailed Statistical Tables | NSF 09-301 | December 2008

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### General Notes

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#### Introduction

This report is the second of two publications containing results from the 2004 Survey of Industrial Research and Development. The first publication, an InfoBrief (NSF 2006a) 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 2004 and on R&D personnel in January 2005. 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 1994, and a table classified by state that contains statistics for selected years since 1991. 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 questionnaires, 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/seind08/>) 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.

### **Industry Reclassification**

For the 2004 survey, some companies' electronically assigned industry codes were manually examined and changed. The result was that most of the R&D previously attributed to NAICS 42 and 55 industries was redistributed. Statistics resulting from the old and new industry classification methods are in tables A-9 and A-10. For detailed information, see Table Notes, Industrial Classification, and NSF 2007. Due to the reclassification, tables that traditionally provided data by industry for one or more historical years now only show data for the study year (2004).

### **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 1991–2003 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 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 (2, 25–27). Gross domestic product (GDP) implicit price deflators were used to convert current to constant dollars.

### 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 are included in tables 14 and 15 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 29–31, statistics for 1998–2004 are flagged with an E if more than 50% 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, most historical tables classified by industry contained the current survey's statistics plus statistics for 10 previous years. Because of the conversion to the North American Industry Classification System (NAICS) and a change in the way industry codes are assigned during statistical processing (see below), tables that traditionally provided data by industry for one or more historical years now only show data for the study year (2004).

### Industry Classification

During initial statistical processing, one North American Industry Classification System (NAICS) code was assigned to each company. Multiestablishment 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 1999–2004 surveys:

Manufacturing industries	31, 32, 33
Food	311
Beverage and tobacco products	312
Textiles, apparel, and leather	313–316
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	other 325
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	other 334
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	other 336
Furniture and related products	337
Miscellaneous manufacturing	339
Medical equipment and supplies	3391
Other miscellaneous manufacturing	other 339
Other manufacturing	other 31, other 32, other 33
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
Wholesale Trade	42
Retail Trade	44, 45
Transportation and warehousing	48, 49
Information	51
Publishing	511
Newspaper, periodical, book, and database	5111
Software	5112
Broadcasting and telecommunications	513
Telecommunications	5133
Other broadcasting and telecommunications	other 513
Other information	other 51
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	other 54

Health care services	621, 622, 623
Other nonmanufacturing	55, 56, 61, 624, 71, 72, 81

For the 2004 survey, some companies' electronically assigned industry codes were manually examined and changed. Beginning in the late 1990s, increasingly large amounts of R&D were attributed to the wholesale trade industries, resulting from the payroll-based methodology used to assign industry classifications and the change from the SIC system to NAICS in 1999. Such classification artifacts were of particular concern for companies traditionally thought of as pharmaceutical or computer-manufacturing firms. As these firms increasingly marketed their own products and more of their payroll involved employees in selling and distribution activities, the potential for the companies to be classified among the wholesale trade industries increased. To enhance the relevance and usefulness of the industrial R&D statistics, NSF evaluated ways to ameliorate the negative effects of the industry classification methodology and change in classification systems. Beginning in 2004, in addition to firms originally assigned NAICS codes among the wholesale trade (NAICS 42) industries, firms in the information services (NAICS 51); professional, scientific, and technical services (NAICS 54); and management of companies and enterprises (NAICS 55) industries using the payroll-based methodology were manually reviewed by NSF and Census. These firms were reclassified based on primary R&D activity, which in most cases corresponded to their primary products or service activities. The result was that most of the R&D previously attributed to NAICS 42 and 55 industries was redistributed. Statistics resulting from the old and new industry classification methods are in tables A-9 and A-10. For detailed information, see NSF 2007.

### **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 for those companies not manually reviewed as described in Industry Classification above. For companies not manually reviewed, if the largest portion of a company's payroll shifts to an activity other than an R&D-related activity, 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. This capture and weighting adjustment process can produce large year-to-year changes in the statistical series twice when the company is first captured and data are overstated by the application of a large weight and then when the weight is reduced. This process affects lower level statistics (i.e., detailed industry and company size categories) the most because at the aggregate levels (i.e., all industries, manufacturing, nonmanufacturing) large year-to-year increases in some industries or in some company size categories are offset by large decreases in others.

### **Nonresponse and Imputation**

For various reasons, some firms did not choose to return the survey questionnaire (unit nonresponse) or returned it with one or more blank items (item nonresponse). (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% 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 a numerical value is accumulated from the statistical file to estimate a money amount, number of companies, number of employees, or number of R&D scientists and engineers, and the accumulated sum equals zero, the cell is filled with 0 or 0.0. When a percentage is calculated from the statistical file and the percentage equals zero, the cell is filled with 0.0.

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### 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 table 12. More comprehensive data on R&D performed at universities and colleges are collected in NSF's annual 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.



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## Data Tables

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TABLE 1. Funds for industrial R&amp;D, sales, and employment for companies performing industrial R&amp;D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	All R&D	Federal R&D	Company and other R&D	Domestic net sales	R&D scientists and engineers <sup>a</sup>	Domestic employment
							(March)
		\$millions			Thousands		
All industries	21–23, 31–33, 42, 44–81	208,301	20,266	188,035	5,601,729	1,111.3	14,820
Manufacturing industries	31–33	147,288	15,401	131,887	3,871,294	717.0	9,399
Food	311	2,254	5	2,249	347,396	11.7	876
Beverage and tobacco products	312	555 i	0	555 i	43,292	4.7 i	100
Textiles, apparel, and leather	313–16	570	3	568	48,859	5.8	256
Wood products	321	D	D	152	35,066	D	151
Paper, printing, and support activities	322, 323	D	D	2,308	155,801	D	475
Petroleum and coal products	324	1,603	9	1,595	408,956	D	169
Chemicals	325	D	D	39,070	595,292	118.6	1,073
Basic chemicals	3251	2,393	80	2,312	109,200	10.6	179
Resin, synthetic rubber, fibers, and filament	3252	2,096	16	2,080	67,610	9.4	100
Pharmaceuticals and medicines	3254	31,477	33	31,444	315,180	79.9	469
Other chemicals	other 325	D	D	3,234	103,302	18.6	325
Plastics and rubber products	326	D	D	1,879	120,670	14.1	429
Nonmetallic mineral products	327	787	5	783	43,155	6.5 i	179
Primary metals	331	727	21	705	101,868	4.9	274
Fabricated metal products	332	1,512	47	1,465	102,935	15.7	482
Machinery	333	6,579	105	6,473	178,618	62.6	665
Computer and electronic products	334	48,296	7,605	40,691	506,103	273.3	1,373
Computers and peripheral equipment	3341	5,734	27	5,707	122,494	45.1	247
Communications equipment	3342	D	D	8,433	88,381	49.9	210
Semiconductor and other electronic components	3344	D	D	17,524	162,398	97.4	411
Navigational, measuring, electromedical, and control instruments	3345	15,214	7,332	7,882	110,416	74.6 i	450
Other computer and electronic products	other 334	1,148	3	1,144	22,415	6.2	55
Electrical equipment, appliances, and components	335	2,664	42	2,622	95,715	19.4	345
Transportation equipment	336	D	D	26,019	946,474	134.1	1,956
Motor vehicles, trailers, and parts	3361–63	15,677	67	15,610	643,079	D	1,039
Aerospace products and parts	3364	13,086	3,862	9,224	228,018	37.9	622
Other transportation equipment	other 336	D	D	1,185	75,377	D	295
Furniture and related products	337	408	2	406	51,578	2.9	241
Miscellaneous manufacturing	339	4,388	39	4,348	89,515	21.8	355
Medical equipment and supplies	3391	3,343	30	3,313	56,713	13.9	211
Other miscellaneous manufacturing	other 339	1,045	10	1,035	32,802	7.9	143

TABLE 1. Funds for industrial R&amp;D, sales, and employment for companies performing industrial R&amp;D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	All R&D	Federal R&D	Company and other R&D	Domestic net sales	R&D scientists and engineers <sup>a</sup>	Domestic employment
							(March)
		\$millions				Thousands	
Nonmanufacturing industries	21–23, 42, 44–81	61,013	4,865	56,148	1,730,435	394.3	5,421
Mining, extraction, and support activities	21	D	D	714	29,753	D	97
Utilities	22	202	26	176	170,637	0.8	255
Construction	23	1,481	15	1,466	56,118	D	160
Wholesale trade	42	D	D	1,540	68,879	15.5	155
Retail trade	44, 45	1,596	0	1,596	191,632	15.3	603
Transportation and warehousing	48, 49	D	D	347	74,235	D	597
Information	51	22,593	307	22,285	445,652	131.5	1,233
Publishing	511	D	D	17,273	90,234	98.5	343
Newspaper, periodical, book, and database	5111	763	0	763	19,230	4.8	105
Software	5112	D	D	16,510	71,004	93.7	238
Broadcasting and telecommunications	513	2,215	0	2,215	291,646	10.9	697 i
Telecommunications	5133	2,052	0	2,052	D	10.4	D
Other broadcasting and telecommunications	other 513	163	0	163	D	*	D
Other information	other 51	D	D	2,797	63,772	22.0	192
Finance, insurance, and real estate	52, 53	1,708	0	1,708	440,122	22.3	857
Professional, scientific, and technical services	54	28,709	4,464	24,245	185,812	174.1	957
Architectural, engineering, and related services	5413	4,265	1,970	2,295	34,885	41.4	157
Computer systems design and related services	5415	11,575	378	11,197	95,541	74.5	485
Scientific R&D services	5417	11,355	1,972	9,383	31,729	44.7	163
Other professional, scientific, and technical services	other 54	1,514	144	1,370	23,658	13.5	152
Health care services	621–23	500	5	495	27,638	6.0 i	160
Other nonmanufacturing <sup>b</sup>	55, 56, 61, 624, 71, 72, 81	1,595	19	1,576	39,957	10.9	348



TABLE 1. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	All R&D	Federal R&D	Company and other R&D	Domestic net sales	R&D scientists and engineers <sup>a</sup>	Domestic employment
							(March)
		\$millions			Thousands		
Company size (employees)							
All companies	-	208,301	20,266	188,035	5,601,729	1,111.3	14,820
5-24	-	6,295	685	5,610	111,868 i	66.2	240
25-49	-	5,906	612	5,293	46,138	43.4	236
50-99	-	6,456	608	5,849	101,559	44.1	356
100-249	-	11,045	1,058	9,987	180,436	73.1	635
250-499	-	8,380	547	7,832	152,243	52.3	545
500-999	-	10,821	762	10,060	217,014	59.3	610
1,000-4,999	-	31,475	493	30,982	828,300	173.8	2,325
5,000-9,999	-	18,191	2,018	16,173	571,170	96.6	1,373
10,000-24,999	-	31,208	1,561	29,647	993,497	178.9	2,243
25,000 or more	-	78,523	11,923	66,600	2,399,505	323.6	6,258

\* = amount < 500; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Data recorded in January represent employment for the previous year.

<sup>b</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 2. Industrial R&amp;D performed in the United States, by source of funds: 1953–2004

(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
1999	184,129	188,136	22,535	23,025	161,594	165,111

TABLE 2. Industrial R&D performed in the United States, by source of funds: 1953–2004  
(Millions of current and constant 2000 dollars)

Year	All sources		Federal		Company and other	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
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	186,072	16,401	15,741	177,467	170,330
2003	200,724 r	188,828 r	17,798 r	16,743 r	182,926 r	172,085 r
2004	208,301	190,927	20,266	18,576	188,035	172,351

r = data significantly revised, replaces previously published data.

NOTES: Beginning with 2001, all and federally funded industrial R&D exclude 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 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. Excludes 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 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: 2004.

TABLE 3. Funds for and companies performing industrial R&D in the United States, by industry and company size, by total R&D program size: 2004

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	41,029	208,301	22,354	1,391	9,795	4,732	7,166	20,577	1,462	41,307	252	140,295
Manufacturing industries	31-33	18,818	147,288	10,403	638	4,667	2,209	2,757	8,368	801	24,595	190	111,479
Food	311	973	2,254	630	38	216	112	98	267	25	802	5	1,036
Beverage and tobacco products	312	59	555 i	39	1	5	3	7	D	6	121	1	D
Textiles, apparel, and leather	313-16	498	570	278	D	162	62	48	159	9	164	1	D
Wood products	321	167	D	129	D	25	10	9	25	4	113	0	0
Paper, printing, and support activities	322, 323	442	D	267	D	114	46	44	143	14	422	3	1,692
Petroleum and coal products	324	98	1,603	32	1	51	19	7	29	3	125	5	1,429
Chemicals	325	2,026	D	1,040	D	465	222	295	930	176	6,641	50	31,496
Basic chemicals	3251	211	2,393	61	5	54	27	51	162	39	1,470	6	730
Resin, synthetic rubber, fibers, and filament	3252	100	2,096	26	2	34	15	26	81	11	240	3	1,759
Pharmaceuticals and medicines	3254	394	31,477	82	8	72	40	114	391	89	3,517	38	27,521
Other chemicals	other 325	1,320	D	872	D	305	140	104	297	37	1,414	3	1,487
Plastics and rubber products	326	1,184	D	724	D	269	129	159	520	28	653	3	561
Nonmetallic mineral products	327	386	787	287	10	57	27	29	D	11	399	1	D
Primary metals	331	534	727	319	13	57	D	142	240	15	255	1	D
Fabricated metal products	332	2,116	1,512	1,458	D	442	182	195	464	20	508	1	D
Machinery	333	3,235	6,579	1,972	106	832	415	347	983	73	1,757	11	3,317
Computer and electronic products	334	3,226	48,296	1,010	71	1,154	561	742	2,522	252	7,998	66	37,144
Computers and peripheral equipment	3341	430	5,734	77	11	223	150	84	305	34	1,130	11	4,139
Communications equipment	3342	548	D	170	D	119	54	185	690	64	1,909	11	5,894
Semiconductor and other electronic components	3344	876	D	361	D	231	103	180	611	84	2,810	21	14,098
Navigational, measuring, electromedical, and control instruments	3345	1,246	15,214	360	26	546	238	259	803	62	1,866	19	12,281
Other computer and electronic products	other 334	125	1,148	43	3	36	17	35	113	8	283	4	731
Electrical equipment, appliances, and components	335	826	2,664	462	45	158	81	154	462	48	1,335	4	741
Transportation equipment	336	927	D	437	D	224	101	176	605	60	1,856	29	30,599
Motor vehicles, trailers, and parts	3361-63	564	15,677	242	16	144	67	118	413	44	1,364	16	13,816
Aerospace products and parts	3364	160	13,086	69	5	36	13	37	109	9	295	9	12,664
Other transportation equipment	other 336	203	D	126	D	44	21	21	82	7	197	4	4,119
Furniture and related products	337	514	408	376	D	93	D	34	D	11	258	0	0
Miscellaneous manufacturing	339	1,610	4,388	942	59	343	162	270	809	46	1,189	9	2,169 i
Medical equipment and supplies	3391	661	3,343	254	16	218	104	147	499	37	921	6	1,802 i
Other miscellaneous manufacturing	other 339	949	1,045	689	42	125	57	123	310	9	268	3	367

TABLE 3. Funds for and companies performing industrial R&D in the United States, by industry and company size, by total R&D program size: 2004

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	22,210	61,013	11,951	753	5,129	2,523	4,408	12,208	661	16,713	62	28,816
Mining, extraction, and support activities	21	91	D	63	2	7	4	12	D	7	137	2	D
Utilities	22	67	202	20	2	22	9	21	79	5	113	0	0
Construction	23	1,057	1,481	1,028	D	10	5	10	41	8	D	1	D
Wholesale trade	42	3,459	D	2,344	D	797	327	298	791	19	282	0	0
Retail trade	44, 45	1,579	1,596	773	24	19	11	772	1,137	14	423	0	0
Transportation and warehousing	48, 49	270	D	2	D	255	D	10	D	2	D	1	D
Information	51	2,206	22,593	676	57	715	378	653	2,059	132	3,864	30	16,235
Publishing	511	1,301	D	241	D	485	248	459	1,417	95	2,726	21	12,916
Newspaper, periodical, book, and database	5111	61	763	6	D	35	D	11	42	7	201	2	D
Software	5112	1,240	D	234	26	451	D	448	1,374	88	2,525	19	D
Broadcasting and telecommunications	513	224	2,215	8	*	144	97	51	178	18	677	3	1,263
Telecommunications	5133	214	2,052	6	D	142	D	50	D	13	518	3	1,263
Other broadcasting and telecommunications	other 513	10	163	2	D	2	D	1	D	5	159	0	0
Other information	other 51	681	D	427	D	86	33	143	465	19	460	6	2,056
Finance, insurance, and real estate	52, 53	824	1,708	253	3	513	378	27	D	30	1,067	1	D
Professional, scientific, and technical services	54	9,845	28,709	4,687	316	2,431	1,179	2,281	7,402	422	9,971	24	9,842
Architectural, engineering, and related services	5413	2,107	4,265	1,120	D	434	167	513	1,593	34	1,006	7	D
Computer systems design and related services	5415	3,460	11,575	1,256	130	1,364	621	726	2,141	106	2,297	8	6,385
Scientific R&D services	5417	1,685	11,355	283	26	370	214	758	3,033	268	6,335	7	1,747 i
Other professional, scientific, and technical services	other 54	2,592	1,514	2,028	D	264	176	285	635	14	333	2	D
Health care services	621-23	1,581	500	1,280	D	273	130	24	58	4	88	1	D
Other nonmanufacturing <sup>a</sup>	55-56, 61, 624, 71-72, 81	1,232	1,595	826	15	87	D	300	446	17	483	2	D

TABLE 3. Funds for and companies performing industrial R&D in the United States, by industry and company size, by total R&D program size: 2004

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000–\$999,999		\$1 million–\$9.9 million		\$10 million–\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)													
All companies	-	41,029	208,301	22,354	1,391	9,795	4,732	7,166	20,577	1,462	41,307	252	140,295
5–24	-	21,303	6,295	15,579	927	3,691	1,671	2,030	3,638	3	60 i	0	0
25–49	-	6,716	5,906	3,487	183	1,923	806	1,234	3,856	71	1,061	0	0
50–99	-	4,897	6,456	1,768	146	1,976	965	1,024	3,176	129	2,169	0	0
100–249	-	4,158	11,045	959	D	1,494	898	1,451	4,286	253	5,677	1	D
250–499	-	1,590	8,380	391	D	412	221	582	2,153	196	5,016	8	D
500–999	-	882	10,821	92	9	174	97	367	1,328	235	7,067	14	2,320
1,000–4,999	-	1,045	31,475	75	6	106	62	396	1,792	392	13,206	76	16,409
5,000–9,999	-	192	18,191	3	*	16	9	47	197	89	2,842	38	15,143
10,000–24,999	-	143	31,208	0	0	2	D	23	D	60	2,536	58	28,570
25,000 or more	-	102	78,523	0	0	1	D	11	D	33	1,674	57	76,798

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed: industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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: 2004.

TABLE 4. Funds for industrial R&D performed in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
All industries	21–23, 31–33, 42, 44–81	208,301	6,295	5,906	6,456	11,045	8,380	10,821	31,475	18,191	31,208	78,523
Manufacturing industries	31–33	147,288	999	1,283	2,109	4,645	5,064	7,352	23,510	D	D	D
Food	311	2,254	31	15	49	71	D	96	278	D	D	D
Beverage and tobacco products	312	555 i	1	D	D	1	9	0	D	D	0	D
Textiles, apparel, and leather	313–16	570	14	D	D	D	D	46	D	57	D	D
Wood products	321	D	1	D	D	D	3	D	17	52	D	D
Paper, printing, and support activities	322, 323	D	D	4	6	21	43	D	169	118	D	D
Petroleum and coal products	324	1,603	10	2	5	D	9	D	14	D	D	D
Chemicals	325	D	177	214	375	908	1,511	2,230	D	4,901	7,670	D
Basic chemicals	3251	2,393	D	D	D	D	44	D	D	D	D	0
Resin, synthetic rubber, fibers, and filament	3252	2,096	D	18	D	9	62	23	D	D	D	D
Pharmaceuticals and medicines	3254	31,477	72	118	289	D	1,270	D	D	D	D	D
Other chemicals	other 325	D	90	D	D	D	135	D	D	D	D	D
Plastics and rubber products	326	D	D	42	152	D	102	D	D	D	D	D
Nonmetallic mineral products	327	787	D	D	10	15	49	D	D	D	D	0
Primary metals	331	727	D	19	7	125	D	15	D	D	D	D
Fabricated metal products	332	1,512	D	56	126	D	D	D	D	159	D	D
Machinery	333	6,579	131	D	D	527	D	484	D	D	D	D
Computer and electronic products	334	48,296	363	528	789	1,784	1,908	2,646	9,702	4,711	D	D
Computers and peripheral equipment	3341	5,734	D	61	110	D	D	D	D	D	D	D
Communications equipment	3342	D	28	89	195	456	558 i	D	D	0	D	D
Semiconductor and other electronic components	3344	D	91	197	266	D	D	941	D	D	D	D
Navigational, measuring, electromedical, and control instruments	3345	15,214	162	166	177	526	D	D	D	2,025	D	D
Other computer and electronic products	other 334	1,148	D	15	40	96	51	D	D	0	D	0
Electrical equipment, appliances, and components	335	2,664	28	D	102	216	D	D	D	304	884	0
Transportation equipment	336	D	30	71	D	276	D	D	D	D	D	D
Motor vehicles, trailers, and parts	3361–63	15,677	8	37	65	132	D	D	D	D	D	D
Aerospace products and parts	3364	13,086	20	27	D	D	78	D	D	D	D	11,664
Other transportation equipment	other 336	D	2	7	D	D	D	18	D	D	D	D
Furniture and related products	337	408	D	12	12	24	31	D	70	179	D	D
Miscellaneous manufacturing	339	4,388	120	113	148	387	D	D	D	664	D	0
Medical equipment and supplies	3391	3,343	D	D	D	193	D	D	670	D	D	0
Other miscellaneous manufacturing	other 339	1,045	D	D	D	194	111	56	D	D	0	0



TABLE 4. Funds for industrial R&D performed in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
Nonmanufacturing industries	21–23, 42, 44–81	61,013	5,296	4,623	4,348	6,400	3,315	3,470	7,965	D	D	D
Mining, extraction, and support activities	21	D	D	12	2	D	D	D	110	D	D	D
Utilities	22	202	3	D	D	D	0	D	32	D	D	D
Construction	23	1,481	92	D	*	D	17	D	D	D	D	0
Wholesale trade	42	D	D	469	398	317	79	D	D	0	D	0
Retail trade	44, 45	1,596	664	3	D	D	55	D	147	D	25 i	144
Transportation and warehousing	48, 49	D	63	D	D	5	D	D	D	D	D	D
Information	51	22,593	D	477	D	D	D	969	D	2,321	3,373	D
Publishing	511	D	D	D	D	D	541	D	D	D	D	D
Newspaper, periodical, book, and database	5111	763	0	10	5	34	16	17	D	D	D	D
Software	5112	D	D	D	D	D	525	D	D	D	D	D
Broadcasting and telecommunications	513	2,215	D	D	44	81	132	D	D	D	146	D
Telecommunications	5133	2,052	D	D	D	D	D	0	D	D	146	D
Other broadcasting and telecommunications	other 513	163	0	0	D	D	D	D	D	0	0	D
Other information	other 51	D	91	D	135	D	D	D	D	D	D	D
Finance, insurance, and real estate	52, 53	1,708	D	D	174	228	70 i	100	458	77	46	D
Professional, scientific, and technical services	54	28,709	3,341	3,602	3,049	D	2,205	1,979	D	D	D	D
Architectural, engineering, and related services	5413	4,265	852	D	324	496	D	288	736	D	D	0
Computer systems design and related services	5415	11,575	D	D	D	D	D	D	D	D	D	D
Scientific R&D services	5417	11,355	1,053	2,176	1,844	2,798	D	D	D	D	D	D
Other professional, scientific, and technical services	other 54	1,514	D	D	D	78	D	21	199	D	D	D
Health care services	621–23	500	D	D	120	D	11 i	D	D	D	D	D
Other nonmanufacturing <sup>a</sup>	55–56, 61, 624, 71–72, 81	1,595	318	D	D	D	D	D	164	62	D	680

\* = amount < \$500,000.

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 5. Funds for industrial R&D and companies in manufacturing and nonmanufacturing industries performing industrial R&D in the United States, by company size: 2004

Company size (employees)	Companies performing R&D (number)			Funds for industrial R&D (\$millions)		
	All industries	Manufacturing	Nonmanufacturing	All industries	Manufacturing	Nonmanufacturing
All companies	41,029	18,818	22,210	208,301	147,288	61,013
5-24	21,303	6,752	14,550	6,295	999	5,296
25-49	6,716	3,260	3,456	5,906	1,283	4,623
50-99	4,897	3,010	1,887	6,456	2,109	4,348
100-249	4,158	2,732	1,426	11,045	4,645	6,400
250-499	1,590	1,278	311	8,380	5,064	3,315
500-999	882	670	212	10,821	7,352	3,470
1,000-4,999	1,045	821	225	31,475	23,510	7,965
5,000-9,999	192	134	58	18,191	D	D
10,000-24,999	143	98	45	31,208	D	D
25,000 or more	102	62	40	78,523	D	D

D = suppressed to avoid disclosure of confidential information.

NOTES: Detail does not add to total because of rounding or suppression. Excludes 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. Excludes 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: 2004.

TABLE 6. Costs for industrial R&D in the United States, by industry and company size, by type of cost: 2004  
(Percent distribution)

Industry and company size	NAICS codes	All R&D costs		Wages of R&D personnel	Employer's cost of fringe benefits for R&D personnel	Materials and supplies	R&D depreciation	Other costs
		Amount (\$millions)	Percent					
All industries	21–23, 31–33, 42, 44–81	208,301	100.0	46.7	8.7	12.1	4.8	27.7 i
Manufacturing industries	31–33	147,288	100.0	43.7	8.4	14.0	4.9	28.9 i
Food	311	2,254	100.0	38.9	12.3	11.5	4.6	32.7
Beverage and tobacco products	312	555 i	100.0	38.2 i	22.7 i	10.5 i	4.8 i	23.8 i
Textiles, apparel, and leather	313–16	570	100.0	54.9	11.4	11.5	2.6	19.6
Wood products	321	D	100.0	56.1	9.9	8.6	2.5	22.9
Paper, printing, and support activities	322, 323	D	100.0	47.7 i	3.6 i	15.4 i	3.5 i	29.8 i
Petroleum and coal products	324	1,603	100.0	40.0 i	16.8 i	12.7 i	5.2 i	25.3 i
Chemicals	325	D	100.0	34.9 i	8.7	11.8 i	5.9	38.8 i
Basic chemicals	3251	2,393	100.0	43.5	10.3	12.6 i	5.3	28.3
Resin, synthetic rubber, fibers, and filament	3252	2,096	100.0	48.2	6.0	10.0	10.1	25.7 i
Pharmaceuticals and medicines	3254	31,477	100.0	31.8 i	8.0	11.9	5.4 i	42.9 i
Other chemicals	other 325	D	100.0	51.0 i	16.0 i	11.0 i	8.5	13.6
Plastics and rubber products	326	D	100.0	46.7	9.4	20.1	3.6	20.2
Nonmetallic mineral products	327	787	100.0	35.0	14.7	16.6	5.8	27.9
Primary metals	331	727	100.0	61.9	7.5	13.3	3.8	13.4
Fabricated metal products	332	1,512	100.0	48.9	18.0	8.1	2.8	22.0
Machinery	333	6,579	100.0	44.8	8.0	20.2 i	5.1	21.9
Computer and electronic products	334	48,296	100.0	50.0	8.5 i	11.3 i	6.0	24.3 i
Computers and peripheral equipment	3341	5,734	100.0	54.4	8.9	8.8	5.9	22.0
Communications equipment	3342	D	100.0	54.8	9.2	7.3 i	5.8 i	22.8 i
Semiconductor and other electronic components	3344	D	100.0	48.2	6.7 i	11.1	8.4	25.5
Navigational, measuring, electromedical, and control instruments	3345	15,214	100.0	47.2 i	9.9 i	14.8 i	3.4 i	24.7 i
Other computer and electronic products	other 334	1,148	100.0	58.0 i	8.7 i	7.9 i	5.2 i	20.3
Electrical equipment, appliances, and components	335	2,664	100.0	53.3	9.6	10.2	2.9	24.1
Transportation equipment	336	D	100.0	44.4 i	7.0	19.9	2.9 i	25.8 i
Motor vehicles, trailers, and parts	3361–63	15,677	100.0	45.7 i	10.0	25.8	3.6 i	15.0 i
Aerospace products and parts	3364	13,086	100.0	43.5	2.6 i	13.6	1.7	38.5
Other transportation equipment	other 336	D	100.0	42.4 i	9.3 i	17.9 i	3.9 i	26.5 i
Furniture and related products	337	408	100.0	48.8	8.2	15.9	1.3	25.7
Miscellaneous manufacturing	339	4,388	100.0	43.1 i	8.8	12.6 i	2.6 i	32.8
Medical equipment and supplies	3391	3,343	100.0	40.1 i	8.0	13.9 i	2.5	35.5 i
Other miscellaneous manufacturing	other 339	1,045	100.0	54.6	11.8	7.6	3.1 i	22.9

TABLE 6. Costs for industrial R&D in the United States, by industry and company size, by type of cost: 2004  
(Percent distribution)

Industry and company size	NAICS codes	All R&D costs		Wages of R&D personnel	Employer's cost of fringe benefits for R&D personnel	Materials and supplies	R&D depreciation	Other costs
		Amount (\$millions)	Percent					
Nonmanufacturing industries	21–23, 42, 44–81	61,013	100.0	56.4	9.6	6.1	4.4 i	23.6
Mining, extraction, and support activities	21	D	100.0	72.3 i	7.5 i	7.2 i	3.6 i	9.4 i
Utilities	22	202	100.0	33.6	9.4	11.1	0.4	45.4
Construction	23	1,481	100.0	44.0 i	8.2 i	12.9 i	4.2 i	30.7 i
Wholesale trade	42	D	100.0	54.3	10.8	9.8	7.8	17.2
Retail trade	44, 45	1,596	100.0	54.6	6.2	6.1	3.2	30.0
Transportation and warehousing	48, 49	D	100.0	53.3 i	15.9 i	2.4	0.6	27.8 i
Information	51	22,593	100.0	61.9 i	10.9 i	3.5 i	4.5 i	19.3 i
Publishing	511	D	100.0	60.4 i	11.3 i	3.7 i	4.9 i	19.7 i
Newspaper, periodical, book, and database	5111	763	100.0	66.3	10.8	1.4	6.6	14.9
Software	5112	D	100.0	60.1 i	11.3 i	3.8 i	4.8 i	19.9 i
Broadcasting and telecommunications	513	2,215	100.0	59.3 i	14.8 i	3.4 i	5.0 i	17.4 i
Telecommunications	5133	2,052	100.0	59.3 i	14.8 i	3.5 i	5.0 i	17.5 i
Other broadcasting and telecommunications	other 513	163	100.0	65.1 i	17.3 i	1.0 i	4.8 i	11.8 i
Other information	other 51	D	100.0	73.5	5.1	1.8	2.0	17.6
Finance, insurance, and real estate	52, 53	1,708	100.0	69.1	6.8	4.4	2.4	17.4
Professional, scientific, and technical services	54	28,709	100.0	49.7	8.8	8.5	4.8	28.2
Architectural, engineering, and related services	5413	4,265	100.0	49.2	12.5	16.0	2.5 i	19.8
Computer systems design and related services	5415	11,575	100.0	57.3	8.2	3.6	5.5	25.5
Scientific R&D services	5417	11,355	100.0	38.0	8.5 i	12.8	4.8	36.0
Other professional, scientific, and technical services	other 54	1,514	100.0	57.0	7.3	8.2	3.3	24.1
Health care services	621–23	500	100.0	52.9 i	10.5 i	4.4 i	0.7 i	31.6 i
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1,595	100.0	59.5	5.5	6.8	0.9	27.3

TABLE 6. Costs for industrial R&D in the United States, by industry and company size, by type of cost: 2004  
(Percent distribution)

Industry and company size	NAICS codes	All R&D costs		Wages of R&D personnel	Employer's cost of fringe benefits for R&D personnel	Materials and supplies	R&D depreciation	Other costs
		Amount (\$millions)	Percent					
Company size (employees)								
All companies	-	208,301	100.0	46.7	8.7	12.1	4.8	27.7
5-24	-	6,295	100.0	33.2	6.8	11.6	3.4	45.1
25-49	-	5,906	100.0	39.2	7.6	12.5	4.0	36.7
50-99	-	6,456	100.0	44.9	8.6	10.0	4.8	31.8
100-249	-	11,045	100.0	45.8	8.1	11.5	4.5	30.0
250-499	-	8,380	100.0	47.1	9.0	9.2	4.9	29.8
500-999	-	10,821	100.0	44.9	8.5	11.3	4.2	31.1
1,000-4,999	-	31,475	100.0	47.6	9.5	9.7	5.2	27.9
5,000-9,999	-	18,191	100.0	46.2	8.4	14.8	3.4	27.2
10,000-24,999	-	31,208	100.0	45.4	9.0	9.3	4.7	31.5
25,000 or more	-	78,523	100.0	47.4	8.4	13.9	5.0	25.2

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total due to rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 7. Funds for and companies performing industrial R&D in the United States, by industry and company size, by R&D area: 2004

(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	41,029	208,301	2,582	17,590	12,595	34,628
Manufacturing industries	31–33	18,818	147,288	626	11,063	2,616	11,157
Food	311	973	2,254	43	78	27	13
Beverage and tobacco products	312	59	555 i	4	D	1	D
Textiles, apparel, and leather	313–16	498	570	5	D	23	D
Wood products	321	167	D	2	D	5	D
Paper, printing, and support activities	322, 323	442	D	2	D	67	D
Petroleum and coal products	324	98	1,603	1	D	3	D
Chemicals	325	2,026	D	220	9,617	145	D
Basic chemicals	3251	211	2,393	19	D	9	D
Resin, synthetic rubber, fibers, and filament	3252	100	2,096	2	D	8	D
Pharmaceuticals and medicines	3254	394	31,477	148	8,816	14	D
Other chemicals	other 325	1,320	D	50	583	113	D
Plastics and rubber products	326	1,184	D	5	D	28	D
Nonmetallic mineral products	327	386	787	5	D	9	D
Primary metals	331	534	727	3	D	20	D
Fabricated metal products	332	2,116	1,512	3	1 i	108	102
Machinery	333	3,235	6,579	126	7	340	D
Computer and electronic products	334	3,226	48,296	92	445	1,336	5,279
Computers and peripheral equipment	3341	430	5,734	2	D	238	1,710
Communications equipment	3342	548	D	0	0	196	2,289
Semiconductor and other electronic components	3344	876	D	4	D	214	D
Navigational, measuring, electromedical, and control instruments	3345	1,246	15,214	83	418	620	754
Other computer and electronic products	other 334	125	1,148	3	D	68	D
Electrical equipment, appliances, and components	335	826	2,664	7	4	180	401
Transportation equipment	336	927	D	5	4	67	D
Motor vehicles, trailers, and parts	3361–63	564	15,677	1	D	27	D
Aerospace products and parts	3364	160	13,086	0	0	17	D
Other transportation equipment	other 336	203	D	4	D	22	D
Furniture and related products	337	514	408	1	D	48	D
Miscellaneous manufacturing	339	1,610	4,388	100	752	210	139
Medical equipment and supplies	3391	661	3,343	97	749	110	66
Other miscellaneous manufacturing	other 339	949	1,045	3	3	100	73

TABLE 7. Funds for and companies performing industrial R&amp;D in the United States, by industry and company size, by R&amp;D area: 2004

(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	22,210	61,013	1,956	6,526	9,980	23,471
Mining, extraction, and support activities	21	91	D	2	D	8	100 i
Utilities	22	67	202	29	D	7	D
Construction	23	1,057	1,481	1	D	258	51
Wholesale trade	42	3,459	D	128	223	742	418
Retail trade	44, 45	1,579	1,596	2	D	771	498
Transportation and warehousing	48, 49	270	D	1	D	5	D
Information	51	2,206	22,593	47	D	1,806	10,428
Publishing	511	1,301	D	3	1	1,165	7,978
Newspaper, periodical, book, and database	5111	61	763	0	0	51	213
Software	5112	1,240	D	3	1	1,114	7,765
Broadcasting and telecommunications	513	224	2,215	39	D	140	286
Telecommunications	5133	214	2,052	39	D	134	D
Other broadcasting and telecommunications	other 513	10	163	0	0	6	D
Other information	other 51	681	D	4	D	501	2,164
Finance, insurance, and real estate	52, 53	824	1,708	0	0	544	1,358
Professional, scientific, and technical services	54	9,845	28,709	1,437	6,005	5,472	9,715
Architectural, engineering, and related services	5413	2,107	4,265	133	D	809	902
Computer systems design and related services	5415	3,460	11,575	324	148	2,966	7,646
Scientific R&D services	5417	1,685	11,355	729	5,389	383	594
Other professional, scientific, and technical services	other 54	2,592	1,514	252	D	1,314	573
Health care services	621–23	1,581	500	294	106	254	17
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1,232	1,595	16	6	113	846



TABLE 7. Funds for and companies performing industrial R&D in the United States, by industry and company size, by R&D area: 2004

(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	-	41,029	208,301	2,582	17,590	12,595	34,628
5-24	-	21,303	6,295	1,426	777	7,428	2,194
25-49	-	6,716	5,906	491	1,556	2,119	1,508
50-99	-	4,897	6,456	219	1,332	1,352	1,774
100-249	-	4,158	11,045	203	2,109	912	2,499
250-499	-	1,590	8,380	95	1,807	309	1,802
500-999	-	882	10,821	57	1,613	184	2,201
1,000-4,999	-	1,045	31,475	63	4,139	197	5,967
5,000-9,999	-	192	18,191	8	42	28	2,631
10,000-24,999	-	143	31,208	11	1,891	34	4,215
25,000 or more	-	102	78,523	9	2,324	32	9,837

TABLE 7. Funds for and companies performing industrial R&D in the United States, by industry and company size, by R&D area: 2004

(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	6,839	16,427	17,684	59,236	7,291	80,420
Manufacturing industries	31–33	4,757	13,934	11,810	48,392	2,510	62,741
Food	311	295	263	621	1,427	62	473
Beverage and tobacco products	312	21	D	48	117	4	400
Textiles, apparel, and leather	313–16	146	233	280	225	82	81
Wood products	321	28	14	109	55	38	83
Paper, printing, and support activities	322, 323	69	115	317	285	27	1,874
Petroleum and coal products	324	57	D	47	427	2	770
Chemicals	325	940	2,646	909	6,253	257	20,547
Basic chemicals	3251	130	732	66	759	36	671
Resin, synthetic rubber, fibers, and filament	3252	62	191	54	136	6	1,768
Pharmaceuticals and medicines	3254	72	D	151	4,397	58	17,492
Other chemicals	other 325	676	D	638	961	157	615
Plastics and rubber products	326	365	428	678	803	198	598
Nonmetallic mineral products	327	114	208	253	212	31	298
Primary metals	331	115	345 i	438	280	19	62
Fabricated metal products	332	615	302	1,086	842	430	266
Machinery	333	729	D	2,394	4,007	263	1,013
Computer and electronic products	334	564	6,190	1,995	14,012	388	22,371
Computers and peripheral equipment	3341	30	D	290	1,543	29	2,380
Communications equipment	3342	112	D	366	3,687	28	2,208
Semiconductor and other electronic components	3344	216	5,318	515	5,352	151	6,525
Navigational, measuring, electromedical, and control instruments	3345	184	321	757	2,604	170	11,117
Other computer and electronic products	other 334	21	D	67	825	10	141
Electrical equipment, appliances, and components	335	117	206	566	1,645	166	407
Transportation equipment	336	137	D	667	16,511	166	11,307
Motor vehicles, trailers, and parts	3361–63	83	717	401	8,686	108	6,126
Aerospace products and parts	3364	22	D	116	D	34	4,995
Other transportation equipment	other 336	32	54	151	D	23	187
Furniture and related products	337	71	46	378	266	89	87
Miscellaneous manufacturing	339	375	368	1,023	1,026	289	2,103
Medical equipment and supplies	3391	107	182	419	640	87	1,706
Other miscellaneous manufacturing	other 339	268	186	605	386	202	397

TABLE 7. Funds for and companies performing industrial R&D in the United States, by industry and company size, by R&D area: 2004

(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	2,081	2,493	5,873	10,844	4,781	17,678
Mining, extraction, and support activities	21	28	D	37	224 i	23	330
Utilities	22	17	D	32	172	6	10
Construction	23	11	D	537	158	256	1,227
Wholesale trade	42	528	D	1,308	470	1,007	289
Retail trade	44, 45	269	D	537	724	257	60
Transportation and warehousing	48, 49	1	D	13	D	252	259
Information	51	10	D	257	2,048	262	9,921
Publishing	511	8	D	63	573	128	8,781
Newspaper, periodical, book, and database	5111	5	*	14	507	6	43
Software	5112	3	D	50	66	122	8,738
Broadcasting and telecommunications	513	2	D	128	956	9	817
Telecommunications	5133	1	D	123	893	8	794
Other broadcasting and telecommunications	other 513	1	D	5	63	1	24
Other information	other 51	0	0	65	520	125	323
Finance, insurance, and real estate	52, 53	4	D	20	D	259	88
Professional, scientific, and technical services	54	928	1,777	2,752	6,555	934	4,656
Architectural, engineering, and related services	5413	153	D	1,126	1,700	90	1,193
Computer systems design and related services	5415	146	503	324	2,707	365	569
Scientific R&D services	5417	369	1,049	529	1,999	218	2,325
Other professional, scientific, and technical services	other 54	259	D	773	149	260	569
Health care services	621–23	0	0	277	155	759	221
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	285	31	103	95	766	616

TABLE 7. Funds for and companies performing industrial R&D in the United States, by industry and company size, by R&D area: 2004

(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	-	6,839	16,427	17,684	59,236	7,291	80,420
5-24	-	3,337	603	7,427	1,312	4,561	1,409
25-49	-	1,047	499	3,038	1,677	1,025	666
50-99	-	813	603	2,523	1,777	696	971
100-249	-	726	1,009	2,514	3,623	410	1,805
250-499	-	388	1,071	901	2,561	167	1,139
500-999	-	191	772	493	4,286	105	1,950
1,000-4,999	-	239	2,995	580	11,152	176	7,222
5,000-9,999	-	41	702	90	6,758	61	8,059
10,000-24,999	-	31	1,348	74	7,945	50	15,809
25,000 or more	-	25	6,825	43	18,147	41	41,390

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes federally funded research and development centers. Detail does not add to total for number of companies because categories are not mutually exclusive. Detail does not add to total for money amounts because of rounding or suppression. 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. Excludes 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: 2004.

TABLE 8. Companies using nanotechnology to perform R&amp;D, by industry and company size, by R&amp;D area: 2004

Industry and company size	NAICS codes	Biotechnology	Software development	Materials and synthesis processing	Other areas
All industries	21–23, 31–33, 42, 44–81	81	152	266	419
Manufacturing industries	31–33	42	67	221	348
Food	311	3	0	8	15
Beverage and tobacco products	312	2	0	0	1
Textiles, apparel, and leather	313–16	1	0	5	7
Wood products	321	0	0	1	1
Paper, printing, and support activities	322, 323	0	1	2	9
Petroleum and coal products	324	0	0	3	2
Chemicals	325	20	0	52	43
Basic chemicals	3251	2	0	13	8
Resin, synthetic rubber, fibers, and filament	3252	0	0	10	3
Pharmaceuticals and medicines	3254	14	0	5	6
Other chemicals	other 325	4	0	24	26
Plastics and rubber products	326	3	2	22	23
Nonmetallic mineral products	327	0	1	5	5
Primary metals	331	1	0	5	3
Fabricated metal products	332	1	4	18	25
Machinery	333	0	5	24	44
Computer and electronic products	334	6	43	41	76
Computers and peripheral equipment	3341	0	6	1	9
Communications equipment	3342	0	5	6	10
Semiconductor and other electronic components	3344	1	5	19	22
Navigational, measuring, electromedical, and control instruments	3345	5	23	14	32
Other computer and electronic products	other 334	0	4	1	3
Electrical equipment, appliances, and components	335	0	5	10	31
Transportation equipment	336	0	0	7	29
Motor vehicles, trailers, and parts	3361–63	0	0	5	18
Aerospace products and parts	3364	0	0	0	6
Other transportation equipment	other 336	0	0	2	5
Furniture and related products	337	0	1	3	8
Miscellaneous manufacturing	339	5	5	15	26
Medical equipment and supplies	3391	4	4	11	13
Other miscellaneous manufacturing	other 339	1	1	4	13
Nonmanufacturing industries	21–23, 42, 44–81	39	85	45	71
Mining, extraction, and support activities	21	0	1	4	2
Utilities	22	0	1	1	3
Construction	23	0	0	1	2
Wholesale trade	42	0	3	5	12
Retail trade	44, 45	0	1	4	2
Transportation and warehousing	48, 49	0	0	0	2
Information	51	0	36	1	5
Publishing	511	0	28	1	2
Newspaper, periodical, book, and database	5111	0	1	1	1
Software	5112	0	27	0	1
Broadcasting and telecommunications	513	0	0	0	1
Telecommunications	5133	0	0	0	1
Other broadcasting and telecommunications	other 513	0	0	0	0
Other information	other 51	0	8	0	2
Finance, insurance, and real estate	52, 53	0	0	0	0
Professional, scientific, and technical services	54	35	37	25	36
Architectural, engineering, and related services	5413	1	7	3	9
Computer systems design and related services	5415	0	20	2	4
Scientific R&D services	5417	34	6	20	21
Other professional, scientific, and technical services	other 54	0	4	0	2
Health care services	621–23	3	0	0	2
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1	6	4	5

TABLE 8. Companies using nanotechnology to perform R&D, by industry and company size, by R&D area: 2004

Industry and company size	NAICS codes	Biotechnology	Software development	Materials and synthesis processing	Other areas
Company size (employees)					
All companies	-	81	152	266	419
5-24	-	7	13	24	33
25-49	-	7	15	29	37
50-99	-	9	23	29	69
100-249	-	20	36	43	91
250-499	-	16	20	53	57
500-999	-	11	16	25	51
1,000-4,999	-	9	20	41	60
5,000-9,999	-	0	3	9	10
10,000-24,999	-	0	4	7	7
25,000 or more	-	2	2	6	4

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 9. Funds for and number of companies performing energy R&D in the United States, by selected industry, company size and primary energy source, by source of funds: 2004

(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	93	2,429	32	149	85	2,279
Manufacturing	31-33	58	1,921	18	51	53	1,870
Petroleum and coal products	324	2	D	2	D	2	D
Chemicals	325	11	45	4	9	10	36
Machinery	333	8	D	2	D	8	217 i
Computer and electronic products	334	13	D	2	D	12	490
Electrical equipment, appliances, and components	335	4	28	1	D	3	D
Transportation equipment	336	7	728	4	16	6	712
All other manufacturing	-	13	148 i	3	5	12	143
Nonmanufacturing	21-23, 42, 44-81	35	508	14	99	32	409
Mining, extraction, and support activities	21	6	D	1	D	6	165
All other nonmanufacturing	22, 23, 42, 44-81	29	D	13	D	26	244
Company size (employees)							
All companies	-	93	2,429	32	149	85	2,279
5-24	-	0	0	0	0	0	0
25-49	-	6	22	4	1	5	21
50-99	-	5	D	3	D	4	43
100-249	-	11	47	4	12	9	35
250-499	-	7	D	3	D	7	32
500-999	-	9	D	2	D	8	97
1,000-4,999	-	26	389	3	9	25	381
5,000-9,999	-	7	D	2	D	6	58
10,000-24,999	-	14	770	4	13	14	757
25,000 or more	-	8	894	7	38	7	856
Primary energy source							
All energy	-	93	2,429	32	149	85	2,279
Fossil fuels	-	38	1,075	8	35	38	1,040
Nuclear	-	4	30	0	0	4	30
Total geothermal, solar, and conservation and utilization	-	15	303	6	42	13	261 i
All other energy	-	57	1,021	20	73	51	948

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

- = not applicable.

NOTES: All and federally funded industrial R&D exclude federally funded research and development centers. Detail does not add to total for number of companies 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. 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. Excludes 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: 2004.

TABLE 10. Company and other nonfederal funds for industrial R&D performed in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
All industries	21–23, 31–33, 42, 44–81	188,035	5,610	5,293	5,849	9,987	7,832	10,060	30,982	16,173	29,647	66,600
Manufacturing industries	31–33	131,887	884	1,206	2,051	4,534	5,014	7,155	23,235	12,434	24,079	51,296
Food	311	2,249	31	13	49	70	89	96	278	217	668	737
Beverage and tobacco products	312	555 i	1	D	D	1	9	0	D	D	0	D
Textiles, apparel, and leather	313–16	568	14	D	D	36	24	46	D	57	D	D
Wood products	321	152	1	D	D	D	3	D	17	52	D	D
Paper, printing, and support activities	322, 323	2,308	D	4	6	21	43	D	169	118	D	1,553
Petroleum and coal products	324	1,595	10	2	5	D	9	D	14	D	D	D
Chemicals	325	39,070	166	203	369	904	1,495	2,223	7,105	4,880	7,656	14,068
Basic chemicals	3251	2,312	9	14	19	D	44	387	1,183	402	D	0
Resin, synthetic rubber, fibers, and filament	3252	2,080	4	18	10	9	62	23	D	D	D	D
Pharmaceuticals and medicines	3254	31,444	72	108	286	721	1,267	1,700	D	D	D	D
Other chemicals	other 325	3,234	81	63	54	D	122	114	D	D	541	D
Plastics and rubber products	326	1,879	D	42	147	69	102	D	558	D	D	D
Nonmetallic mineral products	327	783	D	19	10	15	49	37	152	D	491	0
Primary metals	331	705	D	17	7	125	37	15	D	63	78	D
Fabricated metal products	332	1,465	D	56	120	164	158	92	244	159	155	D
Machinery	333	6,473	131	103	212	515	428	472	1,501	1,251	628	1,235
Computer and electronic products	334	40,691	272	493	767	1,760	1,895	2,505	9,569	3,592	9,641	10,198
Computers and peripheral equipment	3341	5,707	65	61	110	273	240	D	1,611	D	D	D
Communications equipment	3342	8,433	28	82	193	454	558	D	1,817	0	D	D
Semiconductor and other electronic components	3344	17,524	74	174	256	426	715	922	3,730	D	D	7,033
Navigational, measuring, electromedical, and control instruments	3345	7,882	90	159	166	511	330	D	1,757	905	2,226	D
Other computer and electronic products	other 334	1,144	16	15	40	96	51	D	653	0	D	0
Electrical equipment, appliances, and components	335	2,622	28	74	94	200	190	206	643	304	884	0
Transportation equipment	336	26,019	23	51	92	249	186	454	1,482	587	1,554	21,341
Motor vehicles, trailers, and parts	3361–63	15,610	8 i	37	65	132	D	376	D	D	1,227	D
Aerospace products and parts	3364	9,224	14	8	D	109	78	60	D	99	D	8,576
Other transportation equipment	other 336	1,185	1	6	D	8	D	18	D	D	D	D
Furniture and related products	337	406	6	10	12	24	31	D	70	179	D	D
Miscellaneous manufacturing	339	4,348	116	109	141	373	266	296	1,054	664	1,330	0
Medical equipment and supplies	3391	3,313	95	D	91	183	155	240	670	D	1,330	0
Other miscellaneous manufacturing	other 339	1,035	21	D	50	190	111	56	384	D	0	0



TABLE 10. Company and other nonfederal funds for industrial R&D performed in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
Nonmanufacturing industries	21–23, 42, 44–81	56,148	4,726	4,088	3,798	5,454	2,819	2,905	7,747	3,740	5,568	15,304
Mining, extraction, and support activities	21	714	D	12	2	D	D	D	110	D	D	D
Utilities	22	176	3	D	D	2	0	D	32	40	D	D
Construction	23	1,466	92	D	*	D	17	D	96	D	D	0
Wholesale trade	42	1,540	218	456	398	317	79	D	D	0	D	0
Retail trade	44, 45	1,596	664	3	D	D	55 i	D	147	D	25 i	144
Transportation and warehousing	48, 49	347	63	D	D	5	D	D	D	D	D	D
Information	51	22,285	494	451	562	1,051	764	969	4,783	2,321	3,373	7,517
Publishing	511	17,273	D	D	388	836	541	D	3,959	D	D	D
Newspaper, periodical, book, and database	5111	763	0	10	5	34	16	17	D	D	D	D
Software	5112	16,510	D	D	382	801	525	D	D	D	D	D
Broadcasting and telecommunications	513	2,215	D	D	44	81	132	D	D	D	146 i	D
Telecommunications	5133	2,052	D	D	D	D	D	0	D	D	146 i	D
Other broadcasting and telecommunications	other 513	163	0	0	D	D	D	D	D	0	0	D
Other information	other 51	2,797	90	D	131	135	91	D	D	D	D	D
Finance, insurance, and real estate	52, 53	1,708	D	D	174	228	70 i	100	458	77	46	D
Professional, scientific, and technical services	54	24,245	2,806	3,108	2,522	3,349	1,728	1,415	1,928	1,012	420	5,957
Architectural, engineering, and related services	5413	2,295	733	D	155	180	115	D	562	85	D	0
Computer systems design and related services	5415	11,197	D	D	710	797	D	D	805	D	D	D
Scientific R&D services	5417	9,383	834	1,871	1,579	2,294	1,005	D	362	D	D	D
Other professional, scientific, and technical services	other 54	1,370	D	D	78	78	D	21	199	D	D	D
Health care services	621–23	495	62	23	120	11	11 i	67	22	D	D	D
Other nonmanufacturing <sup>a</sup>	55–56, 61, 624, 71–72, 81	1,576	317	28 i	D	33	75	D	164	62	D	680

\* = amount < \$500,000.

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. 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. Excludes 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.

TABLE 10. Company and other nonfederal funds for industrial R&D performed in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)									
		All companies	5-24	25-49	50-99	100-249	250-499	500-999	1,000-4,999	5,000-9,999	10,000-24,999

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2004.

TABLE 11. Company and other nonfederal funds for and companies performing R&D in the United States, by industry and company size, by nonfederally funded R&D program size: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	40,222	188,035	22,218	1,369	9,634	4,626	6,741	18,810	1,390	39,313	239	123,916
Manufacturing industries	31-33	18,695	131,887	10,527	642	4,501	2,126	2,695	8,201	788	24,302	183	96,615
Food	311	966	2,249	622	35	216	112	98	267	25	800	5	1,036
Beverage and tobacco products	312	59	555 i	39	1	5	3	7	D	6	121	1	D
Textiles, apparel, and leather	313-16	498	568	280	D	161	62	47	156	9	164	1	D
Wood products	321	167	152	129	4	25	10	9	25	4	113	0	0
Paper, printing, and support activities	322, 323	442	2,308	267	25	114	46	44	143	14	422	3	1,671
Petroleum and coal products	324	98	1,595	32	1	51	19	7	29	3	125	5	1,420
Chemicals	325	2,004	39,070	1,041	77	456	217	285	924	172	6,536	50	31,316
Basic chemicals	3251	209	2,312	61	5	53	26	51	161	38	1,408	6	712
Resin, synthetic rubber, fibers, and filament	3252	99	2,080	30	2	29	13	26	81	11	240	3	1,744
Pharmaceuticals and medicines	3254	393	31,444	81	8	72	40	116	397	87	3,485	38	27,513
Other chemicals	other 325	1,303	3,234	871	61	301	138	93	285	36	1,402	3	1,347
Plastics and rubber products	326	1,173	1,879	724	44	260	124	159	515	27	636	3	561
Nonmetallic mineral products	327	385	783	287	10	56	26	29	D	11	397	1	D
Primary metals	331	534	705	320	13	57	D	143	256	13	222	1	D
Fabricated metal products	332	2,110	1,465	1,473	D	422	175	195	461	19	471	1	D
Machinery	333	3,234	6,473	1,973	107	831	415	350	994	69	1,685	11	3,273
Computer and electronic products	334	3,171	40,691	1,122	79	1,035	509	697	2,392	254	7,970	62	29,742
Computers and peripheral equipment	3341	430	5,707	77	11	223	148	84	304	34	1,106	11	4,139
Communications equipment	3342	543	8,433	177	10	111	51	181	681	65	1,905	10	5,786
Semiconductor and other electronic components	3344	873	17,524	370	23	234	104	164	559	83	2,778	21	14,060
Navigational, measuring, electromedical, and control instruments	3345	1,200	7,882	454	32	431	189	235	735	64	1,900	16	5,026
Other computer and electronic products	other 334	125	1,144	44	3	36	17	34	112	8	281	4	731
Electrical equipment, appliances, and components	335	825	2,622	466	45	158	80	151	457	46	1,299	4	741
Transportation equipment	336	909	26,019	426	31	228	102	170	588	59	1,901	26	23,397
Motor vehicles, trailers, and parts	3361-63	563	15,610	242	16	143	67	119	414	43	1,349	16	13,763
Aerospace products and parts	3364	157	9,224	69	5	41	15	31	92	10	376	6	8,735
Other transportation equipment	other 336	189	1,185	116	9	43	20	20	81	6	176	4	899
Furniture and related products	337	514	406	376	D	93	D	34	D	11	258	0	0
Miscellaneous manufacturing	339	1,607	4,348	947	58	335	153	269	785	46	1,184	9	2,169
Medical equipment and supplies	3391	660	3,313	261	16	210	95	146	482	37	918	6	1,802
Other miscellaneous manufacturing	other 339	946	1,035	686	41	125	57	123	302	9	266	3	367

TABLE 11. Company and other nonfederal funds for and companies performing R&D in the United States, by industry and company size, by nonfederally funded R&D program size: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	21,527	56,148	11,691	727	5,133	2,500	4,045	10,609	602	15,011	56	27,301
Mining, extraction, and support activities	21	91	714	63	2	7	4	12	D	7	137	2	D
Utilities	22	67	176	20	2	22	9	21	74	5	92	0	0
Construction	23	1,057	1,466	1,028	D	10	5	11	48	7	D	1	D
Wholesale trade	42	3,459	1,540	2,344	169	815	323	281	767	19	282	0	0
Retail trade	44, 45	1,579	1,596	773	24 i	19	11	772	1,137	14	423	0	0
Transportation and warehousing	48, 49	270	347	2	D	255	D	10	D	2	D	1	D
Information	51	2,133	22,285	641	59	732	382	597	1,946	132	3,863	30	16,036
Publishing	511	1,301	17,273	264	29	511	256	410	1,347	95	2,726	21	12,916
Newspaper, periodical, book, and database	5111	61	763	6	1	35	D	11	42	7	201	2	D
Software	5112	1,240	16,510	258	28	476	D	399	1,305	88	2,525	19	D
Broadcasting and telecommunications	513	224	2,215	8	*	144	97	51	178	18	677	3	1,263
Telecommunications	5133	214	2,052	6	D	142	D	50	D	13	518 i	3	1,263
Other broadcasting and telecommunications	other 513	10	163	2	D	2	D	1	D	5	159	0	0
Other information	other 51	607	2,797	369	30	77	29	135	421	19	460	6	1,857
Finance, insurance, and real estate	52, 53	824	1,708	253	3	513	378	27	D	30	1,067	1	D
Professional, scientific, and technical services	54	9,489	24,245	4,713	290	2,399	1,156	1,995	5,957	365	8,312	18	8,531
Architectural, engineering, and related services	5413	1,992	2,295	1,133	D	371	137	466	1,188	19	480	3	D
Computer systems design and related services	5415	3,410	11,197	1,298	110	1,327	593	678	2,021	98	2,167	8	6,306
Scientific R&D services	5417	1,501	9,383	254	21	440	250	566	2,231	235	5,357	5	1,524 i
Other professional, scientific, and technical services	other 54	2,587	1,370	2,028	D	261	176	284	517	12	308	2	D
Health care services	621-23	1,580	495	1,280	D	274	130	22	54	4	87	1	D
Other nonmanufacturing <sup>a</sup>	55-56, 61, 624, 71-72, 81	979	1,576	575	14	87	D	298	431	17	479	2	D

TABLE 11. Company and other nonfederal funds for and companies performing R&D in the United States, by industry and company size, by nonfederally funded R&D program size: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)													
All companies	-	40,222	188,035	22,218	1,369	9,634	4,626	6,741	18,810	1,390	39,313	239	123,916
5-24	-	20,775	5,610	15,391	907	3,553	1,580	1,828	3,063	3	60 i	0	0
25-49	-	6,585	5,293	3,524	182	1,902	780	1,092	3,313	68	1,018	0	0
50-99	-	4,831	5,849	1,779	145	1,955	960	985	2,842	112	1,902	0	0
100-249	-	4,109	9,987	965	80	1,515	917	1,400	3,940	229	5,050	0	0
250-499	-	1,571	7,832	391	39	411	219	579	2,131	181	4,501	8	942
500-999	-	871	10,060	91	9	171	95	370	1,338	228	6,688	11	1,929
1,000-4,999	-	1,042	30,982	75	6	106	62	403	1,811	383	12,827	75	16,275
5,000-9,999	-	192	16,173	3	*	17	9	49	220	91	2,980	33	12,963
10,000-24,999	-	142	29,647	0	0	2	D	23	D	62	2,637	55	26,909
25,000 or more	-	102	66,600	0	0	1	D	11	D	33	1,652	57	64,897

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed: industry-specific estimates for 2004 are not directly comparable with those for previous years. 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. Excludes 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: 2004.

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Company-funded R&D performed by outside organizations		For-profit companies		Universities and colleges	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	6,770	12,385	645	8,330	203	353
Manufacturing industries	31–33	2,955	8,642	402	6,954	146	304
Food	311	104	182	15	129 i	10	40 i
Beverage and tobacco products	312	7	8	4	6	3	D
Textiles, apparel, and leather	313–16	104	7	6	D	1	D
Wood products	321	20	D	1	D	1	D
Paper, printing, and support activities	322, 323	48	340 i	8	9	5	D
Petroleum and coal products	324	16	62 i	4	43	5	D
Chemicals	325	342	4,909	93	4,156	56	210
Basic chemicals	3251	36	42	13	D	12	D
Resin, synthetic rubber, fibers, and filament	3252	24	18	6	D	4	D
Pharmaceuticals and medicines	3254	170	4,656	56	3,971	31	187
Other chemicals	other 325	112	193	18	148	9	D
Plastics and rubber products	326	153	37	14	10	3	1
Nonmetallic mineral products	327	35	D	4	D	2	D
Primary metals	331	140	D	4	D	5	*
Fabricated metal products	332	305	53	11	D	1	D
Machinery	333	370	130	29	99	8	2
Computer and electronic products	334	737	1,205	110	920	20	18
Computers and peripheral equipment	3341	199	140	20	69	3	D
Communications equipment	3342	84	264	26	D	1	D
Semiconductor and other electronic components	3344	126	260	30	182	6	D
Navigational, measuring, electromedical, and control instruments	3345	300	530	29	431	7	D
Other computer and electronic products	other 334	28	11	5	D	3	D
Electrical equipment, appliances, and components	335	130	49	19	D	2	D
Transportation equipment	336	141	1,436	44	1,396	10	D
Motor vehicles, trailers, and parts	3361–63	76	1,085	29	D	6	D
Aerospace products and parts	3364	41	340	11	D	3	D
Other transportation equipment	other 336	24	11	4	D	1	D
Furniture and related products	337	67	D	2	D	0	0
Miscellaneous manufacturing	339	238	180	34	138	14	13
Medical equipment and supplies	3391	149	143	28	D	12	D
Other miscellaneous manufacturing	other 339	89	37	6	D	2	D

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Company-funded R&D performed by outside organizations		For-profit companies		Universities and colleges	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	3,814	3,743	243	1,376	57	48
Mining, extraction, and support activities	21	38	97 i	5	D	2	D
Utilities	22	19	76	6	13	3	D
Construction	23	272	D	3	D	1	D
Wholesale trade	42	686	57	2	D	1	D
Retail trade	44, 45	519	205	8	D	3	1
Transportation and warehousing	48, 49	7	23	3	D	1	D
Information	51	301	1,427	57	D	4	D
Publishing	511	207	D	41	D	2	D
Newspaper, periodical, book, and database	5111	8	D	3	D	0	0
Software	5112	199	195	38	D	2	D
Broadcasting and telecommunications	513	37	D	3	D	1	D
Telecommunications	5133	34	D	3	D	1	D
Other broadcasting and telecommunications	other 513	3	D	0	0	0	0
Other information	other 51	58	1,063	13	D	1	D
Finance, insurance, and real estate	52, 53	274	391	15	179	0	0
Professional, scientific, and technical services	54	1,379	1,347	136	510	41	35
Architectural, engineering, and related services	5413	104	47	11	D	2	D
Computer systems design and related services	5415	595	151	45	D	2	D
Scientific R&D services	5417	417	1,031	70	297	36	D
Other professional, scientific, and technical services	other 54	264	119	10	D	1	D
Health care services	621–23	255	D	3	D	1	D
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	64	16	5	3	0	0

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Company-funded R&D performed by outside organizations		For-profit companies		Universities and colleges	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	-	6,770	12,385	645	8,330	203	353
5-24	-	3,097	417	5	D	2	D
25-49	-	1,113	307	38	113	14	D
50-99	-	628	384	39	D	10	D
100-249	-	955	821	95	268	22	19
250-499	-	328	521	112	328	21	D
500-999	-	216	1,287	89	378	23	21
1,000-4,999	-	270	1,978	150	1,609	50	49
5,000-9,999	-	59	1,527	36	1,367	16	D
10,000-24,999	-	56	1,620	43	1,320	24	50
25,000 or more	-	49	3,523	38	2,848	21	114



TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Federal agencies or laboratories		State government agencies or laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	55	85	12	D	9	D
Manufacturing industries	31–33	37	47	7	1	6	1
Food	311	4	D	0	0	1	D
Beverage and tobacco products	312	2	D	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	D	0	0	0	0
Petroleum and coal products	324	2	D	0	0	0	0
Chemicals	325	13	33	3	D	5	D
Basic chemicals	3251	1	D	1	D	1	D
Resin, synthetic rubber, fibers, and filament	3252	0	0	0	0	0	0
Pharmaceuticals and medicines	3254	9	D	1	D	2	D
Other chemicals	other 325	3	D	1	D	2	D
Plastics and rubber products	326	0	0	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	0	0	0	0	0	0
Machinery	333	0	0	0	0	0	0
Computer and electronic products	334	8	D	1	D	0	0
Computers and peripheral equipment	3341	1	D	0	0	0	0
Communications equipment	3342	0	0	1	D	0	0
Semiconductor and other electronic components	3344	2	D	0	0	0	0
Navigational, measuring, electromedical, and control instruments	3345	5	D	0	0	0	0
Other computer and electronic products	other 334	0	0	0	0	0	0
Electrical equipment, appliances, and components	335	0	0	0	0	0	0
Transportation equipment	336	2	D	0	0	0	0
Motor vehicles, trailers, and parts	3361–63	0	0	0	0	0	0
Aerospace products and parts	3364	2	D	0	0	0	0
Other transportation equipment	other 336	0	0	0	0	0	0
Furniture and related products	337	0	0	0	0	0	0
Miscellaneous manufacturing	339	1	D	3	D	0	0
Medical equipment and supplies	3391	1	D	3	D	0	0
Other miscellaneous manufacturing	other 339	0	0	0	0	0	0

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Federal agencies or laboratories		State government agencies or laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	18	38	5	D	3	D
Mining, extraction, and support activities	21	0	0	1	D	1	D
Utilities	22	7	34 i	0	0	1	D
Construction	23	0	0	0	0	0	0
Wholesale trade	42	1	D	1	D	0	0
Retail trade	44, 45	1	D	0	0	0	0
Transportation and warehousing	48, 49	1	D	0	0	0	0
Information	51	1	D	0	0	0	0
Publishing	511	1	D	0	0	0	0
Newspaper, periodical, book, and database	5111	0	0	0	0	0	0
Software	5112	1	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	0	0	0	0
Finance, insurance, and real estate	52, 53	0	0	0	0	0	0
Professional, scientific, and technical services	54	7	D	3	D	1	D
Architectural, engineering, and related services	5413	0	0	1	D	0	0
Computer systems design and related services	5415	0	0	1	D	0	0
Scientific R&D services	5417	7	D	1	D	1	D
Other professional, scientific, and technical services	other 54	0	0	0	0	0	0
Health care services	621–23	0	0	0	0	0	0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	0	0	0	0	0	0

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Federal agencies or laboratories		State government agencies or laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	-	55	85	12	4	9	2
5-24	-	0	0	1	D	1	D
25-49	-	2	D	0	0	1	D
50-99	-	3	D	0	0	0	0
100-249	-	6	D	1	D	1	D
250-499	-	3	*	2	D	0	0
500-999	-	7	D	2	D	0	0
1,000-4,999	-	11	D	4	*	2	D
5,000-9,999	-	6	11	0	0	1	D
10,000-24,999	-	9	D	0	0	1	D
25,000 or more	-	8	D	2	D	2	D

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Undistributed R&D	
		Companies	Amount
All industries	21–23, 31–33, 42, 44–81	6,081	3,611
Manufacturing industries	31–33	2,518	1,335
Food	311	86	12
Beverage and tobacco products	312	3	*
Textiles, apparel, and leather	313–16	98	7
Wood products	321	19	9
Paper, printing, and support activities	322, 323	37	329
Petroleum and coal products	324	11	5
Chemicals	325	237	509
Basic chemicals	3251	20	5
Resin, synthetic rubber, fibers, and filament	3252	16	6
Pharmaceuticals and medicines	3254	109	469
Other chemicals	other 325	92	30
Plastics and rubber products	326	139	26
Nonmetallic mineral products	327	30	1
Primary metals	331	132	2
Fabricated metal products	332	294	46
Machinery	333	340	29
Computer and electronic products	334	619	259
Computers and peripheral equipment	3341	179	70
Communications equipment	3342	58	32
Semiconductor and other electronic components	3344	94	74
Navigational, measuring, electromedical, and control instruments	3345	266	80
Other computer and electronic products	other 334	22	4
Electrical equipment, appliances, and components	335	111	28
Transportation equipment	336	96	34
Motor vehicles, trailers, and parts	3361–63	46	15
Aerospace products and parts	3364	29	16
Other transportation equipment	other 336	21	2
Furniture and related products	337	65	9
Miscellaneous manufacturing	339	203	29
Medical equipment and supplies	3391	120	17
Other miscellaneous manufacturing	other 339	83	12

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Undistributed R&D	
		Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	3,562	2,276
Mining, extraction, and support activities	21	33	7
Utilities	22	10	28
Construction	23	269	20
Wholesale trade	42	683	56
Retail trade	44, 45	511	197
Transportation and warehousing	48, 49	4	4
Information	51	244	936
Publishing	511	166	56
Newspaper, periodical, book, and database	5111	5	2
Software	5112	161	54
Broadcasting and telecommunications	513	34	53
Telecommunications	5133	31	D
Other broadcasting and telecommunications	other 513	3	D
Other information	other 51	45	828
Finance, insurance, and real estate	52, 53	259	213
Professional, scientific, and technical services	54	1,238	796
Architectural, engineering, and related services	5413	93	34
Computer systems design and related services	5415	549	40
Scientific R&D services	5417	343	703
Other professional, scientific, and technical services	other 54	254	20
Health care services	621–23	252	7
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	59	13

TABLE 12. Company and other nonfederal funds for and companies funding industrial R&D performed outside of company facilities in the United States by outside organizations, by industry and company size, by type of organization: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Undistributed R&D	
		Companies	Amount
Company size (employees)			
All companies	-	6,081	3,611
5-24	-	3,092	394
25-49	-	1,073	190
50-99	-	587	298
100-249	-	854	533
250-499	-	214	179
500-999	-	123	876
1,000-4,999	-	105	310
5,000-9,999	-	17	74
10,000-24,999	-	7	221
25,000 or more	-	10	536

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Detail does not add to total because categories are not mutually exclusive. Detail does not add to total for money amounts because of rounding or suppression. 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. Excludes 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: 2004.

TABLE 13. 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: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	All company-funded R&D		All company-funded collaborative R&D		For-profit companies		Universities and colleges	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	40,222	188,035	268	6,903	221	6,721	80	68
Manufacturing industries	31–33	18,695	131,887	170	4,858	138	4,709	57	47
Food	311	966	2,249	5	D	5	D	2	D
Beverage and tobacco products	312	59	555 i	1	D	1	D	0	0
Textiles, apparel, and leather	313–16	498	568	2	D	1	D	1	D
Wood products	321	167	152	0	0	0	0	0	0
Paper, printing, and support activities	322, 323	442	2,308	3	D	2	D	1	D
Petroleum and coal products	324	98	1,595	3	D	2	D	3	D
Chemicals	325	2,004	39,070	54	998	43	890	21	19
Basic chemicals	3251	209	2,312	9	31	6	26	6	D
Resin, synthetic rubber, fibers, and filament	3252	99	2,080	3	3	2	D	1	D
Pharmaceuticals and medicines	3254	393	31,444	35	897	29	796	12	D
Other chemicals	other 325	1,303	3,234	7	67	6	D	2	D
Plastics and rubber products	326	1,173	1,879	7	58	7	D	1	D
Nonmetallic mineral products	327	385	783	0	0	0	0	0	0
Primary metals	331	534	705	6	7	4	D	3	D
Fabricated metal products	332	2,110	1,465	2	D	2	D	0	0
Machinery	333	3,234	6,473	17	31	13	29	6	1
Computer and electronic products	334	3,171	40,691	36	949	27	935	10	6
Computers and peripheral equipment	3341	430	5,707	4	D	4	D	0	0
Communications equipment	3342	543	8,433	9	D	7	D	3	D
Semiconductor and other electronic components	3344	873	17,524	14	288	9	281 i	3	D
Navigational, measuring, electromedical, and control instruments	3345	1,200	7,882	8	33	7	32	3	D
Other computer and electronic products	other 334	125	1,144	1	D	0	0	1	D
Electrical equipment, appliances, and components	335	825	2,622	5	8	3	D	0	0
Transportation equipment	336	909	26,019	19	2,561	18	2,556	5	4
Motor vehicles, trailers, and parts	3361–63	563	15,610	13	D	12	D	4	D
Aerospace products and parts	3364	157	9,224	4	D	4	D	1	D
Other transportation equipment	other 336	189	1,185	2	D	2	D	0	0
Furniture and related products	337	514	406	1	D	1	D	0	0
Miscellaneous manufacturing	339	1,607	4,348	9	19	9	16	4	D
Medical equipment and supplies	3391	660	3,313	6	16	6	D	3	D
Other miscellaneous manufacturing	other 339	946	1,035	3	3	3	D	1	D

TABLE 13. 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: 2004

(Millions of dollars)

Industry and company size	NAICS codes	All company-funded R&D		All company-funded collaborative R&D		For-profit companies		Universities and colleges	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	21,527	56,148	98	2,044	83	2,011	23	21
Mining, extraction, and support activities	21	91	714	2	D	2	D	0	0
Utilities	22	67	176	5	30	4	25	1	D
Construction	23	1,057	1,466	1	D	1	D	1	D
Wholesale trade	42	3,459	1,540	0	0	0	0	0	0
Retail trade	44, 45	1,579	1,596	1	D	1	D	1	D
Transportation and warehousing	48, 49	270	347	0	0	0	0	0	0
Information	51	2,133	22,285	11	1,036	11	D	1	D
Publishing	511	1,301	17,273	8	D	8	D	0	0
Newspaper, periodical, book, and database	5111	61	763	0	0	0	0	0	0
Software	5112	1,240	16,510	8	D	8	D	0	0
Broadcasting and telecommunications	513	224	2,215	2	D	2	D	0	0
Telecommunications	5133	214	2,052	2	D	2	D	0	0
Other broadcasting and telecommunications	other 513	10	163	0	0	0	0	0	0
Other information	other 51	607	2,797	1	D	1	D	1	D
Finance, insurance, and real estate	52, 53	824	1,708	3	D	2	D	1	D
Professional, scientific, and technical services	54	9,489	24,245	73	875	60	858	18	11
Architectural, engineering, and related services	5413	1,992	2,295	4	D	3	D	1	D
Computer systems design and related services	5415	3,410	11,197	11	361	9	D	2	D
Scientific R&D services	5417	1,501	9,383	57	469	47	453	15	10
Other professional, scientific, and technical services	other 54	2,587	1,370	1	D	1	D	0	0
Health care services	621–23	1,580	495	0	0	0	0	0	0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	979	1,576	2	D	2	D	0	0



TABLE 13. 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: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	All company-funded R&D		All company-funded collaborative R&D		For-profit companies		Universities and colleges	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)									
All companies	-	40,222	188,035	268	6,903	221	6,721	80	68
5-24	-	20,775	5,610	2	D	1	D	0	0
25-49	-	6,585	5,293	22	D	19	80	6	D
50-99	-	4,831	5,849	30	87	24	D	7	4
100-249	-	4,109	9,987	31	189	24	182	6	5
250-499	-	1,571	7,832	35	372	29	364	6	D
500-999	-	871	10,060	30	410	27	402	9	7
1,000-4,999	-	1,042	30,982	64	1,178	50	1,078	21	11
5,000-9,999	-	192	16,173	16	1,137	15	1,127	6	9
10,000-24,999	-	142	29,647	22	363	17	346	13	11
25,000 or more	-	102	66,600	16	3,082	15	3,065	6	D

TABLE 13. 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: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Federal agencies or laboratories		State government agencies or laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	20	8	24	19	4	1
Manufacturing industries	31–33	11	D	14	13	3	D
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	0	0	0	0	0	0
Wood products	321	0	0	0	0	0	0
Paper, printing, and support activities	322, 323	0	0	0	0	0	0
Petroleum and coal products	324	1	D	1	D	0	0
Chemicals	325	2	D	3	D	2	D
Basic chemicals	3251	1	D	1	D	1	D
Resin, synthetic rubber, fibers, and filament	3252	0	0	0	0	0	0
Pharmaceuticals and medicines	3254	1	D	2	D	1	D
Other chemicals	other 325	0	0	0	0	0	0
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	0	0	0	0	0	0
Machinery	333	1	D	2	D	0	0
Computer and electronic products	334	2	D	3	D	1	D
Computers and peripheral equipment	3341	1	D	0	0	0	0
Communications equipment	3342	0	0	0	0	0	0
Semiconductor and other electronic components	3344	0	0	3	D	0	0
Navigational, measuring, electromedical, and control instruments	3345	1	D	0	0	1	D
Other computer and electronic products	other 334	0	0	0	0	0	0
Electrical equipment, appliances, and components	335	1	D	1	D	0	0
Transportation equipment	336	0	0	4	1	0	0
Motor vehicles, trailers, and parts	3361–63	0	0	2	D	0	0
Aerospace products and parts	3364	0	0	2	D	0	0
Other transportation equipment	other 336	0	0	0	0	0	0
Furniture and related products	337	0	0	0	0	0	0
Miscellaneous manufacturing	339	1	D	0	0	0	0
Medical equipment and supplies	3391	1	D	0	0	0	0
Other miscellaneous manufacturing	other 339	0	0	0	0	0	0

TABLE 13. 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: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Federal agencies or laboratories		State government agencies or laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21–23, 42, 44–81	9	D	10	6	1	D
Mining, extraction, and support activities	21	0	0	0	0	0	0
Utilities	22	5	D	2	D	1	D
Construction	23	0	0	0	0	0	0
Wholesale trade	42	0	0	0	0	0	0
Retail trade	44, 45	1	D	0	0	0	0
Transportation and warehousing	48, 49	0	0	0	0	0	0
Information	51	0	0	0	0	0	0
Publishing	511	0	0	0	0	0	0
Newspaper, periodical, book, and database	5111	0	0	0	0	0	0
Software	5112	0	0	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	0	0	0	0
Finance, insurance, and real estate	52, 53	1	D	0	0	0	0
Professional, scientific, and technical services	54	2	D	8	D	0	0
Architectural, engineering, and related services	5413	0	0	0	0	0	0
Computer systems design and related services	5415	0	0	0	0	0	0
Scientific R&D services	5417	2	D	8	D	0	0
Other professional, scientific, and technical services	other 54	0	0	0	0	0	0
Health care services	621–23	0	0	0	0	0	0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	0	0	0	0	0	0

TABLE 13. 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: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Nonprofit organizations (other than universities and colleges)		Federal agencies or laboratories		State government agencies or laboratories	
		Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)							
All companies	-	20	8	24	19	4	1
5-24	-	0	0	1	D	0	0
25-49	-	1	D	1	D	1	D
50-99	-	1	D	4	D	0	0
100-249	-	3	1 i	3	2	0	0
250-499	-	1	D	3	D	0	0
500-999	-	2	D	2	D	0	0
1,000-4,999	-	1	D	4	3	2	D
5,000-9,999	-	3	D	2	D	0	0
10,000-24,999	-	6	5	3	D	1	D
25,000 or more	-	2	D	1	D	0	0

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. 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. Excludes 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: 2004.

TABLE 14. Company and other nonfederal funds for and companies funding industrial R&D performed outside of the United States, by industry and company size: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Companies	Amount
All industries	21–23, 31–33, 42, 44–81	2,573	31,393
Manufacturing industries	31–33	1,111	26,293
Food	311	29	377
Beverage and tobacco products	312	2	D
Textiles, apparel, and leather	313–16	24	63
Wood products	321	4	1
Paper, printing, and support activities	322, 323	38	620 i
Petroleum and coal products	324	6	25
Chemicals	325	180	8,893
Basic chemicals	3251	33	436
Resin, synthetic rubber, fibers, and filament	3252	14	411
Pharmaceuticals and medicines	3254	78	7,654
Other chemicals	other 325	56	392
Plastics and rubber products	326	48	343
Nonmetallic mineral products	327	12	52
Primary metals	331	16	16
Fabricated metal products	332	84	328
Machinery	333	100	861
Computer and electronic products	334	361	7,520
Computers and peripheral equipment	3341	40	3,842
Communications equipment	3342	89	900
Semiconductor and other electronic components	3344	127	1,594
Navigational, measuring, electromedical, and control instruments	3345	85	1,000
Other computer and electronic products	other 334	20	184
Electrical equipment, appliances, and components	335	49	409
Transportation equipment	336	62	6,302
Motor vehicles, trailers, and parts	3361–63	48	5,429
Aerospace products and parts	3364	6	D
Other transportation equipment	other 336	8	D
Furniture and related products	337	10	D
Miscellaneous manufacturing	339	86	480
Medical equipment and supplies	3391	57	375
Other miscellaneous manufacturing	other 339	29	105
Nonmanufacturing industries	21–23, 42, 44–81	1,461	5,100
Mining, extraction, and support activities	21	8	50
Utilities	22	5	5
Construction	23	4	13
Wholesale trade	42	388	140
Retail trade	44, 45	12	26
Transportation and warehousing	48, 49	2	D
Information	51	314	2,591
Publishing	511	227	1,867
Newspaper, periodical, book, and database	5111	6	28 i
Software	5112	221	1,840
Broadcasting and telecommunications	513	60	29
Telecommunications	5133	58	D
Other broadcasting and telecommunications	other 513	2	D
Other information	other 51	26	695
Finance, insurance, and real estate	52, 53	12	76
Professional, scientific, and technical services	54	688	1,993
Architectural, engineering, and related services	5413	49	459
Computer systems design and related services	5415	176	908
Scientific R&D services	5417	199	572
Other professional, scientific, and technical services	other 54	264	55 i
Health care services	621–23	3	D
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	25	204

TABLE 14. Company and other nonfederal funds for and companies funding industrial R&D performed outside of the United States, by industry and company size: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Companies	Amount
Company size (employees)			
All companies	-	2,573	31,393
5-24	-	807	145
25-49	-	320	186
50-99	-	231	208
100-249	-	306	703
250-499	-	216	427
500-999	-	173	817
1,000-4,999	-	330	4,981
5,000-9,999	-	75	3,244
10,000-24,999	-	69	3,715
25,000 or more	-	44	16,968

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. 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. Excludes 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: 2004.

TABLE 15. Company and other nonfederal funds for and companies funding industrial R&D performed outside of the 50 states and D.C. by majority-owned foreign affiliates and other organizations, by location of R&D performance: 2004

(Millions of dollars)

Location of R&D performance	Companies	Amount
All locations	1,493	29,284
Puerto Rico	25	73
Canada	257	2,126
China	91	295
France	192	1,935
Germany	240	4,220
India	113	546
Ireland	58	674
Israel	44	769
Italy	79	346
Japan	140	1,383
Singapore	57	696
Sweden	58	492
United Kingdom	330	3,100
Other locations outside of the 50 states and D.C.	399	11,115
Undistributed <sup>a</sup>	805	1,514

<sup>a</sup> Includes R&D reported on Form RD-1 that was not allocated to specific locations outside of the 50 states and D.C. Also includes total R&D performed in locations outside of the 50 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 for number of companies because categories are not mutually exclusive. Detail does not add to total for money amounts because of rounding or suppression. Data are reported in current U.S. dollars. 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. Excludes 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: 2004.

TABLE 16. Federal funds for and number of companies performing industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2004

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
All industries	21-23, 31-33, 42, 44-81	3,008	20,266	1,364	90	863	422	668	1953	89	2,318	24	15,483
Manufacturing industries	31-33	780	15,401	355	31	219	106	161	406	28	716	17	14,143
Food	311	29	5	26	3	3	2	0	0	0	0	0	0
Beverage and tobacco products	312	0	0	0	0	0	0	0	0	0	0	0	0
Textiles, apparel, and leather	313-16	4	3	1	D	2	D	1	D	0	0	0	0
Wood products	321	1	D	1	D	0	0	0	0	0	0	0	0
Paper, printing, and support activities	322, 323	1	D	0	0	0	0	0	0	1	D	0	0
Petroleum and coal products	324	3	9	0	0	1	D	2	D	0	0	0	0
Chemicals	325	76	D	15	2	25	14	33	84	2	D	1	D
Basic chemicals	3251	15	80	1	D	5	D	7	D	2	D	0	0
Resin, synthetic rubber, fibers, and filament	3252	7	16	3	D	1	D	3	15	0	0	0	0
Pharmaceuticals and medicines	3254	29	33	6	1	13	6	9	26	0	0	0	0
Other chemicals	other 325	25	D	4	D	6	4	14	D	0	0	1	D
Plastics and rubber products	326	15	D	2	D	10	5	2	D	1	D	0	0
Nonmetallic mineral products	327	7	5	2	D	2	D	3	4	0	0	0	0
Primary metals	331	13	21	7	D	1	D	4	D	1	D	0	0
Fabricated metal products	332	67	47	40	1	23	D	3	14	1	D	0	0
Machinery	333	29	105	6	*	15	6	6	26	3	72	0	0
Computer and electronic products	334	299	7,605	102	14	105	52	78	170	9	D	6	D
Computers and peripheral equipment	3341	15	27	9	D	5	D	0	0	1	D	0	0
Communications equipment	3342	23	D	9	1	4	1	8	D	2	D	0	0
Semiconductor and other electronic components	3344	57	D	16	2	5	D	34	D	2	D	0	0
Navigational, measuring, electromedical, and control instruments	3345	202	7,332	67	10	90	44	35	84	4	D	6	D
Other computer and electronic products	other 334	3	3	1	D	1	D	1	D	0	0	0	0
Electrical equipment, appliances, and components	335	23	42	8	D	4	2	9	19	2	D	0	0
Transportation equipment	336	62	D	26	D	6	D	12	38	8	D	10	D
Motor vehicles, trailers, and parts	3361-63	21	67	10	D	3	1	5	D	3	40	0	0
Aerospace products and parts	3364	20	3,862	0	0	1	D	7	D	4	56	8	3,792
Other transportation equipment	other 336	22	D	17	D	2	D	0	0	1	D	2	D
Furniture and related products	337	38	2	38	2	0	0	0	0	0	0	0	0
Miscellaneous manufacturing	339	111	39	81	6	22	10	7	24	0	0	0	0
Medical equipment and supplies	3391	51	30	24	D	22	10	5	D	0	0	0	0
Other miscellaneous manufacturing	other 339	60	10	58	D	0	0	2	D	0	0	0	0



TABLE 16. Federal funds for and number of companies performing industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2004

(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Nonmanufacturing industries	21-23, 42, 44-81	2,228	4,865	1,009	59	644	316	507	1547	61	1,602	7	1,340
Mining, extraction, and support activities	21	1	D	1	D	0	0	0	0	0	0	0	0
Utilities	22	5	26	1	D	1	D	2	D	1	D	0	0
Construction	23	3	15	0	0	0	0	3	15	0	0	0	0
Wholesale trade	42	49	D	5	*	41	D	3	D	0	0	0	0
Retail trade	44, 45	0	0	0	0	0	0	0	0	0	0	0	0
Transportation and warehousing	48, 49	2	D	1	D	1	D	0	0	0	0	0	0
Information	51	148	307	63	1	47	D	37	82	0	0	1	D
Publishing	511	73	D	4	*	39	D	30	D	0	0	0	0
Newspaper, periodical, book, and database	5111	0	0	0	0	0	0	0	0	0	0	0	0
Software	5112	73	D	4	*	39	D	30	D	0	0	0	0
Broadcasting and telecommunications	513	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
Other broadcasting and telecommunications	other 513	0	0	0	0	0	0	0	0	0	0	0	0
Other information	other 51	75	D	58	*	8	4	7	D	0	0	1	D
Finance, insurance, and real estate	52, 53	0	0	0	0	0	0	0	0	0	0	0	0
Professional, scientific, and technical services	54	1,749	4,464	678	57	549	D	456	1422	60	D	6	D
Architectural, engineering, and related services	5413	387	1,970	111	4	114	58	139	409	19	572	4	926
Computer systems design and related services	5415	433	378	315	29	56	D	56	155	6	D	0	0
Scientific R&D services	5417	672	1,972	251	D	127	D	259	846	34	827	2	D
Other professional, scientific, and technical services	other 54	257	144	1	D	252	D	3	12 i	1	D	0	0
Health care services	621-23	8	5	2	D	5	D	1	D	0	0	0	0
Other nonmanufacturing <sup>a</sup>	55-56, 61, 624, 71-72, 81	263	19	258	1	0	0	5	18	0	0	0	0

TABLE 16. Federal funds for and number of companies performing industrial R&D in the United States, by industry and company size, by federally funded R&D program size: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	R&D program size											
		All companies		Less than \$200,000		\$200,000-\$999,999		\$1 million-\$9.9 million		\$10 million-\$99.9 million		\$100 million or more	
		Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
Company size (employees)													
All companies	-	3,008	20,266	1,364	90	863	422	668	1953	89	2,318	24	15,483
5-24	-	1,657	685	890	59	531	253	236	373	0	0	0	0
25-49	-	581	612	248	12	167	91	165	491	2	18	0	0
50-99	-	272	608	92	6	78	33	92	396	10	172	0	0
100-249	-	257	1,058	99	9	43	D	88	386	26	539	1	D
250-499	-	67	547	14	1	13	D	24	D	16	453	0	0
500-999	-	47	762	8	1	10	6	17	D	10	439	2	D
1,000-4,999	-	50	493	8	D	9	4	21	D	11	309	1	D
5,000-9,999	-	18	2,018	0	0	4	2	5	18	4	129	5	1,869
10,000-24,999	-	28	1,561	4	*	6	3	11	43	3	52	4	1,461
25,000 or more	-	31	11,923	1	D	2	D	10	47	7	206	11	11,669

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed: industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 17. Federal funds for industrial R&D performed in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5-24	25-49	50-99	100-249	250-499	500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 +
All industries	21-23, 31-33, 42, 44-81	20,266	685	612	608	1,058	547	762	493	2,018	1,561	11,923
Manufacturing industries	31-33	15,401	114	77	58	111	51	197	275	D	D	D
Food	311	5	0	1	0	1	D	0	0	D	D	D
Beverage and tobacco products	312	0	0	0	0	0	0	0	0	0	0	0
Textiles, apparel, and leather	313-16	3	0	0	D	D	D	0	0	0	0	0
Wood products	321	D	0	0	0	0	0	0	0	0	D	0
Paper, printing, and support activities	322, 323	D	0	0	0	0	0	0	0	0	0	D
Petroleum and coal products	324	9	0	0	0	0	0	D	0	0	D	D
Chemicals	325	D	10	11	6	4	16	7	D	21	14	D
Basic chemicals	3251	80	D	D	D	D	0	D	D	D	D	0
Resin, synthetic rubber, fibers, and filament	3252	16	D	0	D	0	0	0	0	D	D	D
Pharmaceuticals and medicines	3254	33	0	10	3	D	4	D	D	0	D	D
Other chemicals	other 325	D	9	D	D	0	12	D	0	0	D	D
Plastics and rubber products	326	D	D	0	5	D	0	0	D	0	0	0
Nonmetallic mineral products	327	5	D	D	0	0	0	D	D	0	D	0
Primary metals	331	21	0	2	0	0	D	0	0	D	D	D
Fabricated metal products	332	47	D	0	6	D	D	D	D	0	D	0
Machinery	333	105	0	D	D	13	D	12	D	D	D	D
Computer and electronic products	334	7,605	91	36	22	24	13	141	133	1,119	D	D
Computers and peripheral equipment	3341	27	D	0	0	D	D	D	D	0	0	0
Communications equipment	3342	D	0	7	2	2	0	D	D	0	0	D
Semiconductor and other electronic components	3344	D	18	23	9	D	D	19	D	0	0	D
Navigational, measuring, electromedical, and control instruments	3345	7,332	72	7	11	15	D	D	D	1,119	D	D
Other computer and electronic products	other 334	3	D	0	0	0	0	0	D	0	0	0
Electrical equipment, appliances, and components	335	42	0	D	8	16	D	D	D	0	0	0
Transportation equipment	336	D	7	20	D	27	D	D	D	D	D	D
Motor vehicles, trailers, and parts	3361-63	67	0	1	0	0	D	D	D	D	D	46
Aerospace products and parts	3364	3,862	6	18	0	D	0	D	0	D	D	3,088
Other transportation equipment	other 336	D	1	1	D	D	0	0	0	0	0	D
Furniture and related products	337	2	D	2	0	0	0	D	0	0	0	0
Miscellaneous manufacturing	339	39	5	5	7	14	D	D	D	0	D	0
Medical equipment and supplies	3391	30	D	5	D	10	D	D	0	0	D	0
Other miscellaneous manufacturing	other 339	10	D	0	D	4	0	0	D	0	0	0

TABLE 17. Federal funds for industrial R&D performed in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
Nonmanufacturing industries	21–23, 42, 44–81	4,865	571	535	550	947	497	565	217	D	D	D
Mining, extraction, and support activities	21	D	0	0	0	0	0	0	0	0	0	D
Utilities	22	26	0	0	D	D	0	D	0	D	0	D
Construction	23	15	0	0	0	0	0	0	D	0	D	0
Wholesale trade	42	D	D	13	0	0	0	*	0	0	0	0
Retail trade	44, 45	0	0	0	0	0	0	0	0	0	0	0
Transportation and warehousing	48, 49	D	0	0	0	0	0	0	D	0	0	D
Information	51	307	D	26	D	D	D	0	D	0	0	D
Publishing	511	D	D	26	D	D	0	0	D	0	0	0
Newspaper, periodical, book, and database	5111	0	0	0	0	0	0	0	0	0	0	0
Software	5112	D	D	26	D	D	0	0	D	0	0	0
Broadcasting and telecommunications	513	0	0	0	0	0	0	0	0	0	0	0
Telecommunications	5133	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
Other information	other 51	D	*	0	4	D	D	0	0	0	0	D
Finance, insurance, and real estate	52, 53	0	0	0	0	0	0	0	0	0	0	0
Professional, scientific, and technical services	54	4,464	535	494	527	D	477	564	D	D	D	D
Architectural, engineering, and related services	5413	1,970	119	161	169	315	D	D	173	D	D	0
Computer systems design and related services	5415	378	79	D	D	D	0	D	D	0	D	D
Scientific R&D services	5417	1,972	219	304	265	504	D	D	D	0	D	0
Other professional, scientific, and technical services	other 54	144	119	D	D	0	0	0	0	0	0	0
Health care services	621–23	5	D	D	0	D	0	D	D	D	0	0
Other nonmanufacturing <sup>a</sup>	55–56, 61, 624, 71–72, 81	19	*	D	D	D	D	D	0	0	0	0

\* = amount < \$500,000.

D = suppressed to avoid disclosure of confidential information.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 18. Domestic net sales of companies performing industrial R&D in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
All industries	21–23, 31–33, 42, 44–81	5,601,729	111,868 i	46,138	101,559	180,436	152,243	217,014	828,300	571,170	993,497	2,399,505
Manufacturing industries	31–33	3,871,294	30,554	22,397	68,160	100,792	126,101	169,886	628,659	431,746	689,900	1,603,099
Food	311	347,396	2,180	1,521	3,109	8,282	9,156	18,759	49,720	40,868	58,668	155,131
Beverage and tobacco products	312	43,292	1,485	D	33	183	838	0	D	D	0	D
Textiles, apparel, and leather	313–16	48,859	343	D	796	2,775	1,496	3,114	D	5,352	10,248	D
Wood products	321	35,066	157	59	414	718	676	1,236	D	7,543	D	D
Paper, printing, and support activities	322, 323	155,801	362	357	480	1,994	2,687	3,962	19,578	11,848	17,343	97,190
Petroleum and coal products	324	408,956	191	133	428	485	833	D	D	D	D	270,369
Chemicals	325	595,292	3,882	2,384	28,843	10,902	16,141	24,903	156,580	74,508	152,053	125,095
Basic chemicals	3251	109,200	236	359	715	2,376	1,716	5,830	D	27,262	D	0
Resin, synthetic rubber, fibers, and filament	3252	67,610	144	151	270	331	4,447	2,763	D	D	D	D
Pharmaceuticals and medicines	3254	315,180	1,888 i	324	25,416	2,976	4,400	10,418	D	D	D	D
Other chemicals	other 325	103,302	1,615	1,550	2,443	5,219	5,578	5,893	D	21,204	14,479	D
Plastics and rubber products	326	120,670	737	1,568	2,903	4,815	7,148	31,823	35,794	D	D	D
Nonmetallic mineral products	327	43,155	206	431	523	1,070	1,518	D	D	D	D	0
Primary metals	331	101,868	278	165	580	3,784	2,409	1,639	19,080	D	31,170	D
Fabricated metal products	332	102,935	911	2,470	5,656	8,315	8,724	6,895	D	D	14,524	D
Machinery	333	178,618	2,129	3,588	7,598	14,700	12,184	18,174	44,978	21,697	20,835	32,735
Computer and electronic products	334	506,103	2,630	3,988	6,837	22,138	35,808	21,774	94,207	23,655	90,167	204,900
Computers and peripheral equipment	3341	122,494	291	386	908	8,178	2,274	3,547	16,082	D	D	76,330
Communications equipment	3342	88,381	484	569	1,214	4,303	24,796	D	16,587	0	D	D
Semiconductor and other electronic components	3344	162,398	598	1,619	2,293	4,214	4,203	D	40,325	D	D	D
Navigational, measuring, electromedical, and control instruments	3345	110,416	1,139	1,322	2,014	4,631	3,813	D	15,017	10,026	33,259	D
Other computer and electronic products	other 334	22,415	118	93	408	813	722	D	6,196	0	D	0
Electrical equipment, appliances, and components	335	95,715	458	889	3,148	3,078	6,897	6,368	24,495	17,925	32,458	0
Transportation equipment	336	946,474	11,672	864	2,736	9,416	5,053	18,674	69,036	83,985	110,722	634,316
Motor vehicles, trailers, and parts	3361–63	643,079	11,451	505	1,867	5,326	3,477	15,221	D	D	D	D
Aerospace products and parts	3364	228,018	126	107	243	3,225 i	642	990	3,895	4,639	D	D
Other transportation equipment	other 336	75,377	95	252	627	865	934	2,463	D	D	D	D
Furniture and related products	337	51,578	206	769	468	1,505	7,649	1,191	8,340	D	D	D
Miscellaneous manufacturing	339	89,515	2,728	2,339	3,606	6,632	6,885	8,812	29,873	11,331	17,308	0
Medical equipment and supplies	3391	56,713	2,097	1,603 i	1,536	2,712	3,889	4,402	16,900	6,267	17,308	0
Other miscellaneous manufacturing	other 339	32,802	631	736	2,071	3,919	2,996	4,410	12,974	5,065	0	0

TABLE 18. Domestic net sales of companies performing industrial R&D in the United States, by industry, by company size: 2004

(Millions of dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
Nonmanufacturing industries	21–23, 42, 44–81	1,730,435	81,314 i	23,741	33,399	79,643	26,142	47,128	199,641	139,424	303,597	796,405
Mining, extraction, and support activities	21	29,753	43 i	167	65	257	691	3,287	6,840	D	D	D
Utilities	22	170,637	54	36	D	172	0	D	22,020	54,115	D	D
Construction	23	56,118	2,198	D	D	D	797	1,715	18,103	D	D	0
Wholesale trade	42	68,879	4,456	D	D	18,956	D	D	514	0	D	0
Retail trade	44, 45	191,632	40,872 i	31	103	D	3,329	2,057	12,608	D	51,723	D
Transportation and warehousing	48, 49	74,235	67	D	D	294	D	D	2,893	D	D	D
Information	51	445,652	21,509 i	2,135	3,593	29,865	6,227	7,749	31,834	20,792	71,813	250,135
Publishing	511	90,234	1,017	1,299	1,905	4,017	3,556	D	17,899	9,619	18,411	D
Newspaper, periodical, book, and database	5111	19,230	0	183	52	145	206	345	3,515	D	D	D
Software	5112	71,004	1,017	1,116	1,853	3,872	3,349	D	14,384	D	D	D
Broadcasting and telecommunications	513	291,646	19,013 i	373	491	D	D	D	1,419	D	24,512	D
Telecommunications	5133	D	19,013 i	373	D	D	D	0	D	D	24,512	D
Other broadcasting and telecommunications	other 513	D	0	0	D	D	D	D	D	0	0	D
Other information	other 51	63,772	1,480 i	463 i	1,197	D	D	D	12,516	D	28,890	D
Finance, insurance, and real estate	52, 53	440,122	39	D	3,216	8,076	1,622	5,252	71,081	D	21,512	322,116
Professional, scientific, and technical services	54	185,812	9,832	9,324	8,360	10,790	8,601	11,467	24,829	17,134	21,104	64,371
Architectural, engineering, and related services	5413	34,885	2,222	2,780	2,201	1,635	D	969	7,012	5,687	D	0
Computer systems design and related services	5415	95,541	3,219	3,872	3,171	4,780	D	7,525	11,605	6,734	D	D
Scientific R&D services	5417	31,729	1,420	2,598	2,724	3,863	2,424	2,572	3,333	D	D	D
Other professional, scientific, and technical services	other 54	23,658	2,970	75 i	263	512	475	401	2,880	D	D	D
Health care services	621–23	27,638	1,353 i	895 i	2,963	454	531	918	1,714	8,172 i	D	D
Other nonmanufacturing <sup>a</sup>	55–56, 61, 624, 71–72, 81	39,957	891	140	184	936	2,129	2,420	7,204	4,971	5,443 i	15,638

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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: 2004.

TABLE 19. Concentration of all, federal, and company and other industrial R&D funds and net sales of companies performing industrial R&D in the United States, ranked by R&D program size: 1994–2004  
(Percent distribution)

Companies ranked by R&D program size	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All R&D funds											
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	15	16	15	14	12	11	10	10	10	11	10
Next 4 (5–8)	8	8	8	8	8	8	7	7	7	7	8
Next 12 (9–20)	14	13	13	13	13	13	13	13	13	13	13
Next 20 (21–40)	13	12	12	11	11	11	11	11	12	11	10
Next 60 (41–100)	15	14	14	14	13	13	14	14	15	14	13
Next 100 (101–200)	9	8	9	9	9	9	9	10	10	9	10
Next 100 (201–300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
Next 100 (301–400)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Next 100 (401–500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
All others <sup>a</sup>	26	29	29	31	34	35	36	35	33	35	25
Federal R&D funds											
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	26	35	37	40	46	47	43	41	42	47	50
Next 4 (5–8)	19	19	20	23	17	14	16	17	15	12	11
Next 12 (9–20)	32	27	23	18	14	15	15	17	19	13	13
Next 20 (21–40)	13	8	7	7	7	8	7	6	9	6	7
Next 60 (41–100)	7	5	5	5	7	7	6	8	9	7	7
Next 100 (101–200)	2	3	4	3	5	4	5	5	5	7	5
Next 100 (201–300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
Next 100 (301–400)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Next 100 (401–500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
All others <sup>a</sup>	1	3	4	4	4	5	8	6	1	8	0
Company and other R&D funds											
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	16	16	15	13	12	11	10	11	10	11	11
Next 4 (5–8)	7	7	7	7	7	8	7	8	7	7	8
Next 12 (9–20)	12	11	11	11	12	12	13	12	13	12	12
Next 20 (21–40)	11	11	10	11	10	10	11	10	11	11	10
Next 60 (41–100)	14	14	14	13	13	13	13	14	15	14	13
Next 100 (101–200)	9	9	10	10	10	9	9	10	11	10	10
Next 100 (201–300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
Next 100 (301–400)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4
Next 100 (401–500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
All others <sup>a</sup>	31	32	33	35	36	37	37	35	33	35	24

TABLE 19. Concentration of all, federal, and company and other industrial R&D funds and net sales of companies performing industrial R&D in the United States, ranked by R&D program size: 1994–2004 (Percent distribution)

Companies ranked by R&D program size	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	Domestic net sales										
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	8	8	6	6	5	6 i	3 r	3 r	3 r	3 r	3
Next 4 (5–8)	2	2	3	2	3	2 r	D	4 r	4 r	2 r	2
Next 12 (9–20)	5	6	6	5	5	7	8 r	8 r	8 r	8 r	9
Next 20 (21–40)	5	4	4	5	5	4 r	D	5 r	4 r	3 r	3
Next 60 (41–100)	10	9	8	7	8	9 r	11 r	9 r	10 r	9 r	10
Next 100 (101–200)	8	8	11	8	8	8 r	9 r	11 r	10 r	10 r	11
Next 100 (201–300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6
Next 100 (301–400)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
Next 100 (401–500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
All others <sup>a</sup>	62	63	62	67	66	64	69	60	61	65	49

D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; NA = not available; r = data significantly revised, replaces previously published data.

<sup>a</sup> Includes companies in 201-500 size categories prior to 2004.

NOTES: 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 have been revised since originally published. Beginning with 2001, statistics for total and federally funded industrial R&D exclude 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. Excludes R&D not performed within the company (e.g., R&D not 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). Prior to 2004, this table focused on the top 400 R&D performers. Data for the 201-300 and 301-400 categories were aggregated and data for the 401-500 category were included in the all others category. Beginning in 2004, the focus of the table was changed to the top 500 R&D performers. 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: 2004.



TABLE 20. Funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	% of net sales
All industries	21–23, 31–33, 42, 44–81	3.7
Manufacturing industries	31–33	3.8
Food	311	0.6
Beverage and tobacco products	312	1.3
Textiles, apparel, and leather	313–16	1.2
Wood products	321	D
Paper, printing, and support activities	322, 323	D
Petroleum and coal products	324	0.4
Chemicals	325	D
Basic chemicals	3251	2.2
Resin, synthetic rubber, fibers, and filament	3252	3.1
Pharmaceuticals and medicines	3254	10.0
Other chemicals	other 325	D
Plastics and rubber products	326	D
Nonmetallic mineral products	327	1.8
Primary metals	331	0.7
Fabricated metal products	332	1.5
Machinery	333	3.7
Computer and electronic products	334	9.5
Computers and peripheral equipment	3341	4.7
Communications equipment	3342	D
Semiconductor and other electronic components	3344	D
Navigational, measuring, electromedical, and control instruments	3345	13.8
Other computer and electronic products	other 334	5.1
Electrical equipment, appliances, and components	335	2.8
Transportation equipment	336	D
Motor vehicles, trailers, and parts	3361–63	2.4
Aerospace products and parts	3364	5.7
Other transportation equipment	other 336	D
Furniture and related products	337	0.8
Miscellaneous manufacturing	339	4.9
Medical equipment and supplies	3391	5.9
Other miscellaneous manufacturing	other 339	3.2
Nonmanufacturing industries	21–23, 42, 44–81	3.5
Mining, extraction, and support activities	21	D
Utilities	22	0.1
Construction	23	2.6
Wholesale trade	42	D
Retail trade	44, 45	0.8
Transportation and warehousing	48, 49	D
Information	51	5.1
Publishing	511	D
Newspaper, periodical, book, and database	5111	4.0
Software	5112	D
Broadcasting and telecommunications	513	0.8
Telecommunications	5133	D
Other broadcasting and telecommunications	other 513	D
Other information	other 51	D
Finance, insurance, and real estate	52, 53	0.4
Professional, scientific, and technical services	54	15.5
Architectural, engineering, and related services	5413	12.2
Computer systems design and related services	5415	12.1
Scientific R&D services	5417	35.8
Other professional, scientific, and technical services	other 54	6.4
Health care services	621–23	1.8
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	4.0

TABLE 20. Funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	% of net sales
Company size (employees)		
All companies	-	3.7
5-24	-	5.6 i
25-49	-	12.8
50-99	-	6.4
100-249	-	6.1
250-499	-	5.5
500-999	-	5.0
1,000-4,999	-	3.8
5,000-9,999	-	3.2
10,000-24,999	-	3.1
25,000 or more	-	3.3

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 21. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	% of net sales
All industries	21–23, 31–33, 42, 44–81	3.4
Manufacturing industries	31–33	3.4
Food	311	0.6
Beverage and tobacco products	312	1.3
Textiles, apparel, and leather	313–16	1.2
Wood products	321	0.4
Paper, printing, and support activities	322, 323	1.5
Petroleum and coal products	324	0.4
Chemicals	325	6.6
Basic chemicals	3251	2.1
Resin, synthetic rubber, fibers, and filament	3252	3.1
Pharmaceuticals and medicines	3254	10.0
Other chemicals	other 325	3.1
Plastics and rubber products	326	1.6
Nonmetallic mineral products	327	1.8
Primary metals	331	0.7
Fabricated metal products	332	1.4
Machinery	333	3.6
Computer and electronic products	334	8.0
Computers and peripheral equipment	3341	4.7
Communications equipment	3342	9.5
Semiconductor and other electronic components	3344	10.8
Navigational, measuring, electromedical, and control instruments	3345	7.1
Other computer and electronic products	other 334	5.1
Electrical equipment, appliances, and components	335	2.7
Transportation equipment	336	2.7
Motor vehicles, trailers, and parts	3361–63	2.4
Aerospace products and parts	3364	4.0
Other transportation equipment	other 336	1.6
Furniture and related products	337	0.8
Miscellaneous manufacturing	339	4.9
Medical equipment and supplies	3391	5.8
Other miscellaneous manufacturing	other 339	3.2
Nonmanufacturing industries	21–23, 42, 44–81	3.2
Mining, extraction, and support activities	21	2.4
Utilities	22	0.1
Construction	23	2.6
Wholesale trade	42	2.2
Retail trade	44, 45	0.8
Transportation and warehousing	48, 49	0.5
Information	51	5.0
Publishing	511	19.1
Newspaper, periodical, book, and database	5111	4.0
Software	5112	23.3
Broadcasting and telecommunications	513	0.8
Telecommunications	5133	D
Other broadcasting and telecommunications	other 513	D
Other information	other 51	4.4
Finance, insurance, and real estate	52, 53	0.4
Professional, scientific, and technical services	54	13.0
Architectural, engineering, and related services	5413	6.6
Computer systems design and related services	5415	11.7
Scientific R&D services	5417	29.6
Other professional, scientific, and technical services	other 54	5.8
Health care services	621–23	1.8
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	3.9

TABLE 21. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	% of net sales
Company size (employees)		
All companies	-	3.4
5-24	-	5.0 i
25-49	-	11.5
50-99	-	5.8
100-249	-	5.5
250-499	-	5.1
500-999	-	4.6
1,000-4,999	-	3.7
5,000-9,999	-	2.8
10,000-24,999	-	3.0
25,000 or more	-	2.8

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. 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. Excludes 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: 2004.

TABLE 22. Funds for industrial R&amp;D as a percent of net sales of companies performing industrial R&amp;D in the United States, by industry and company size, ranked by R&amp;D program size: 2004

Industry and company size	NAICS codes	All funds (\$millions)			% 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	20,454	16,707	27,294	12.1	13.2	5.4
Manufacturing industries	31–33	19,003	13,704	24,211	10.9	13.3	5.0
Food	311	907	348	441	1.2	0.6	0.7
Beverage and tobacco products	312	481	46	25	1.8	0.6	0.4
Textiles, apparel, and leather	313–16	260	53	91	1.4	1.4	2.4
Wood products	321	113	17	13	1.7	0.3	0.1
Paper, printing, and support activities	322, 323	1,761	195	184	3.5	0.5	0.6
Petroleum and coal products	324	1,256	297	32	0.4	0.3	0.6
Chemicals	325	11,569	6,330	8,471	14.2	14.5	9.1
Basic chemicals	3251	515	390	693	3.9	2.5	2.7
Resin, synthetic rubber, fibers, and filament	3252	1,805	114	115	4.4	1.2	1.0
Pharmaceuticals and medicines	3254	11,569	6,330	6,730	14.2	14.5	11.0
Other chemicals	other 325	1,580	341	597	7.6	2.8	2.4
Plastics and rubber products	326	652	196	233	4.6	1.7	1.8
Nonmetallic mineral products	327	443	132	129	3.0	3.0	1.1
Primary metals	331	279	69	123	1.0	0.7	0.4
Fabricated metal products	332	466	125	197	2.7	3.2	1.2
Machinery	333	2,167	771	923	6.0	5.9	3.9
Computer and electronic products	334	14,470	4,925	7,992	17.2	13.3	9.1
Computers and peripheral equipment	3341	2,473	1,239	1,061	12.7	3.6	2.2
Communications equipment	3342	4,757	800	990	13.2	19.0	16.8
Semiconductor and other electronic components	3344	9,216	2,407	2,365	12.9	8.2	17.2
Navigational, measuring, electromedical, and control instruments	3345	8,152	1,664	2,565	19.7	10.1	11.8
Other computer and electronic products	other 334	731	222	118	4.7	6.3	13.9
Electrical equipment, appliances, and components	335	741	308	485	3.4	2.6	3.0
Transportation equipment	336	15,845	8,288	5,009	5.5	3.2	3.7
Motor vehicles, trailers, and parts	3361–63	10,529	1,687	1,962	3.1	2.9	2.3
Aerospace products and parts	3364	11,121	1,401	452	5.5	9.1	7.2
Other transportation equipment	other 336	4,119	147	110	7.9	1.5	1.5
Furniture and related products	337	142	79	78	0.7	1.3	0.8
Miscellaneous manufacturing	339	1,542	523	665	10.5	6.2	4.7
Medical equipment and supplies	3391	1,542	415	421	10.5	7.5	3.9
Other miscellaneous manufacturing	other 339	423	153	120	5.2	11.1	2.1

TABLE 22. Funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by R&D program size: 2004

Industry and company size	NAICS codes	All funds (\$millions)			% 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	13,476	3,544	4,768	19.3	12.6	5.5
Mining, extraction, and support activities	21	585	64	58	4.7	1.0	1.6
Utilities	22	101	38	41	0.2	0.2	0.1
Construction	23	1,243	86	54	7.3	0.4	1.0
Wholesale trade	42	71	44	67	25.5	2.7	4.1
Retail trade	44, 45	233	107	125	2.5	0.7	0.3
Transportation and warehousing	48, 49	252	19	14	0.5	2.5	0.1
Information	51	9,520	2,040	3,062	21.8	2.8	15.9
Publishing	511	9,070	1,228	2,498	25.4	23.3	18.2
Newspaper, periodical, book, and database	5111	610	85	53	5.4	4.2	1.1
Software	5112	9,070	1,228	2,206	25.4	23.3	26.8
Broadcasting and telecommunications	513	1,344	265	320	1.1	0.4	0.4
Telecommunications	5133	1,339	235	241	1.0	0.7	0.4
Other broadcasting and telecommunications	other 513	148	14	D	0.3	5.1	D
Other information	other 51	1,738	456	258	10.4	5.8	0.9
Finance, insurance, and real estate	52, 53	439	281	335	0.4	0.4	0.3
Professional, scientific, and technical services	54	6,907	891	1,609	15.1	18.4	13.9
Architectural, engineering, and related services	5413	1,083	429	494	67.6	11.3	20.1
Computer systems design and related services	5415	5,861	524	611	14.2	3.7	14.2
Scientific R&D services	5417	1,413	431	915	16.8	63.5	87.1
Other professional, scientific, and technical services	other 54	376	111	151	3.2	9.2	6.6
Health care services	621–23	220	20	27	2.4	0.4	0.5
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	755	156	197	5.2	4.5	3.1

TABLE 22. Funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by R&D program size: 2004

Industry and company size	NAICS codes	All funds (\$millions)			% 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	-	20,454	16,707	27,294	12.1	13.2	5.4
5-24	-	60	29	58	4.3	198.7	12.6
25-49	-	101	76	163	97.6	91.5	53.0
50-99	-	186	108	265	65.0	150.1	295.9
100-249	-	349	270	602	11.4	432.5	131.9
250-499	-	503	447	872	505.6	47.4	80.5
500-999	-	887	711	1,267	33.4	61.9	35.4
1,000-4,999	-	2,229	1,364	3,465	53.4	18.5	23.1
5,000-9,999	-	4,673	2,791	4,641	21.6	16.3	17.5
10,000-24,999	-	8,525	4,784	7,743	17.7	23.6	9.1
25,000 or more	-	20,454	16,707	23,710	12.1	13.2	4.6

D = suppressed to avoid disclosure of confidential information.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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). 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 detail does not add to total. 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: 2004.

TABLE 23. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by nonfederally funded R&D program size: 2004

Industry and company size	NAICS codes	Company and other nonfederal R&D funds (\$millions)			% 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	19,852	14,431	22,824	10.9	12.9	4.8
Manufacturing industries	31–33	17,543	11,505	19,246	9.1	5.8	5.7
Food	311	907	347	439	1.2	0.6	0.7
Beverage and tobacco products	312	481	46	25	1.8	0.6	0.4
Textiles, apparel, and leather	313–16	260	53	91	1.4	1.4	2.4
Wood products	321	113	17	13	1.7	0.3	0.1
Paper, printing, and support activities	322, 323	1,740	195	184	3.4	0.5	0.6
Petroleum and coal products	324	1,248	297	32	0.4	0.3	0.6
Chemicals	325	11,569	6,323	8,318	14.2	14.5	9.0
Basic chemicals	3251	499	387	676	3.8	2.5	2.5
Resin, synthetic rubber, fibers, and filament	3252	1,790	114	115	4.3	1.2	1.0
Pharmaceuticals and medicines	3254	11,569	6,323	6,730	14.2	14.5	11.0
Other chemicals	other 325	1,439	340	597	6.9	2.7	2.4
Plastics and rubber products	326	652	196	230	4.6	1.7	1.8
Nonmetallic mineral products	327	441	132	128	3.0	3.0	1.1
Primary metals	331	273	64	116	1.0	0.5	0.4
Fabricated metal products	332	458	121	181	2.7	2.7	1.2
Machinery	333	2,142	752	923	6.0	5.8	3.9
Computer and electronic products	334	11,203	3,234	6,809	14.2	7.4	8.4
Computers and peripheral equipment	3341	2,473	1,238	1,052	12.7	3.6	2.2
Communications equipment	3342	4,755	800	943	13.2	19.0	15.7
Semiconductor and other electronic components	3344	9,181	2,404	2,365	12.9	8.2	17.2
Navigational, measuring, electromedical, and control instruments	3345	2,315	1,183	1,878	4.9	15.3	7.9
Other computer and electronic products	other 334	731	219	118	4.7	6.3	13.9
Electrical equipment, appliances, and components	335	741	308	472	3.4	2.6	2.9
Transportation equipment	336	13,706	5,112	3,723	3.9	2.8	2.4
Motor vehicles, trailers, and parts	3361–63	10,486	1,683	1,955	3.1	2.9	2.3
Aerospace products and parts	3364	8,332	557	249	4.1	3.6	3.5
Other transportation equipment	other 336	899	147	92	1.7	1.5	1.1
Furniture and related products	337	142	79	78	0.7	1.3	0.8
Miscellaneous manufacturing	339	1,542	523	665	10.5	6.2	4.7
Medical equipment and supplies	3391	1,542	415	421	10.5	7.5	3.9
Other miscellaneous manufacturing	other 339	423	153	118	5.2	11.1	2.0



TABLE 23. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by nonfederally funded R&D program size: 2004

Industry and company size	NAICS codes	Company and other nonfederal R&D funds (\$millions)			% 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	13,397	3,345	4,426	19.1	11.9	5.1
Mining, extraction, and support activities	21	585	64	58	4.7	1.0	1.6
Utilities	22	80	38	37	0.2	0.2	0.1
Construction	23	1,238	81	48	7.2	0.4	1.0
Wholesale trade	42	71	44	67	25.5	2.7	4.1
Retail trade	44, 45	233	107	125	2.5	0.7	0.3
Transportation and warehousing	48, 49	252	19	14	0.5	2.5	0.1
Information	51	9,321	2,040	3,062	21.3	2.8	15.9
Publishing	511	9,070	1,228	2,498	25.4	23.3	18.2
Newspaper, periodical, book, and database	5111	610	85	53	5.4	4.2	1.1
Software	5112	9,070	1,228	2,206	25.4	23.3	26.8
Broadcasting and telecommunications	513	1,344	265	320	1.1	0.4	0.4
Telecommunications	5133	1,339	235	241	1.0	0.7	0.4
Other broadcasting and telecommunications	other 513	148	14	D	0.3	5.1	D
Other information	other 51	1,539	456	258	9.2	5.8	0.9
Finance, insurance, and real estate	52, 53	439	281	335	0.4	0.4	0.3
Professional, scientific, and technical services	54	6,504	745	1,473	14.2	16.4	7.1
Architectural, engineering, and related services	5413	504	146	243	12.1	10.9	8.3
Computer systems design and related services	5415	5,786	519	606	14.0	3.7	14.7
Scientific R&D services	5417	1,413	390	803	16.8	125.7	18.3
Other professional, scientific, and technical services	other 54	376	111	143	3.2	9.2	4.9
Health care services	621–23	219	19	26	2.4	0.4	0.5
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	755	156	193	5.2	4.5	2.9

TABLE 23. Company and other nonfederal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by nonfederally funded R&D program size: 2004

Industry and company size	NAICS codes	Company and other nonfederal R&D funds (\$millions)			% 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	-	19,852	14,431	22,824	10.9	12.9	4.8
5-24	-	60	28	54	4.3	8.5	21.0
25-49	-	100	76	163	96.6	91.5	66.3
50-99	-	186	106	238	65.0	181.1	275.1
100-249	-	316	258	568	10.8	492.9	143.4
250-499	-	503	439	850	505.6	46.6	75.1
500-999	-	887	678	1,150	33.4	33.1	36.5
1,000-4,999	-	2,229	1,364	3,460	53.4	18.5	23.0
5,000-9,999	-	4,604	2,549	3,859	18.1	19.3	13.5
10,000-24,999	-	8,522	4,706	7,048	17.7	18.3	9.2
25,000 or more	-	19,852	14,395	16,618	10.9	6.1	4.6

D = suppressed to avoid disclosure of confidential information.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. 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. Consequently, industry and company size detail does not add to total. 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. Excludes 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: 2004.

TABLE 24. Federal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by federally funded R&D program size: 2004

Industry and company size	NAICS codes	Federal R&D funds (\$millions)			% 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	10,103	2,254	2,681	14.8	4.1	1.3
Manufacturing industries	31-33	10,103	2,116	2,151	14.8	3.7	1.1
Food	311	2	*	0	0.0	0.2	0.0
Beverage and tobacco products	312	0	0	0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	3	0	0	1.7	0.0	0.0
Wood products	321	D	0	0	0.0	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	9	0	0	0.0	0.0	0.0
Chemicals	325	205	24	34	0.7	0.2	0.1
Basic chemicals	3251	65	11	5	0.6	0.4	0.0
Resin, synthetic rubber, fibers, and filament	3252	15	*	0	0.0	7.3	0.0
Pharmaceuticals and medicines	3254	18	7	6	0.1	0.7	1.3
Other chemicals	other 325	D	3	*	1.6	0.1	0.0
Plastics and rubber products	326	23	D	0	2.3	1.5	0.0
Nonmetallic mineral products	327	4	*	0	0.1	2.4	0.0
Primary metals	331	19	2	0	0.1	0.0	0.0
Fabricated metal products	332	38	2	1	0.8	0.8	0.1
Machinery	333	80	16	6	0.4	3.4	0.2
Computer and electronic products	334	6,617	553	238	16.0	8.6	0.9
Computers and peripheral equipment	3341	25	1	0	2.1	0.1	0.0
Communications equipment	3342	111	5	1	0.6	0.7	1.0
Semiconductor and other electronic components	3344	57	14	15	0.3	0.1	1.9
Navigational, measuring, electromedical, and control instruments	3345	6,617	514	110	16.0	8.0	1.7
Other computer and electronic products	other 334	3	0	0	0.6	0.0	0.0
Electrical equipment, appliances, and components	335	27	6	2	11.7	1.1	0.2
Transportation equipment	336	5,602	1,120	418	6.7	0.7	0.2
Motor vehicles, trailers, and parts	3361-63	50	14	2	0.0	0.0	0.0
Aerospace products and parts	3364	2,942	850	57	1.9	1.4	1.6
Other transportation equipment	other 336	D	1	0	7.4	3.8	0.0
Furniture and related products	337	*	0	0	0.2	0.0	0.0
Miscellaneous manufacturing	339	17	7	3	13.8	0.8	0.1
Medical equipment and supplies	3391	17	4	1	10.2	3.6	0.1
Other miscellaneous manufacturing	other 339	5	*	0	0.6	0.3	0.0

TABLE 24. Federal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by federally funded R&D program size: 2004

Industry and company size	NAICS codes	Federal R&D funds (\$millions)			% 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	1,020	395	577	8.8	1.1	71.2
Mining, extraction, and support activities	21	D	0	0	0.0	0.0	0.0
Utilities	22	26	D	0	0.2	0.1	0.0
Construction	23	15	0	0	0.2	0.0	0.0
Wholesale trade	42	3	*	0	1.4	2.0	0.0
Retail trade	44, 45	0	0	0	0.0	0.0	0.0
Transportation and warehousing	48, 49	D	0	0	0.0	0.0	0.0
Information	51	212	4	3	2.0	27.1	0.8
Publishing	511	5	2	1	24.9	0.9	1.0
Newspaper, periodical, book, and database	5111	0	0	0	0.0	0.0	0.0
Software	5112	5	2	1	24.9	0.9	1.0
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	2.0	3.3	0.0
Finance, insurance, and real estate	52, 53	0	0	0	0.0	0.0	0.0
Professional, scientific, and technical services	54	932	356	540	74.2	1.0	67.7
Architectural, engineering, and related services	5413	926	200	289	73.7	66.0	32.7
Computer systems design and related services	5415	138	38	65	0.4	120.4	0.6
Scientific R&D services	5417	347	170	299	50.0	65.7	31.4
Other professional, scientific, and technical services	other 54	27	1	0	72.1	2.1	0.0
Health care services	621–23	4	1	0	0.4	0.7	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	17	D	0	9.9	2.3	0.0

TABLE 24. Federal funds for industrial R&D as a percent of net sales of companies performing industrial R&D in the United States, by industry and company size, ranked by federally funded R&D program size: 2004

Industry and company size	NAICS codes	Federal R&D funds (\$millions)			% 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	-	10,103	2,254	2,681	14.8	4.1	1.3
5-24	-	17	10	22	90.2	77.7	78.8
25-49	-	36	30	60	87.4	31.7	84.8
50-99	-	75	46	99	120.6	83.8	82.9
100-249	-	219	103	188	81.1	60.9	65.1
250-499	-	182	134	170	80.3	61.3	25.4
500-999	-	413	201	124	55.0	54.7	5.3
1,000-4,999	-	261	110	94	14.0	4.4	1.7
5,000-9,999	-	1,739	249	31	25.1	3.3	0.1
10,000-24,999	-	1,461	60	37	12.0	0.5	0.0
25,000 or more	-	9,770	1,331	792	12.3	0.7	0.2

\* = amount < \$500,000.

D = suppressed to avoid disclosure of confidential information.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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 detail does not add total. The R&D in this table is the industrial R&D performed within company facilities funded by the federal government. Excludes 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: 2004.

TABLE 25. Funds for industrial basic research, applied research, and development performed in the United States: 1953–2004  
(Millions of current and constant 2000 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
1999	184,129	188,136	7,202	7,359	36,912	37,715	140,015	143,062

TABLE 25. Funds for industrial basic research, applied research, and development performed in the United States: 1953–2004  
(Millions of current and constant 2000 dollars)

Year	All R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
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	186,072	7,547	7,243	28,533	27,386	157,788	151,443
2003	200,724 r	188,828 r	8,330 r	7,836 r	37,334 r	35,121 r	155,060 r	145,870 r
2004	208,301	190,927	7,835	7,181	45,432	41,643	155,034	142,103

r = data significantly revised, replaces previously published data.

NOTES: Excludes 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 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. Excludes 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: 2004.

TABLE 26. Company and other nonfederal funds for industrial basic research, applied research, and development performed in the United States: 1953–2004

(Millions of current and constant 2000 dollars)

Year	Company and other 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
1999	161,594	165,111	5,537	5,658	33,821	34,557	122,236	124,896



TABLE 26. Company and other nonfederal funds for industrial basic research, applied research, and development performed in the United States: 1953–2004

(Millions of current and constant 2000 dollars)

Year	Company and other R&D		Basic research		Applied research		Development	
	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$	Current \$	Constant \$
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	170,330	6,659	6,391	26,081	25,032	144,727	138,907
2003	182,926 r	172,085 r	6,944 r	6,532 r	32,861 r	30,913 r	143,121 r	134,639 r
2004	188,035	172,351	6,763	6,199	40,657	37,266	140,615	128,886

r = data significantly revised, replaces previously published data.

NOTES: Gross domestic product GDP 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. Excludes 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: 2004.

TABLE 27. Federal funds for industrial basic research, applied research, and development performed in the United States: 1953–2004  
(Millions of current and constant 2000 dollars)

Year	Federal 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	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 27. Federal funds for industrial basic research, applied research, and development performed in the United States: 1953–2004  
(Millions of current and constant 2000 dollars)

Year	Federal 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	15,741	888	852	2,452	2,353	13,061 i	12,536
2003	17,798 r	16,743 r	1,386 r	1,304 r	4,473 r	4,208 r	11,939 r	11,231 r
2004	20,266	18,576	1,072	983	4,775	4,377	14,419	13,216

i = more than 50% of the value is imputed.

r = data significantly revised, replaces previously published data.

NOTES: 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. Excludes 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: 2004.

TABLE 28. Funds for and companies performing industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Companies	All industrial R&D			Basic research		
			Total	Federal	Company and other	Total	Federal	Company and other
All industries	21–23, 31–33, 42, 44–81	41,029	208,301	20,266	188,035	7,835	1,072	6,763
Manufacturing industries	31–33	18,818	147,288	15,401	131,887	5,740	503	5,238
Food	311	973	2,254	5	2,249	D	D	D
Beverage and tobacco products	312	59	555 i	0	555 i	5	0	5
Textiles, apparel, and leather	313–16	498	570	3	568	19	D	D
Wood products	321	167	D	D	152	D	0	D
Paper, printing, and support activities	322, 323	442	D	D	2,308	D	D	D
Petroleum and coal products	324	98	1,603	9	1,595	41	0	41
Chemicals	325	2,026	D	D	39,070	D	D	D
Basic chemicals	3251	211	2,393	80	2,312	241	D	D
Resin, synthetic rubber, fibers, and filament	3252	100	2,096	16	2,080	D	0	D
Pharmaceuticals and medicines	3254	394	31,477	33	31,444	2,390	11	2,380
Other chemicals	other 325	1,320	D	D	3,234	D	D	D
Plastics and rubber products	326	1,184	D	D	1,879	D	0	D
Nonmetallic mineral products	327	386	787	5	783	86	0	86
Primary metals	331	534	727	21	705	24	0	24
Fabricated metal products	332	2,116	1,512	47	1,465	36	D	D
Machinery	333	3,235	6,579	105	6,473	57	*	57
Computer and electronic products	334	3,226	48,296	7,605	40,691	1,302	303	999
Computers and peripheral equipment	3341	430	5,734	27	5,707	D	0	D
Communications equipment	3342	548	D	D	8,433	D	D	D
Semiconductor and other electronic components	3344	876	D	D	17,524	D	D	319
Navigational, measuring, electromedical, and control instruments	3345	1,246	15,214	7,332	7,882	465	295	170
Other computer and electronic products	other 334	125	1,148	3	1,144	D	D	D
Electrical equipment, appliances, and components	335	826	2,664	42	2,622	33	D	D
Transportation equipment	336	927	D	D	26,019	D	D	D
Motor vehicles, trailers, and parts	3361–63	564	15,677	67	15,610	231	D	D
Aerospace products and parts	3364	160	13,086	3,862	9,224	465	D	D
Other transportation equipment	other 336	203	D	D	1,185	D	D	D
Furniture and related products	337	514	408	2	406	D	D	D
Miscellaneous manufacturing	339	1,610	4,388	39	4,348	148	5 i	143
Medical equipment and supplies	3391	661	3,343	30	3,313	130	D	D
Other miscellaneous manufacturing	other 339	949	1,045	10	1,035	18	D	D

TABLE 28. Funds for and companies performing industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Companies	All industrial R&D			Basic research		
			Total	Federal	Company and other	Total	Federal	Company and other
Nonmanufacturing industries	21–23, 42, 44–81	22,210	61,013	4,865	56,148	2,094	569	1,525
Mining, extraction, and support activities	21	91	D	D	714	D	0	D
Utilities	22	67	202	26	176	3	0	3
Construction	23	1,057	1,481	15	1,466	D	D	D
Wholesale trade	42	3,459	D	D	1,540	D	0	D
Retail trade	44, 45	1,579	1,596	0	1,596	29	0	29
Transportation and warehousing	48, 49	270	D	D	347	D	0	D
Information	51	2,206	22,593	307	22,285	207	D	D
Publishing	511	1,301	D	D	17,273	D	D	106
Newspaper, periodical, book, and database	5111	61	763	0	763	1	0	1
Software	5112	1,240	D	D	16,510	D	D	105
Broadcasting and telecommunications	513	224	2,215	0	2,215	22	0	22
Telecommunications	5133	214	2,052	0	2,052	D	0	D
Other broadcasting and telecommunications	other 513	10	163	0	163	D	0	D
Other information	other 51	681	D	D	2,797	D	0	D
Finance, insurance, and real estate	52, 53	824	1,708	0	1,708	20	0	20
Professional, scientific, and technical services	54	9,845	28,709	4,464	24,245	1,491	535	956
Architectural, engineering, and related services	5413	2,107	4,265	1,970	2,295	155	D	D
Computer systems design and related services	5415	3,460	11,575	378	11,197	251	108	143
Scientific R&D services	5417	1,685	11,355	1,972	9,383	1,073	349	724
Other professional, scientific, and technical services	other 54	2,592	1,514	144	1,370	11	D	D
Health care services	621–23	1,581	500	5	495	7	D	D
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1,232	1,595	19	1,576	D	D	D

TABLE 28. Funds for and companies performing industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Companies	All industrial R&D			Basic research		
			Total	Federal	Company and other	Total	Federal	Company and other
Company size (employees)								
All companies	-	41,029	208,301	20,266	188,035	7,835	1,072	6,763
5-24	-	21,303	6,295	685	5,610	187	55	132
25-49	-	6,716	5,906	612	5,293	317	83	233
50-99	-	4,897	6,456	608	5,849	275	73	202
100-249	-	4,158	11,045	1,058	9,987	537	154	384
250-499	-	1,590	8,380	547	7,832	267	19	247
500-999	-	882	10,821	762	10,060	484	139	345
1,000-4,999	-	1,045	31,475	493	30,982	977	20	957
5,000-9,999	-	192	18,191	2,018	16,173	572	68	503
10,000-24,999	-	143	31,208	1,561	29,647	1,575	69	1,506
25,000 or more	-	102	78,523	11,923	66,600	2,645	392	2,252

TABLE 28. Funds for and companies performing industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Applied research			Development		
		Total	Federal	Company and other	Total	Federal	Company and other
All industries	21–23, 31–33, 42, 44–81	45,432	4,775	40,657	155,034	14,419	140,615
Manufacturing industries	31–33	30,052	2,758	27,295	111,496	12,141	99,355
Food	311	D	D	D	1,740	D	D
Beverage and tobacco products	312	D	0	D	D	0	D
Textiles, apparel, and leather	313–16	45	D	D	506	D	D
Wood products	321	47	0	47	D	D	D
Paper, printing, and support activities	322, 323	D	8	D	1,741	13	1,728
Petroleum and coal products	324	939	D	D	623	D	D
Chemicals	325	10,516	132	10,384	D	D	D
Basic chemicals	3251	698	D	D	1,453	D	D
Resin, synthetic rubber, fibers, and filament	3252	1,201	D	D	D	D	D
Pharmaceuticals and medicines	3254	7,378	19	7,359	21,708	4 i	21,704
Other chemicals	other 325	1,238	D	D	D	D	D
Plastics and rubber products	326	D	D	D	1,373	D	D
Nonmetallic mineral products	327	296	D	D	406	D	D
Primary metals	331	263	2	261	440	19	420
Fabricated metal products	332	252	D	D	1,225	D	D
Machinery	333	1,264	34	1,229	5,258	71	5,187
Computer and electronic products	334	8,670	665	8,005	38,324	6,637	31,687
Computers and peripheral equipment	3341	D	D	D	5,303	D	D
Communications equipment	3342	1,249	D	D	6,929	D	D
Semiconductor and other electronic components	3344	D	D	4,884	12,389	67	12,322
Navigational, measuring, electromedical, and control instruments	3345	1,983	588	1,394	12,766	6,449	6,317
Other computer and electronic products	other 334	D	D	D	938	0	938
Electrical equipment, appliances, and components	335	373	D	D	2,258	D	D
Transportation equipment	336	D	D	3,182	D	D	D
Motor vehicles, trailers, and parts	3361–63	2,350	D	D	13,095	D	D
Aerospace products and parts	3364	2,582	D	D	10,039	1,895	8,143
Other transportation equipment	other 336	D	17	D	D	D	D
Furniture and related products	337	D	0	D	381	D	D
Miscellaneous manufacturing	339	654	15	638	3,586	19	3,567
Medical equipment and supplies	3391	555	D	D	2,658	13	2,645
Other miscellaneous manufacturing	other 339	99	D	D	928	5	922

TABLE 28. Funds for and companies performing industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Applied research			Development		
		Total	Federal	Company and other	Total	Federal	Company and other
Nonmanufacturing industries	21–23, 42, 44–81	15,380	2,018	13,362	43,538	2,278	41,260
Mining, extraction, and support activities	21	D	D	D	543	0	543
Utilities	22	55	D	D	145	D	D
Construction	23	886	D	D	D	D	D
Wholesale trade	42	D	D	D	1,165	D	D
Retail trade	44, 45	962	0	962	605	0	605
Transportation and warehousing	48, 49	D	D	D	D	D	D
Information	51	4,993	22	4,971	17,392	D	D
Publishing	511	3,108	22	3,085	14,089	7	14,081
Newspaper, periodical, book, and database	5111	21	0	21	741	0	741
Software	5112	3,087	22	3,064	13,347	7	13,340
Broadcasting and telecommunications	513	1,450	0	1,450	743	0	743
Telecommunications	5133	1,393	0	1,393	D	0	D
Other broadcasting and telecommunications	other 513	58	0	58	D	0	D
Other information	other 51	435	0	435	2,561	D	D
Finance, insurance, and real estate	52, 53	137	0	137	1,551	0	1,551
Professional, scientific, and technical services	54	7,542	1,965	5,576	19,677	1,964	17,713
Architectural, engineering, and related services	5413	1,468	924	544	2,643	D	D
Computer systems design and related services	5415	1,096	88	1,008	10,228	182	10,046
Scientific R&D services	5417	4,401	829	3,572	5,881	794	5,087
Other professional, scientific, and technical services	other 54	577	125	452	925	D	D
Health care services	621–23	99	D	D	394	3	391
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	D	D	D	1,414	D	D



TABLE 28. Funds for and companies performing industrial basic research, applied research, and development in the United States, by industry and company size, by source of funds: 2004  
(Millions of dollars)

Industry and company size	NAICS codes	Applied research			Development		
		Total	Federal	Company and other	Total	Federal	Company and other
Company size (employees)							
All companies	-	45,432	4,775	40,657	155,034	14,419	140,615
5-24	-	2,325	398	1,926	3,783	231	3,552
25-49	-	1,942	248	1,695	3,647	281	3,365
50-99	-	1,724	276	1,448	4,458	259	4,199
100-249	-	2,965	392	2,573	7,543	512	7,031
250-499	-	1,921	245	1,677	6,192	283	5,908
500-999	-	2,748	272	2,476	7,589	350	7,239
1,000-4,999	-	5,836	102	5,734	24,662	371	24,291
5,000-9,999	-	5,096	513	4,584	12,524	1,437	11,086
10,000-24,999	-	8,523	262	8,261	21,110	1,230	19,879
25,000 or more	-	12,352	2,068	10,284	63,527	9,463	54,064

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed: industry-specific estimates for 2004 are not directly comparable with those for previous years. Total and federally funded industrial R&D exclude federally funded research and development centers. During statistical processing, when R&D was not allocated among the three character-of-work categories (basic research, applied research, and development) by survey respondents, algorithms were used to do the allocation. See table A-7 for the amount of undistributed R&D and the number of companies that reported R&D in each category. 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. Excludes 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: 2004.

TABLE 29. Funds for industrial R&amp;D performed in the United States, by state: Selected years 1991–2004

(Millions of dollars)

State	1991	1993	1995	1997	1998	1999	2000	2001	2002	2003	2004	% change, 2003–04
United States	116,952	117,400	132,103	157,539	169,180	184,129	201,962	202,017	193,868	200,724 r	208,301	3.8
Alabama	596	557 i	686	589 i	845	823	821 i	905	846	992 r	1,227	23.7
Alaska	21	14	30	24 i	37 e	82 e	48 e	68	51 e	36 e	35 e	-2.8
Arizona	1,080	1,039	1,356 i	1,854	1,801	2,109 i	2,182 i	2,707	3,201	2,604 r	2,570	-1.3
Arkansas	S	179	181	118	213 e	326	400	254 e	225 e	270	287	6.3
California	S	21,975	28,710	34,011	32,856	38,169	45,455	44,628	42,177	46,401 r	46,614	0.5
Colorado	S	1,966	1,865	2,248	3,180	3,266	3,143	3,082	2,823	3,543 r	4,008	13.1
Connecticut	1,756	2,228	3,906	3,014	3,346	4,145 i	4,132 i	4,686	6,077	5,834	7,177	23.0
Delaware	D	913 i	1,077 i	1,009 i	1,356 i	1,295 i	1,468 i	1,232	1,219	1,298	1,059	-18.4
District of Columbia	46	515 i	672 i	D	598 i	268 e	196 e	242	194	235	182 e	-22.6
Florida	S	2,386	4,101	3,442	3,265	3,482	3,773 i	3,755	3,707	3,155 r	3,486	10.5
Georgia	993	792	1,175	1,273	1,617	1,904	2,159 i	1,912	2,107	2,104 r	2,160	2.7
Hawaii	13	255	14	87	55 e	68 e	93 e	93	103	133	131	-1.5
Idaho	S	686	827	1,181 i	1,103 i	1,239	1,363	884	992	745	681	-8.6
Illinois	5,750	5,023	5,776 i	6,248	7,318	8,102	8,393 i	8,232	7,616	8,319	8,554	2.8
Indiana	2,274	2,141	2,721 i	2,677	2,922	2,863 i	2,888 i	3,583	3,572	3,658	4,208	15.0
Iowa	527	505	998	578	750	730	762	817	753	833	963	15.6
Kansas	S	280 i	569	1,136 i	1,384 i	1,448 i	1,327 i	1,299 i	1,427 i	1,675 i	1,804 i	7.7
Kentucky	176	282	452	359	606	777	762	636	656	601	565	-6.0
Louisiana	S	106	61	172	377 e	516 e	364 e	316 e	248 e	289 r	311	7.6
Maine	S	D	286	83	137	208	255	249	250 i	200	213	6.5
Maryland	1,376	1,296	1,075	1,425	1,905	2,020	2,213	3,682	3,800	3,118 r	3,826	22.7
Massachusetts	S	5,960	7,416	8,300	10,367	9,781	10,857	11,756	10,609	11,092 r	11,819	6.6
Michigan	9,283	18,845	12,388	13,009	12,554	16,877	17,489 i	14,283	13,565	15,217 r	15,170	-0.3
Minnesota	2,070	2,341	2,636 i	3,116	3,367	3,695	3,971	4,355	4,460	5,003	5,199	3.9
Mississippi	S	51	66	73	183 e	224 e	242 e	219 e	224	199 r	160	-19.6
Missouri	S	1,339 i	2,028 i	1,290 i	1,505	1,664	1,978	1,792	1,592	1,742	2,151	23.5
Montana	S	D	17	92	63	92 e	78 e	70 e	66	65	70	7.7
Nebraska	67	93	150	71	195 e	217 e	335 e	306	342	363	383	5.5
Nevada	95	65	322	380	476	490	433	290	339	383	417	8.9
New Hampshire	D	247	472	652	1,138	1,157	722	1,339	1,153	1,349	1,330	-1.4
New Jersey	8,933	8,009	8,200	11,069	11,107	10,145	10,580	10,164	11,566	11,405 r	10,993	-3.6
New Mexico	1,217	D	1,461	1,310 i	1,450 i	1,352 i	1,203 i	231	331	338 r	450	33.1
New York	9,457	8,597	8,651	9,939 i	10,283	12,260	11,622	10,884	9,234	8,528 r	8,793	3.1
North Carolina	1,470	1,886	2,226	3,590	3,483	3,754	4,535	4,437	3,704	4,423 r	4,565	3.2
North Dakota	S	D	12	33	46 e	95 e	83 e	347	154	216	379 i	75.5

TABLE 29. Funds for industrial R&amp;D performed in the United States, by state: Selected years 1991–2004

(Millions of dollars)

State	1991	1993	1995	1997	1998	1999	2000	2001	2002	2003	2004	% change, 2003–04
Ohio	5,406	4,494	4,001	5,608	5,742	6,531	6,245	6,694	6,230	6,258 r	5,516	-11.9
Oklahoma	448	299	288	428	369	562 e	463	543 e	412	576 r	410	-28.8
Oregon	S	455	741	1,102	1,345	1,408	1,533	2,677	2,320 i	2,956 r	3,057	3.4
Pennsylvania	S	4,652	5,331	6,609 i	7,393	7,474	8,473	8,967	7,064	7,091	8,005	12.9
Rhode Island	174	154	520	704 i	1,332 i	1,317 i	1,167 i	1,134 i	1,121	1,203 i	1,320 i	9.7
South Carolina	479	461	739	783 i	996	922	1,059	921	1,054	976	961	-1.5
South Dakota	6	D	19	26	40 e	57 e	89 e	87 e	53	75	72	-4.0
Tennessee	843	788	1,003	1,089	2,440	2,205	1,644	1,503	1,289	1,507	1,630	8.2
Texas	5,439	4,562	6,211 i	7,265	8,984	8,661	10,048	9,839	10,744	11,008 r	10,992	-0.1
Utah	407	279	803	1,027	1,119	1,028	1,063	1,173	1,116	996	1,089	9.3
Vermont	D	D	248	246	114	346	389	339	286 i	360	423	17.5
Virginia	1,275	1,046	1,577	1,767	2,540	2,662	2,683	2,957	2,920	3,492 r	4,006	14.7
Washington	3,677	4,575 i	4,294 i	6,610 i	7,072 i	7,093 i	8,235 i	8,933 i	8,579	9,220 r	8,840 i	-4.1
West Virginia	D	100 i	243	D	335	351	329	211	264	219	202	-7.8
Wisconsin	1,304	1,296	1,706	1,707	1,929	2,194	2,415	2,469 i	2,649 e	2,623	2,645	0.8
Wyoming	2	15	25	28	20 e	65 e	37 e	28 e	21	37	23	-37.8
Undistributed funds	772	683	1,773 i	7,211 i	5,521 i	5,610 i	9,762 i	9,770 i	8,361	5,762	7,169	24.4

D = suppressed to avoid disclosure of confidential information; e = estimated; more than 50% of cell value is imputed due to raking of state data; i = more than 50% of the value is imputed;

r = data significantly revised, replaces previously published data; S = suppressed for reliability; imputation of more than 50%.

NOTES: Detail does not add to total because of rounding or suppression. Excludes 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. Excludes 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: 2004.

TABLE 30. Funds for and companies performing industrial R&amp;D in the United States, by state and source of funds: 1999–2004

(Millions of dollars)

State	1999						2000					
	All R&D		Federal		Company and other		All R&D		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
United States	38,957	184,129	2,860	22,535	37,750	161,594	35,272	201,962	3,033	19,118	34,372	182,844
Alabama	635	823	35	171	619	652	355	821 i	83	154 i	340	667 e
Alaska	9	82 e	1	3 e	9	79 e	10	48 e	1	3 e	10	46 e
Arizona	780	2,109 i	12	233 i	777	1,876 i	1,066	2,182 i	251	125 i	1,063	2,057 i
Arkansas	97	326	7	8 e	96	318	99	400	3	11	99	389
California	6,907	38,169	638	4,107	6,574	34,062	6,634	45,455	882	3,966 i	6,192	41,489
Colorado	1,158	3,266	35	988	1,152	2,278	1,213	3,143	122	806 i	1,206	2,336
Connecticut	754	4,145 i	42	185	729	3,960 i	423	4,132 i	17	128	420	4,004 i
Delaware	54	1,295 i	9	11	54	1,284 i	49	1,468 i	6	11	49	1,457 i
District of Columbia	39	268 e	5	68	38	200 e	18	196 e	5	58 i	16	138 e
Florida	1,144	3,482	26	746	1,134	2,736	1,393	3,773 i	51	505	1,380	3,268
Georgia	762	1,904	25	107	761	1,797	854	2,159 i	8	116	854	2,043
Hawaii	81	68 e	2	4 e	81	64 e	84	93 e	68	6	69	87 e
Idaho	209	1,239	3	551	207	688	217	1,363	2	D	216	D
Illinois	2,223	8,102	13	103 e	2,222	7,999	1,522	8,393 i	68	93 e	1,470	8,300 i
Indiana	815	2,863 i	8	50 e	812	2,813 i	405	2,888 i	14	43	405	2,845 i
Iowa	250	730	47	12 e	204	718	347	762	4	11 i	345	751
Kansas	526	1,448 i	4	D	525	D	334	1,327 i	6	800 i	333	527
Kentucky	599	777	51	9 e	598	768	200	762	3	8 e	198	754
Louisiana	105	516 e	10	48	104	468 e	198	364 e	22	10 e	197	354 e
Maine	16	208	4	56	15	152	135	255	5	57	134	198
Maryland	977	2,020	355	395	687	1,625	776	2,213	288	349	715	1,864
Massachusetts	1,405	9,781	111	2,338 i	1,400	7,443	1,166	10,857	271	1,890 i	1,159	8,967
Michigan	1,846	16,877	42	150	1,843	16,727	1,328	17,489 i	32	118	1,324	17,372 i
Minnesota	741	3,695	22	257	741	3,438	1,259	3,971	40	167	1,257	3,804 i
Mississippi	288	224 e	54	39	285	185 e	48	242 e	12	22 i	45	220 e
Missouri	498	1,664	104	30 e	497	1,634	647	1,978	18	30 e	646	1,948
Montana	7	92 e	1	4 e	7	88 e	104	78 e	1	2 e	104	75 e
Nebraska	258	217 e	8	10 e	252	207 e	578	335 e	3	11 e	578	324 e
Nevada	29	490	8	D	27	D	25	433	3	100	24	333 e
New Hampshire	301	1,157	7	D	301	D	371	722	6	20	371	702

TABLE 30. Funds for and companies performing industrial R&amp;D in the United States, by state and source of funds: 1999–2004

(Millions of dollars)

State	1999						2000					
	All R&D		Federal		Company and other		All R&D		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
New Jersey	1,466	10,145	21	201	1,459	9,944	1,537	10,580	149	269	1,531	10,311
New Mexico	420	1,352 i	274	1,158 i	407	194 e	107	1,203 i	28	D	97	D
New York	1,862	12,260	208	2,045 i	1,851	10,215	2,332	11,622	53	1,839 i	2,327	9,783
North Carolina	392	3,754	38	48 e	387	3,706	875	4,535	117	63 e	772	4,472
North Dakota	21	95 e		2 e	21	93 e	162	83 e	1	1 e	162	82
Ohio	2,253	6,531	29	1,189	2,245	5,342	1,748	6,245	25	581	1,739	5,664
Oklahoma	231	562 e	5	14	231	548 e	457	463	11	9	457	455
Oregon	1,455	1,408	8	20	1,455	1,388	1,152	1,533	6	22	1,152	1,511
Pennsylvania	2,264	7,474	211	484 i	2,098	6,990	1,775	8,473	144	456 i	1,667	8,018
Rhode Island	194	1,317 i	5	D	193	D	110	1,167 i	7	D	107	D
South Carolina	110	922	13	93 i	107	829	105	1,059	7	96 i	101	963
South Dakota	13	57 e		2	13	55 e	65	89 e	52	2	64	87 e
Tennessee	433	2,205	7	939	429	1,266	349	1,644	6	357 i	347	1,287
Texas	2,495	8,661	54	186	2,487	8,475	2,061	10,048	177	287	2,046	9,762
Utah	585	1,028	7	214	584	814	197	1,063	11	167 i	195	896
Vermont	125	346	3	36	125	310	216	389	4	19 i	215	370
Virginia	1,383	2,662	473	726	1,079	1,936	1,100	2,683	186	728 i	1,008	1,955
Washington	1,368	7,093 i	11	870 i	1,367	6,223 i	954	8,235 i	9	1,153 i	953	7,082 i
West Virginia	91	351	1	4 e	90	347	22	329	3	33	21	296
Wisconsin	1,023	2,194	38	55 e	1,018	2,139	909	2,415	9	37 e	908	2,378
Wyoming	1	65 e	D	D	1	64 e	5	37 e	0	1 e	5	36 e
Undistributed funds	204	5,610 i	34	1,051	204	4,559	242	9,762 i	42	973	236	8,789

TABLE 30. Funds for and companies performing industrial R&amp;D in the United States, by state and source of funds: 1999–2004

(Millions of dollars)

State	2001						2002					
	All R&D		Federal		Company and other		All R&D		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
United States	33,263	202,017	3,217	16,899	32,450	185,118	29,001	193,868	2,496	16,401	28,200	177,467
Alabama	476	905	21	176	466	730	242	846	133	258	229	588
Alaska	11	68	2	2 e	11	66	65	51 e	4	3 i	64	48 e
Arizona	150	2,707	22	232	146	2,475	604	3,201	52	470	601	2,731
Arkansas	91	254 e	2	5 e	91	249 e	64	225 e	2	4 e	64	221
California	6,605	44,628	565	3,648 i	6,589	40,980	5,589	42,177	228	2,975	5,560	39,202
Colorado	1,149	3,082	95	579	1,146	2,503	1,050	2,823	35	169 i	1,044	2,654
Connecticut	371	4,686	12	110	369	4,576	516	6,077	27	317	513	5,761
Delaware	55	1,232	6	10	55	1,222	146	1,219	6	10	145	1,208
District of Columbia	32	242	8	78	28	163	33	194	10	92	27	102 e
Florida	1,262	3,755	65	736	1,252	3,019	1,038	3,707	41	858	1,021	2,848
Georgia	655	1,912	6	57 e	654	1,855	460	2,107	7	71	458	2,036
Hawaii	135	93	6	14 i	134	79 e	53	103	16	37	50	66 e
Idaho	279	884	1	3 e	279	882	366	992	251	3 e	116	990
Illinois	2,899	8,232	109	749	2,801	7,483	1,483	7,616	54	996	1,478	6,620
Indiana	782	3,583	18	63	782	3,520	566	3,572	91	123 i	566	3,450
Iowa	629	817	6	21 i	626	796	228	753	2	6 e	228	748
Kansas	351	1,299 i	57	D	351	D	228	1,427 i	7	D	226	D
Kentucky	474	636	3	8 e	472	628	127	656	3	6 e	126	650
Louisiana	205	316 e	5	13 e	204	304 e	174	248 e	7	14 e	173	233 e
Maine	40	249	4	49	40	200	168	250 i	10	21	167	229 i
Maryland	588	3,682	51	1,119	574	2,562	553	3,800	103	1,165 i	521	2,635
Massachusetts	1,480	11,756	155	1,812 i	1,425	9,944	1,058	10,609	105	1,995 i	1,045	8,614
Michigan	814	14,283	116	117	712	14,166	1,159	13,565	268	133	908	13,432
Minnesota	1,514	4,355	265	207	1,513	4,149	1,006	4,460	23	137	1,005	4,323
Mississippi	101	219 e	4	7 e	100	212 e	91	224	8	14	88	210
Missouri	535	1,792	56	142	533	1,650	923	1,592	15	151	920	1,441
Montana	154	70 e	1	3 e	154	67 e	48	66	1	1 e	48	65
Nebraska	458	306	3	9 e	458	297	76	342	8	7 i	76	335
Nevada	45	290	2	8 e	44	282	151	339	4	7 e	150	333
New Hampshire	209	1,339	4	D	209	D	289	1,153	15	D	280	D

TABLE 30. Funds for and companies performing industrial R&amp;D in the United States, by state and source of funds: 1999–2004

(Millions of dollars)

State	2001						2002					
	All R&D		Federal		Company and other		All R&D		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
New Jersey	1,300	10,164	36	207	1,292	9,957	1,011	11,566	141	238	899	11,328
New Mexico	189	231	69	95	179	135 e	253	331	158	92	246	239
New York	2,052	10,884	838	994	1,702	9,890	2,198	9,234	339	539	2,191	8,695
North Carolina	598	4,437	18	70 e	591	4,367	739	3,704	34	50 e	733	3,654
North Dakota	144	347	1	1 e	144	346	68	154	2	1 e	68	153
Ohio	1,581	6,694	43	783	1,560	5,912	1,568	6,230	113	823	1,553	5,407
Oklahoma	457	543 e	8	14 e	454	529 e	276	412	72	15	274	397
Oregon	218	2,677	55	19 e	218	2,658	670	2,320	118	17 e	593	2,302
Pennsylvania	1,634	8,967	372	122 e	1,529	8,844	2,020	7,064	52	114	2,015	6,950
Rhode Island	203	1,134 i	118	D	187	D	74	1,121 i	10	D	71	D
South Carolina	222	921	12	17 e	217	904	187	1,054	7	24	184	1,031
South Dakota	18	87 e	3	2 e	18	86 e	102	53	2	1 e	101	52
Tennessee	525	1,503	5	154	523	1,348	542	1,289	40	216	537	1,073
Texas	1,527	9,839	107	185	1,518	9,654	1,540	10,744	117	534	1,525	10,209
Utah	621	1,173	9	168 i	619	1,005	378	1,116	16	201 i	373	915
Vermont	225	339	3	7 i	224	332	80	286	3	7 i	79	279
Virginia	644	2,957	146	680	600	2,277	815	2,920	110	719	791	2,201
Washington	609	8,933 i	33	555	589	8,378 i	719	8,579 i	22	460	715	8,120 i
West Virginia	122	211	2	6	121	205	99	264	2	4	99	260
Wisconsin	1,200	2,469	4	22 e	1,200	2,447	914	2,649	9	19 e	914	2,630
Wyoming	9	28 e	D	D	9	28 e	35	21 e	9	1	30	20 e
Undistributed funds	179	9,770 i	22	784 i	179	8,986 i	148	8,361	11	277	152	8,084

TABLE 30. Funds for and companies performing industrial R&D in the United States, by state and source of funds: 1999–2004

(Millions of dollars)

State	2003						2004					
	All R&D		Federal		Company and other		All R&D		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
United States	37,843	200,724 r	2,028	17,798 r	36,958	182,926 r	41,029	208,301	3,008	20,266	40,222	188,035
Alabama	253	992 r	31	454 r	241	538 r	291	1,227	64	583	251	644
Alaska	22	36 e	3	5 e	20	31 e	26	35 e	9	8	24	28 e
Arizona	546	2,604 r	18	573 r	542	2,031	968	2,570	24	245	961	2,325
Arkansas	158	270	2	7 e	158	263	165	287	6	27	164	259
California	7,237	46,401 r	323	3,792 r	7,116	42,609 r	8,558	46,614	1,014	3,980 i	8,415	42,634
Colorado	874	3,543 r	105	94 r	797	3,449	1,346	4,008	86	118	1,326	3,890
Connecticut	661	5,834	20	852	655	4,982	864	7,177	22	1,717	859	5,460
Delaware	52	1,298	3	12	52	1,285	373	1,059	4	14	373	1,045
District of Columbia	128	235	10	95	122	140	77	182 e	11	68	73	114 e
Florida	1,610	3,155 r	82	1,009 r	1,594	2,146 r	1,619	3,486	94	1,270	1,607	2,216
Georgia	596	2,104 r	9	53 er	591	2,051	1,134	2,160	24	58 e	1,127	2,102
Hawaii	199	133	17	53	190	80	372	131	16	52	363	78
Idaho	209	745	9	9	201	736	229	681	43	11	216	670
Illinois	1,721	8,319	59	190	1,720	8,129	2,112	8,554	111	267	2,046	8,286
Indiana	1,223	3,658	61	256	1,188	3,401	1,389	4,208	23	232	1,389	3,976
Iowa	424	833	1	7 e	424	826	750	963	15	7 e	749	956
Kansas	288	1,675 i	49	D	244	D	315	1,804 i	65	D	310	D
Kentucky	999	601	4	21 e	997	580	328	565	8	11 e	323	554
Louisiana	360	289 r	19	19 er	358	270 r	152	311	25	19 e	149	293
Maine	243	200	4	30	242	169	177	213	14	D	170	D
Maryland	449	3,118 r	78	970 r	411	2,148 r	495	3,826	118	1,286	445	2,540
Massachusetts	1,153	11,092 r	174	2,151 ir	1,137	8,941	1,468	11,819	184	2,331 i	1,432	9,488
Michigan	1,399	15,217 r	28	213	1,392	15,004 r	1,818	15,170	64	204	1,809	14,966
Minnesota	1,615	5,003	27	236	1,612	4,767	1,513	5,199	37	261	1,506	4,938
Mississippi	184	199 r	10	D	178	D	93	160	10	D	86	D
Missouri	910	1,742	34	80	898	1,662	1,102	2,151	13	84 i	1,097	2,067
Montana	294	65	1	2 e	294	63	100	70	4	3 e	99	67
Nebraska	216	363	4	7	215	356	137	383	7	6 e	137	377
Nevada	248	383	6	31	245	352	512	417	8	23	509	394
New Hampshire	252	1,349	55	D	220	D	293	1,330	40	D	265	D



TABLE 30. Funds for and companies performing industrial R&D in the United States, by state and source of funds: 1999–2004

(Millions of dollars)

State	2003						2004					
	All R&D		Federal		Company and other		All R&D		Federal		Company and other	
	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount	Companies	Amount
New Jersey	1,182	11,405 r	70	219 r	1,166	11,186 r	1,105	10,993	52	294	1,095	10,699
New Mexico	118	338 r	22	154 r	109	184	149	450	32	176	133	275
New York	1,786	8,528 r	79	574 r	1,784	7,954 r	2,138	8,793	193	721	2,131	8,071
North Carolina	967	4,423 r	36	107 r	961	4,315	771	4,565	37	87	758	4,478
North Dakota	61	216	2	2 e	60	214	67	379 i	3	2 e	66	377 i
Ohio	2,032	6,258 r	154	423 r	1,920	5,835	2,284	5,516	80	395	2,256	5,121
Oklahoma	562	576 r	21	32 r	545	545	487	410	262	22	232	387
Oregon	951	2,956 r	92	22 r	942	2,934	532	3,057	33	20 e	529	3,036
Pennsylvania	2,089	7,091	105	166	2,014	6,925	1,766	8,005	167	160	1,745	7,845
Rhode Island	149	1,203 i	19	D	145	D	192	1,320 i	7	D	190	D
South Carolina	381	976	32	36	377	940	368	961	10	37	363	924
South Dakota	90	75	2	2	89	73	109	72	3	3 i	108	69
Tennessee	404	1,507	18	206	392	1,302	568	1,630	14	322	564	1,308
Texas	3,266	11,008 r	74	590 r	3,250	10,418 r	2,259	10,992	68	610	2,243	10,382
Utah	360	996	31	135	355	861	580	1,089	29	174	575	915
Vermont	113	360	2	10 i	112	349	101	423	8	34	100	389
Virginia	1,154	3,492 r	130	1,278 r	1,104	2,214 r	1,034	4,006	230	1,499 i	967	2,507
Washington	643	9,220 r	56	101 r	629	9,119	1,426	8,840 i	125	146	1,336	8,694 i
West Virginia	61	219	4	21	59	198	66	202	6	D	62	D
Wisconsin	1,355	2,623	271	34 e	1,096	2,589	1,424	2,645	47	47	1,419	2,598
Wyoming	79	37	8	2 e	79	35	35	23	16	3	34	21
Undistributed funds	116	5,762	7	104 e	116	5,658	200	7,169	14	44 i	199	7,125

D = suppressed to avoid disclosure of confidential information; e = estimated; more than 50% of cell value is imputed due to raking of state data; i = more than 50% of the value is imputed;

r = data significantly revised, replaces previously published data.

NOTES: Detail does not add to total because categories are not mutually exclusive. Beginning with 2001, 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 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. 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. Excludes 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: 2004.

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	41,029	208,301	1,227	35 e	2,570	287	46,614
Manufacturing industries	31–33	18,818	147,288	572	3 e	1,742	151	30,243
Food	311	973	2,254	3 e	1 e	3 i	13	113
Beverage and tobacco products	312	59	555 i	* e	* e	* e	* e	D
Textiles, apparel, and leather	313–16	498	570	4 e	* e	D	5	25
Wood products	321	167	D	* e	* e	* e	* i	D
Paper, printing, and support activities	322, 323	442	D	2	*	1 e	3	D
Petroleum and coal products	324	98	1,603	*	* i	* e	* e	D
Chemicals	325	2,026	D	42	D	49	12	4,920
Basic chemicals	3251	211	2,393	21	D	* i	5	144 i
Resin, synthetic rubber, fibers, and filament	3252	100	2,096	* e	0	D	D	24 i
Pharmaceuticals and medicines	3254	394	31,477	13	D	D	D	4,535
Other chemicals	other 325	1,320	D	8 i	0	25	5	217 i
Plastics and rubber products	326	1,184	D	4 e	* e	68	4	80
Nonmetallic mineral products	327	386	787	1	D	* e	1	52 i
Primary metals	331	534	727	18	0	4 i	2 e	22 e
Fabricated metal products	332	2,116	1,512	8 e	* e	15	6	273 i
Machinery	333	3,235	6,579	22	* e	62	19	1,669
Computer and electronic products	334	3,226	48,296	325	1	1,353	20 i	16,408
Computers and peripheral equipment	3341	430	5,734	3 i	0	D	0	2,586
Communications equipment	3342	548	D	75	0	57	2	4,107 i
Semiconductor and other electronic components	3344	876	D	18	0	751	6	5,858
Navigational, measuring, electromedical, and control instruments	3345	1,246	15,214	229	1	534	9 i	3,625
Other computer and electronic products	other 334	125	1,148	1 e	0	D	3 i	232
Electrical equipment, appliances, and components	335	826	2,664	12 i	0	22 i	26	284
Transportation equipment	336	927	D	125	* e	D	34	5,324 i
Motor vehicles, trailers, and parts	3361–63	564	15,677	14	0	49	10	D
Aerospace products and parts	3364	160	13,086	106	* e	75	D	3,240 i
Other transportation equipment	other 336	203	D	5 i	* e	D	D	D
Furniture and related products	337	514	408	4	* e	1 e	3	31
Miscellaneous manufacturing	339	1,610	4,388	4 e	*	34	3 e	807
Medical equipment and supplies	3391	661	3,343	2 e	* e	21	1 e	624
Other miscellaneous manufacturing	other 339	949	1,045	2 e	*	13	2 e	183

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Companies	United States	Alabama	Alaska	Arizona	Arkansas	California
Nonmanufacturing industries	21–23, 42, 44–81	22,210	61,013	655	32 e	828	135	16,371
Mining, extraction, and support activities	21	91	D	7	* e	D	* e	D
Utilities	22	67	202	D	* e	D	* e	17
Construction	23	1,057	1,481	D	* e	33	* e	51
Wholesale trade	42	3,459	D	16 e	2 e	36	8 e	291 e
Retail trade	44, 45	1,579	1,596	15 e	3 e	21 e	21 i	260 e
Transportation and warehousing	48, 49	270	D	1 e	* e	D	1 e	D
Information	51	2,206	22,593	72	2 e	94	52	7,480
Publishing	511	1,301	D	47	* e	48	1 e	5,921
Newspaper, periodical, book, and database	5111	61	763	* e	* e	1	* e	14
Software	5112	1,240	D	47	* e	47	1 e	5,906
Broadcasting and telecommunications	513	224	2,215	3 e	2 e	4 e	D	539
Telecommunications	5133	214	2,052	3 e	2 e	4 e	D	D
Other broadcasting and telecommunications	other 513	10	163	0	0	0	0	D
Other information	other 51	681	D	23	* e	43 i	D	1,021
Finance, insurance, and real estate	52, 53	824	1,708	3 e	* e	5 e	1 e	255
Professional, scientific, and technical services	54	9,845	28,709	501	23 e	584	45 e	7,764
Architectural, engineering, and related services	5413	2,107	4,265	188	13 e	55 e	5 e	722
Computer systems design and related services	5415	3,460	11,575	82	3 e	448	22 e	2,781
Scientific R&D services	5417	1,685	11,355	223	6 e	72	15 e	4,053
Other professional, scientific, and technical services	other 54	2,592	1,514	8 e	1 e	9 e	2 e	207 e
Health care services	621–23	1,581	500	3 e	* e	9 i	2 e	28 e
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1,232	1,595	5 e	1 e	26	4 i	106

TABLE 31. Funds for industrial R&D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Companies	United States	Alabama	Alaska	Arizona	Arkansas	California
Company size (employees)								
All companies	-	41,029	208,301	1,227	35 e	2,570	287	46,614
5-24	-	21,303	6,295	81 e	13 e	88 e	35 e	1,165 e
25-49	-	6,716	5,906	97 e	9 e	90 e	20 e	1,376 e
50-99	-	4,897	6,456	54 e	4 e	89 i	17 e	1,706
100-249	-	4,158	11,045	112	5 e	65 e	25 e	3,356
250-499	-	1,590	8,380	44 i	* e	71	19 i	2,801
500-999	-	882	10,821	124	D	160	7 i	2,794
1,000-4,999	-	1,045	31,475	187	1	443	75	9,418
5,000-9,999	-	192	18,191	332	D	47	23	6,110
10,000-24,999	-	143	31,208	25	D	133	21	6,453 i
25,000 or more	-	102	78,523	171	D	1,384	44	11,436 i

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	4,008	7,177	1,059	182 e	3,486	2,160	131
Manufacturing industries	31–33	2,855	6,424	904	37	2,121	1,194	D
Food	311	D	D	1 e	* e	16	55	1 e
Beverage and tobacco products	312	D	D	* e	* e	*	D	D
Textiles, apparel, and leather	313–16	2 i	1 i	* i	* e	4 i	50 i	* e
Wood products	321	* e	* e	* e	* e	1 i	* e	* e
Paper, printing, and support activities	322, 323	5	21	1	* e	15	93	* e
Petroleum and coal products	324	D	* e	D	0	2	D	* e
Chemicals	325	D	3,576	850	6	217	218	24
Basic chemicals	3251	2 i	D	116	0	23	32	* e
Resin, synthetic rubber, fibers, and filament	3252	D	D	D	D	1	15 i	D
Pharmaceuticals and medicines	3254	70	3,465	D	D	160	136	1
Other chemicals	other 325	14	47	D	0	33	36	D
Plastics and rubber products	326	17	29	7	D	33 i	19 i	* e
Nonmetallic mineral products	327	8	2 i	* e	* e	4 i	4 i	* e
Primary metals	331	1 e	6	1 e	0	2 e	2 e	0
Fabricated metal products	332	33	47	2 i	* e	22	9 e	* e
Machinery	333	20	D	2 i	0	48	74	* e
Computer and electronic products	334	1,266	259	13	D	1,227	402	1
Computers and peripheral equipment	3341	502	10 i	0	0	38	54	*
Communications equipment	3342	50	52 i	1 i	D	116	291	D
Semiconductor and other electronic components	3344	355	119	3	* e	90	17	D
Navigational, measuring, electromedical, and control instruments	3345	D	77	10	D	979	39 i	* e
Other computer and electronic products	other 334	D	* e	* e	0	4 i	* e	* e
Electrical equipment, appliances, and components	335	13 i	99	* e	* e	28	39	* e
Transportation equipment	336	D	D	D	D	431	D	D
Motor vehicles, trailers, and parts	3361–63	9 i	2	* e	D	17	27	* e
Aerospace products and parts	3364	D	D	D	0	215	63	D
Other transportation equipment	other 336	4 i	D	D	D	199	D	* e
Furniture and related products	337	15	1 e	* e	* e	2 e	10	* e
Miscellaneous manufacturing	339	33	29	5	D	68	54	1 e
Medical equipment and supplies	3391	27	16	5	D	59	34	* e
Other miscellaneous manufacturing	other 339	6	13	* e	* e	9 i	20	* e

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	1,153	753	155 i	145 e	1,366	966	D
Mining, extraction, and support activities	21	31	D	* e	* e	*	31	* e
Utilities	22	* e	1 i	* e	D	D	* e	D
Construction	23	9	D	* e	*	12	32	1 e
Wholesale trade	42	22 e	20 e	2 e	D	68 e	39 e	3 e
Retail trade	44, 45	20 e	19 e	4 e	1 e	65 e	37 e	5 e
Transportation and warehousing	48, 49	4	1 e	* e	1 e	4 e	2 e	2 i
Information	51	441	48 i	12	14	362	277	3
Publishing	511	268 i	39 i	1 e	9	223	101	1
Newspaper, periodical, book, and database	5111	25	1	* e	2 i	8 i	* e	* e
Software	5112	243 i	38 i	1 e	7	215	101	1
Broadcasting and telecommunications	513	69	1 e	* e	1 e	71 i	100 i	* e
Telecommunications	5133	69	1 e	* e	1 e	D	100 i	* e
Other broadcasting and telecommunications	other 513	0	0	0	0	D	0	0
Other information	other 51	103	7	11	5 e	67	76	2
Finance, insurance, and real estate	52, 53	46	30 i	3 e	2 e	D	43	4 i
Professional, scientific, and technical services	54	536	423	D	123 e	717	450	74
Architectural, engineering, and related services	5413	94	87	D	16 e	278	116	22
Computer systems design and related services	5415	154	86 i	7 e	27	201	210	6 e
Scientific R&D services	5417	267	233	19 e	57 e	181 e	85	43
Other professional, scientific, and technical services	other 54	21	16 e	2 e	22 e	57 e	39 e	2 e
Health care services	621-23	20	3 e	D	* e	17 e	10 e	1 e
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	24	D	1 e	2 e	78	44	D

TABLE 31. Funds for industrial R&D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Hawaii
Company size (employees)								
All companies	-	4,008	7,177	1,059	182 e	3,486	2,160	131
5-24	-	117 e	98 e	19 e	46 e	294 e	157 e	23 e
25-49	-	96 e	101 e	11 e	24 e	175 e	102 e	10 e
50-99	-	230	84 e	15	13 e	158 e	148	17
100-249	-	232	326	11 e	16 e	223	195	26 i
250-499	-	143	176	D	D	177	113 i	6 i
500-999	-	199	137	15	8	131 i	195	13
1,000-4,999	-	914	354	D	D	479	554	D
5,000-9,999	-	304	556	D	* i	1,099	119	D
10,000-24,999	-	232 i	736	7 i	32	123	194	18
25,000 or more	-	1,542	4,611	D	7	630	382	12

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	681	8,554	4,208	963	1,804 i	565	311
Manufacturing industries	31–33	615	7,064	3,979	828	1,628 i	428	203
Food	311	14	261	17	59	17	19	2 e
Beverage and tobacco products	312	* e	*	* e	* e	* e	4 i	* e
Textiles, apparel, and leather	313–16	* e	D	* e	3 i	* e	3 i	* e
Wood products	321	D	2 i	* e	D	* e	D	* i
Paper, printing, and support activities	322, 323	D	12	7	1	3 i	2 e	D
Petroleum and coal products	324	* e	D	2 i	*	7	* e	D
Chemicals	325	16	1,597	D	D	44	42	49
Basic chemicals	3251	*	257 i	29	6	D	23	27
Resin, synthetic rubber, fibers, and filament	3252	*	27	D	D	D	9	D
Pharmaceuticals and medicines	3254	3	1,163	D	31	D	5	6
Other chemicals	other 325	13	151	22	32	25	5	D
Plastics and rubber products	326	2	182	22	9	13 i	15	1 e
Nonmetallic mineral products	327	* e	66	5 i	D	* i	* e	1
Primary metals	331	* e	35 i	93	3 e	1 e	3 e	D
Fabricated metal products	332	2	78	43	7	D	D	4 e
Machinery	333	D	719	D	368	70	28 i	15 i
Computer and electronic products	334	D	3,051	323	42	1,126 i	D	10
Computers and peripheral equipment	3341	D	49 i	1 e	D	17	D	0
Communications equipment	3342	2	D	39	5	D	10	2 i
Semiconductor and other electronic components	3344	D	D	D	D	2 e	3	2
Navigational, measuring, electromedical, and control instruments	3345	2	183	114	7 i	D	12	6
Other computer and electronic products	other 334	* e	D	D	0	D	D	* e
Electrical equipment, appliances, and components	335	* e	171	61	129 i	3	10	1 e
Transportation equipment	336	2	690	926	16	D	69	14
Motor vehicles, trailers, and parts	3361–63	1 e	374	651	8	4	63	D
Aerospace products and parts	3364	D	276	267	D	D	D	D
Other transportation equipment	other 336	D	40 i	8	D	1 i	D	4
Furniture and related products	337	* e	18	47	25	2 i	3	* e
Miscellaneous manufacturing	339	D	90	136	3 e	4 e	13 i	2 e
Medical equipment and supplies	3391	D	25	84	1 e	3 e	7 i	1 e
Other miscellaneous manufacturing	other 339	* e	65	52	2 e	1 e	5	1 e



TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana
Nonmanufacturing industries	21–23, 42, 44–81	65	1,490	229 e	135 e	176	137 e	108 e
Mining, extraction, and support activities	21	* e	D	D	* e	* e	* e	3
Utilities	22	* e	* e	2	1	* e	1	1 e
Construction	23	* e	D	3 e	2	2	5	2 e
Wholesale trade	42	4 e	80 e	28 e	16 e	11 e	19 e	15 e
Retail trade	44, 45	5 e	65 e	28 e	12 e	13 e	14 e	14 e
Transportation and warehousing	48, 49	2	D	1 e	1 e	* e	1 e	1 e
Information	51	26	347	D	25	47	14	11 e
Publishing	511	10 i	278	D	7 i	19	4	4 e
Newspaper, periodical, book, and database	5111	* e	32	* e	1 i	* i	* e	* e
Software	5112	10 i	245	D	5 e	19	4	4 e
Broadcasting and telecommunications	513	D	11 e	2 e	3 e	19	2 e	3 e
Telecommunications	5133	D	11 e	2 e	3 e	19	2 e	3 e
Other broadcasting and telecommunications	other 513	0	0	0	0	0	0	0
Other information	other 51	D	58	D	15	8	8	4
Finance, insurance, and real estate	52, 53	1 e	80	7 e	7 i	2 e	2 e	3 e
Professional, scientific, and technical services	54	26 e	438 e	101 e	66	91 e	75 e	51 e
Architectural, engineering, and related services	5413	10 e	69 e	25 e	7 e	19 e	14 e	27 e
Computer systems design and related services	5415	6 e	162 e	36 e	11 e	17 e	23 i	12 e
Scientific R&D services	5417	4 e	139	29 e	20	16 e	34	6 e
Other professional, scientific, and technical services	other 54	6 i	68 e	10 e	27	38	5 e	7 e
Health care services	621–23	1 e	10 e	7 e	2 e	3 e	3 e	3 e
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1 e	35	7 e	4 e	6 i	3 e	5 e

TABLE 31. Funds for industrial R&D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana
Company size (employees)								
All companies	-	681	8,554	4,208	963	1,804 i	565	311
5-24	-	23 e	269 e	86 e	38 e	44 e	45 e	51 e
25-49	-	10 e	188 e	66 e	25 e	29 e	24 e	25 e
50-99	-	13 e	165 e	70 e	28 e	33 e	36 e	21 e
100-249	-	24	336 i	91 e	67	44 i	38 e	23 e
250-499	-	D	216	60 i	27	30 i	36	14
500-999	-	1 e	453 i	56	32	46	34	9
1,000-4,999	-	66	998	329	103	93	217	27
5,000-9,999	-	D	198	327	52	42	41	5
10,000-24,999	-	D	1,130	2,566	176	26	24	19 i
25,000 or more	-	39	4,600	556	416	1,417 i	71	119

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	213	3,826	11,819	15,170	5,199	160	2,151
Manufacturing industries	31–33	114	2,361	8,425	14,180	4,070	78	1,378
Food	311	1 e	47	17	D	237	D	40
Beverage and tobacco products	312	* e	* e	D	D	* i	* e	D
Textiles, apparel, and leather	313–16	2 i	4	82 i	12	3 i	1 e	1 e
Wood products	321	* i	* e	* e	D	D	* e	* i
Paper, printing, and support activities	322, 323	D	10	19	6	D	1	9
Petroleum and coal products	324	* e	D	6	1 i	D	D	1 i
Chemicals	325	29	623	1,594	1,643	236	D	710
Basic chemicals	3251	* e	44	68	173	1 i	D	D
Resin, synthetic rubber, fibers, and filament	3252	0	D	68	221 i	13	D	D
Pharmaceuticals and medicines	3254	27	565	1,427	D	103	2	399
Other chemicals	other 325	2 i	D	31	D	118	5	241
Plastics and rubber products	326	1 e	75	37	138	40	2 e	25
Nonmetallic mineral products	327	D	* e	D	85	4	* e	1 i
Primary metals	331	* e	5 i	4	61	10 i	1 e	D
Fabricated metal products	332	1 e	D	24	94	D	2 e	105 i
Machinery	333	8 i	D	D	241	257	D	69
Computer and electronic products	334	46	560	5,337 i	367	1,262	9	120
Computers and peripheral equipment	3341	D	8	800	D	402	* e	2 e
Communications equipment	3342	13	230	729 i	D	D	4	1 i
Semiconductor and other electronic components	3344	30	38	657	64	111	4	95
Navigational, measuring, electromedical, and control instruments	3345	2 i	283	2,923 i	198	592	1	22
Other computer and electronic products	other 334	D	* e	227 i	* e	D	* e	* e
Electrical equipment, appliances, and components	335	* e	9	200	202	25	5	20
Transportation equipment	336	11	813	D	11,024	330	D	225 i
Motor vehicles, trailers, and parts	3361–63	* e	3 i	22 i	10,912	63	4 i	101
Aerospace products and parts	3364	D	D	313	76	144	D	119 i
Other transportation equipment	other 336	D	D	D	36	123	D	5
Furniture and related products	337	* i	1 e	2 e	88	8	D	7 i
Miscellaneous manufacturing	339	1 e	44	471	69	828 i	3 i	20 i
Medical equipment and supplies	3391	1 e	40	414	52	815 i	2 i	11
Other miscellaneous manufacturing	other 339	* e	4 i	58	18	13	2 i	8 i

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri
Nonmanufacturing industries	21–23, 42, 44–81	99	1,465	3,394	991	1,130	82	773
Mining, extraction, and support activities	21	* e	D	D	D	* e	* e	* e
Utilities	22	* e	* e	5 i	4 i	* e	* e	1 i
Construction	23	* e	36	D	D	8	1 e	27
Wholesale trade	42	4 e	27 e	42 e	40 e	38 e	7 e	26 e
Retail trade	44, 45	5 e	23 e	28 e	37 e	30 e	8 e	22 e
Transportation and warehousing	48, 49	* e	D	4 i	2 e	4	* e	1 e
Information	51	25	178	1,163 i	398	170	15	255
Publishing	511	10	142	857	80	152	1	94
Newspaper, periodical, book, and database	5111	D	D	44	D	3	* e	D
Software	5112	D	D	813 i	D	149	1	D
Broadcasting and telecommunications	513	D	15 i	227 i	16 i	5 e	2 e	D
Telecommunications	5133	D	15 i	D	16 i	5 e	2 e	D
Other broadcasting and telecommunications	other 513	0	0	D	0	0	0	0
Other information	other 51	D	22	79	302	13	12	D
Finance, insurance, and real estate	52, 53	1 e	14	104	D	10 e	1 e	75
Professional, scientific, and technical services	54	58	1,166	1,857	453 e	859	46	350
Architectural, engineering, and related services	5413	38	255	104 e	126 e	41 e	10 e	36 e
Computer systems design and related services	5415	8	320	674	126 e	717	25	234
Scientific R&D services	5417	10 e	567	964	178	80	9	66
Other professional, scientific, and technical services	other 54	2 e	25 e	115	22 e	21 e	3 e	14 e
Health care services	621–23	2 i	3 e	D	D	4 e	2 e	4 e
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	2 e	7 e	72 i	14 e	6 e	2 e	11 e

TABLE 31. Funds for industrial R&D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri
Company size (employees)								
All companies	-	213	3,826	11,819	15,170	5,199	160	2,151
5-24	-	17 e	172 e	305 e	195 e	125 e	22 e	99 e
25-49	-	19	184 e	468 e	164 e	98 e	10 e	83 e
50-99	-	13 e	140 e	524	142 e	112 e	11 e	62 e
100-249	-	22	255	816	295	232	13 e	107
250-499	-	3	129	698	176 i	180	7	41 i
500-999	-	5	440	851	561	274	10	68
1,000-4,999	-	70	1,119	1,783	901	659	14	363
5,000-9,999	-	D	95	687	470	462	8	362
10,000-24,999	-	8 i	514	2,065	1,282	1,463	D	253
25,000 or more	-	D	779	3,623 i	10,986	1,594	D	713

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	70	383	417	1,330	10,993	450	8,793
Manufacturing industries	31–33	34	116	228	993	8,719	274	5,621
Food	311	* e	33	1	1 i	306	1	148
Beverage and tobacco products	312	* e	D	* e	* e	* e	* e	1
Textiles, apparel, and leather	313–16	* e	* e	* e	D	11	* e	18
Wood products	321	* e	* e	* e	* i	* i	* e	* i
Paper, printing, and support activities	322, 323	* i	2 i	1 i	4 i	20	* e	57
Petroleum and coal products	324	* e	D	D	* e	193	* e	D
Chemicals	325	12 i	12	5	9	6,549	4	2,751
Basic chemicals	3251	D	D	2 i	D	291	D	121
Resin, synthetic rubber, fibers, and filament	3252	0	D	0	D	64 i	D	57 i
Pharmaceuticals and medicines	3254	D	6	2	2 e	5,701	1	1,494
Other chemicals	other 325	D	2	1 i	D	493	* e	1,079
Plastics and rubber products	326	* i	7 i	1 e	3 e	57	* e	28 i
Nonmetallic mineral products	327	* e	* e	* e	3	7	* i	D
Primary metals	331	* e	1	5 i	11	12	1 i	6 e
Fabricated metal products	332	* e	2	3	17 i	15	1 e	50 i
Machinery	333	D	12	3 i	D	113 i	1 e	224
Computer and electronic products	334	D	27	30	828	804	D	679
Computers and peripheral equipment	3341	* e	D	D	8	18	* i	131 i
Communications equipment	3342	* i	12	1 i	46	D	D	90
Semiconductor and other electronic components	3344	D	1 e	1 e	D	D	23	93
Navigational, measuring, electromedical, and control instruments	3345	1 i	12	D	D	388	D	347
Other computer and electronic products	other 334	0	D	* e	D	D	D	18
Electrical equipment, appliances, and components	335	* e	2	14 i	8	342	* e	127
Transportation equipment	336	* e	9	D	2	86	D	966
Motor vehicles, trailers, and parts	3361–63	* e	D	D	1 i	15	* i	D
Aerospace products and parts	3364	* e	* e	D	D	59	D	493
Other transportation equipment	other 336	* e	D	* e	D	12	* e	D
Furniture and related products	337	* e	2 i	* e	* e	2 e	* e	8
Miscellaneous manufacturing	339	2	7	146	13	202	3 i	282
Medical equipment and supplies	3391	1 i	6	1 e	9	187	* e	197
Other miscellaneous manufacturing	other 339	* e	1 e	145	4	15	3 i	85

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	36 e	268	189	337	2,274	176	3,172
Mining, extraction, and support activities	21	* i	* e	D	* e	* e	* e	D
Utilities	22	* e	* e	D	* e	3 i	* e	30
Construction	23	* e	1 e	1 e	1 e	D	1 e	12
Wholesale trade	42	2 e	11 e	8 e	6 e	66 e	5 e	112 e
Retail trade	44, 45	4 e	8 e	11 e	33	73	7 e	74 e
Transportation and warehousing	48, 49	* e	* e	D	*	D	* e	D
Information	51	11	71	64	173	406	41	962
Publishing	511	9	14 i	D	158 i	253	D	694
Newspaper, periodical, book, and database	5111	D	D	* i	* e	61	*	361
Software	5112	D	D	D	158 i	192	D	333
Broadcasting and telecommunications	513	1 e	2 e	2 e	1 e	128	1 e	193 i
Telecommunications	5133	1 e	2 e	2 e	1 e	128	1 e	179 i
Other broadcasting and telecommunications	other 513	0	0	0	0	0	0	14 i
Other information	other 51	2	55	D	14	25	D	76
Finance, insurance, and real estate	52, 53	* e	88 i	4 i	1 e	136	4 i	200 i
Professional, scientific, and technical services	54	16 e	82	52 e	117	986	106	1,724
Architectural, engineering, and related services	5413	6 e	64	17 e	32	91 e	43	115 e
Computer systems design and related services	5415	6 i	12 e	8 e	26	206 e	9 e	1,268
Scientific R&D services	5417	4 e	3 e	22 e	56	620	51 e	247
Other professional, scientific, and technical services	other 54	1 e	3 e	5 e	2 e	69	3 e	94 e
Health care services	621-23	* e	4 i	2 e	1 e	6 e	1 e	20 e
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1 e	2 e	39	5	45	11	31 e

TABLE 31. Funds for industrial R&D performed in the United States, by industry and company size, by state: 2004

(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	-	70	383	417	1,330	10,993	450	8,793
5-24	-	10 e	24 e	41 e	36 e	271 e	27 e	420 e
25-49	-	7 e	15 e	42	44 e	306 e	29 e	273 e
50-99	-	D	13 e	26 e	53 i	265 e	34	256 e
100-249	-	9 i	35	21 e	79	471 i	99 i	418
250-499	-	19 i	16	24	57	321	28	272
500-999	-	D	17 i	40	52 i	563	16 i	429
1,000-4,999	-	*	121	150	149	2,173	27	1,386
5,000-9,999	-	*	8 i	14	2	2,319	2	397
10,000-24,999	-	1	30	9 i	818	2,566	14	834
25,000 or more	-	1	104 i	51	40	1,737	175	4,108



TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	4,565	379 i	5,516	410	3,057	8,005	1,320 i
Manufacturing industries	31–33	2,783	D	4,314	190	2,447	6,182	D
Food	311	43	1	41	2 e	D	64	1 i
Beverage and tobacco products	312	D	* e	* e	* e	1 i	* e	* e
Textiles, apparel, and leather	313–16	53	1 i	6 i	* e	D	14 i	3 i
Wood products	321	*	* e	1	* e	3	D	* e
Paper, printing, and support activities	322, 323	16	*	667	* e	17	21	* e
Petroleum and coal products	324	D	*	14	6	* e	21	* e
Chemicals	325	1,362	2	452	56	21	3,748	13
Basic chemicals	3251	51 i	* i	184	D	D	309	D
Resin, synthetic rubber, fibers, and filament	3252	80	D	61	D	D	161	D
Pharmaceuticals and medicines	3254	1,154	D	71	13 i	6	3,146	5
Other chemicals	other 325	78	D	135	D	8 i	133 i	4 i
Plastics and rubber products	326	57	* e	326 i	2	4 e	D	D
Nonmetallic mineral products	327	5	* e	96	* e	* e	29 i	D
Primary metals	331	12	* e	40	2 e	14	247 i	2 i
Fabricated metal products	332	21	1 e	150	4 e	13 i	140 i	8
Machinery	333	D	D	256	40	65	190	5
Computer and electronic products	334	784	4	235	22	1,934	841 i	D
Computers and peripheral equipment	3341	8	0	7 e	4	68	76	51
Communications equipment	3342	601	D	19	2	D	92	1 i
Semiconductor and other electronic components	3344	90	D	20	2 e	1,709	525 i	22
Navigational, measuring, electromedical, and control instruments	3345	84	* e	188	13	135	146	D
Other computer and electronic products	other 334	1 i	D	* e	* e	D	3	D
Electrical equipment, appliances, and components	335	54	* e	181	5	39	95	2
Transportation equipment	336	D	8	1,761 i	42	125	472	2
Motor vehicles, trailers, and parts	3361–63	97	D	D	D	100	26	* e
Aerospace products and parts	3364	D	D	705 i	10	23	437	D
Other transportation equipment	other 336	5 i	D	D	D	3 i	9	D
Furniture and related products	337	31	* e	23	3 i	1 e	15 i	D
Miscellaneous manufacturing	339	35	* e	65	5	23	135	86
Medical equipment and supplies	3391	27	* e	48	4	17	110	10
Other miscellaneous manufacturing	other 339	8 i	* e	17	1	6	26	77

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	1,782	D	1,202	219	610	1,823	D
Mining, extraction, and support activities	21	D	* e	* i	D	D	* e	* e
Utilities	22	D	* i	14	1	* e	18	* e
Construction	23	13	* e	146	5	D	13	* e
Wholesale trade	42	31 e	3 e	59 e	12 e	18 e	58 e	4 e
Retail trade	44, 45	29 e	3 e	157	18 e	22 e	69 e	4 e
Transportation and warehousing	48, 49	2 e	* e	3 e	1 i	10 i	6	* e
Information	51	329 i	D	244	D	238	329	10
Publishing	511	298 i	D	192	6 e	207	147	8 i
Newspaper, periodical, book, and database	5111	* e	* e	D	* e	* e	10	* e
Software	5112	297 i	D	D	6 e	207	137	7 i
Broadcasting and telecommunications	513	6 e	1 e	15	7 e	3 e	104 i	* e
Telecommunications	5133	6 e	1 e	15	7 e	3 e	D	* e
Other broadcasting and telecommunications	other 513	0	0	0	0	0	D	0
Other information	other 51	25 i	D	36	D	28	78	2
Finance, insurance, and real estate	52, 53	73 i	* e	24	3 e	3 e	112	D
Professional, scientific, and technical services	54	1,268	16 i	463	74	303	1,141	32 e
Architectural, engineering, and related services	5413	62 e	D	106 e	15 e	46 i	105 e	11
Computer systems design and related services	5415	872	D	96 e	19 e	187	310	5 e
Scientific R&D services	5417	302	11 i	236	35	61 e	622	13 e
Other professional, scientific, and technical services	other 54	32 i	1 e	25 e	5 e	9 e	105	3 e
Health care services	621–23	6 e	* e	8 e	4 e	5 i	63 i	1 e
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	21	* e	84	3 e	4 e	13 e	4

TABLE 31. Funds for industrial R&D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island
Company size (employees)								
All companies	-	4,565	379 i	5,516	410	3,057	8,005	1,320 i
5-24	-	153 e	7 e	202 e	44 e	63 e	254 e	D
25-49	-	130 e	4 e	193 e	33 e	58 e	256 e	12 e
50-99	-	146 e	5 e	185 e	43	64	189 e	18 e
100-249	-	242	16 i	238	32 e	128 i	410	29 i
250-499	-	93	2 i	205	11 i	69 i	207	17
500-999	-	268	9 i	167	6 i	199	179	12 i
1,000-4,999	-	568	4	982	89	332	1,743	164
5,000-9,999	-	418 i	D	309	21	34	463	13
10,000-24,999	-	1,411	D	831	26 i	246	1,735	3 i
25,000 or more	-	1,136	325 i	2,202	104	1,863	2,570	D

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	961	72	1,630	10,992	1,089	423	4,006
Manufacturing industries	31–33	740	31	917	7,426	513	95	2,328
Food	311	1 e	2	22	75	6 i	5	D
Beverage and tobacco products	312	* e	* e	D	D	* e	* e	D
Textiles, apparel, and leather	313–16	32	* i	4	6	* e	1	10
Wood products	321	1 i	* e	D	D	* e	* i	* e
Paper, printing, and support activities	322, 323	28	* e	12	52	8	3 i	7
Petroleum and coal products	324	D	* e	D	871	2	* e	57
Chemicals	325	60	1 e	210	492	D	13	D
Basic chemicals	3251	12	D	169	113	D	*	12
Resin, synthetic rubber, fibers, and filament	3252	1 i	D	14	207 i	D	* e	D
Pharmaceuticals and medicines	3254	41	* e	10	105	42	D	61
Other chemicals	other 325	6	* e	16 i	66	14	D	D
Plastics and rubber products	326	273	1 i	18	33 i	1 e	6	27
Nonmetallic mineral products	327	1	* e	2 i	8	2 i	* e	1
Primary metals	331	12	* e	9 e	31 i	2 e	* e	3 e
Fabricated metal products	332	10	1 e	21	43 e	5	1 i	17
Machinery	333	38	3	76	298	43	9 i	23
Computer and electronic products	334	66	5 i	67	4,480	D	22	393
Computers and peripheral equipment	3341	2	D	7	427	45 i	0	D
Communications equipment	3342	18	D	23	878	5	* i	52
Semiconductor and other electronic components	3344	37 i	2	3 e	2,948	28	16	207
Navigational, measuring, electromedical, and control instruments	3345	9 i	* e	34	224	30	6 i	121
Other computer and electronic products	other 334	* e	0	* e	3 i	D	* i	D
Electrical equipment, appliances, and components	335	49	1 e	72	72	3	1 i	12
Transportation equipment	336	155	6	317	662	196	23	D
Motor vehicles, trailers, and parts	3361–63	56	D	293	39	D	D	32
Aerospace products and parts	3364	D	D	18	612	D	D	186
Other transportation equipment	other 336	D	* e	6 i	11	* e	D	D
Furniture and related products	337	D	* e	10	3 e	2 i	* e	8 i
Miscellaneous manufacturing	339	7 i	11	60	293	65	9 i	16
Medical equipment and supplies	3391	3	* e	50	275	46	* e	5
Other miscellaneous manufacturing	other 339	4 i	11	10	18	20	9 i	11

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(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	221	41 i	713 i	3,566	576	328	1,678
Mining, extraction, and support activities	21	D	* e	D	215 i	* i	D	* i
Utilities	22	* i	* e	*	5	* e	D	2
Construction	23	2 e	* e	3 e	44	1 e	* e	4 e
Wholesale trade	42	12 e	2 e	32 e	94 e	12 e	9 e	30 e
Retail trade	44, 45	14 e	19 i	24 e	91 e	17	5 e	30 e
Transportation and warehousing	48, 49	4	* e	D	16	1 e	D	4
Information	51	29	6	26	1,101	320	76	389 i
Publishing	511	23	2	8	559	307	D	130
Newspaper, periodical, book, and database	5111	* e	* e	* e	D	D	* e	1 i
Software	5112	23	2	8	D	D	D	129
Broadcasting and telecommunications	513	3 e	2 i	4 e	275	3 e	* e	247 i
Telecommunications	5133	3 e	D	4 e	275	3 e	* e	247 i
Other broadcasting and telecommunications	other 513	0	D	0	0	0	0	0
Other information	other 51	3	3	15	268	10	D	12 e
Finance, insurance, and real estate	52, 53	21	1 e	D	126	D	* e	15
Professional, scientific, and technical services	54	100	10	465 i	1,778	166	229	1,179
Architectural, engineering, and related services	5413	48	3 i	292	178 e	27	D	418
Computer systems design and related services	5415	35	4	141 i	1,025	39	D	361 e
Scientific R&D services	5417	12 e	2 e	23 e	498	88 i	8 i	279
Other professional, scientific, and technical services	other 54	5 e	1 e	10 e	78 e	12 i	1 e	121
Health care services	621-23	D	1 i	8 e	17 e	D	* e	6 e
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	4 e	2 i	7 e	78	3 e	2 i	18

TABLE 31. Funds for industrial R&D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia
Company size (employees)								
All companies	-	961	72	1,630	10,992	1,089	423	4,006
5-24	-	47 e	8 e	79 e	399 e	46 e	D	223 e
25-49	-	28 e	5 e	45 e	312 e	47 e	10 e	192 e
50-99	-	31 e	11 i	45 e	442	57	11 i	182 e
100-249	-	47	6 e	68 e	460	99 i	26 i	366
250-499	-	35	4	57 i	423	80 i	14	114
500-999	-	295	3 i	62	652	81	15 i	196
1,000-4,999	-	108	11	285 i	1,397	395	51	275
5,000-9,999	-	101	16 i	394	1,031	73	*	209
10,000-24,999	-	117	D	240 i	2,848	161	27	340
25,000 or more	-	151	D	356	3,027	50	D	1,910

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Washington	West Virginia	Wisconsin	Wyoming	Undistributed
All industries	21–23, 31–33, 42, 44–81	8,840 i	D	2,645	23	7,169
Manufacturing industries	31–33	2,429 i	D	2,217	6	5,602
Food	311	14	* e	80	* e	15 i
Beverage and tobacco products	312	* e	* e	*	* e	0
Textiles, apparel, and leather	313–16	1 e	* e	14	* e	1 i
Wood products	321	2 i	* e	8	* e	0
Paper, printing, and support activities	322, 323	39	* e	307	* e	8 i
Petroleum and coal products	324	* e	* e	1 i	* e	0
Chemicals	325	503 i	D	220	3	3,725
Basic chemicals	3251	* e	*	30	2	23 i
Resin, synthetic rubber, fibers, and filament	3252	1	D	6 i	D	7
Pharmaceuticals and medicines	3254	499 i	D	30	D	3,681
Other chemicals	other 325	3	* e	154	D	15 i
Plastics and rubber products	326	5 e	10	48	D	62
Nonmetallic mineral products	327	2 i	* e	D	* e	10
Primary metals	331	16	5 i	15 e	* e	0
Fabricated metal products	332	22 i	1 e	60	* e	20
Machinery	333	59	2 e	280	1 e	248 i
Computer and electronic products	334	561	3 e	D	* e	641 i
Computers and peripheral equipment	3341	91	1 e	47	0	11 i
Communications equipment	3342	70	0	5 i	0	171 i
Semiconductor and other electronic components	3344	D	* e	53	0	385 i
Navigational, measuring, electromedical, and control instruments	3345	347	2 i	D	* e	74 i
Other computer and electronic products	other 334	D	0	* e	* e	0
Electrical equipment, appliances, and components	335	5 i	5	154	* e	62 i
Transportation equipment	336	1,146 i	19	731	D	694 i
Motor vehicles, trailers, and parts	3361–63	40	D	D	* i	685 i
Aerospace products and parts	3364	D	18	D	D	0
Other transportation equipment	other 336	D	D	245	* e	9
Furniture and related products	337	3	* e	18	* e	0
Miscellaneous manufacturing	339	50	4	29	* e	115 i
Medical equipment and supplies	3391	16 i	3	14 i	* i	69
Other miscellaneous manufacturing	other 339	34	2	15	* e	46 i

TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Washington	West Virginia	Wisconsin	Wyoming	Undistributed
Nonmanufacturing industries	21–23, 42, 44–81	6,411 i	D	428	18 e	1,567
Mining, extraction, and support activities	21	* e	* i	* e	* e	0
Utilities	22	* e	D	D	* e	10 i
Construction	23	8 i	* e	3 e	1	96
Wholesale trade	42	51 e	4 e	31 e	2 e	29 i
Retail trade	44, 45	56	5 e	22 e	3 e	25 i
Transportation and warehousing	48, 49	1 e	* e	18	* e	10
Information	51	5,559 i	9	97	1 e	180 i
Publishing	511	D	1 e	71	* e	111 i
Newspaper, periodical, book, and database	5111	2	* e	* e	* e	0
Software	5112	D	1 e	71	* e	111 i
Broadcasting and telecommunications	513	55 i	1 e	6 e	* e	48 i
Telecommunications	5133	55 i	1 e	6 e	* e	48 i
Other broadcasting and telecommunications	other 513	0	0	0	0	0
Other information	other 51	D	7	19	* e	21 i
Finance, insurance, and real estate	52, 53	9 e	1 e	106	* e	4
Professional, scientific, and technical services	54	714	D	137 e	11	606 i
Architectural, engineering, and related services	5413	76 e	D	28 e	3 e	80 i
Computer systems design and related services	5415	115	5	51 e	6	148 i
Scientific R&D services	5417	502 i	4 e	49 e	1 e	230 i
Other professional, scientific, and technical services	other 54	21 e	2 e	9 e	* e	148
Health care services	621–23	4 e	1 e	3 e	* e	28
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	8 e	1 e	D	1 e	579



TABLE 31. Funds for industrial R&amp;D performed in the United States, by industry and company size, by state: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Washington	West Virginia	Wisconsin	Wyoming	Undistributed
Company size (employees)						
All companies	-	8,840 i	202	2,645	23	7,169
5-24	-	D	14 e	93 e	6 e	28 i
25-49	-	149 e	7 e	76 e	2 e	127 i
50-99	-	211	10 e	81 e	D	164 i
100-249	-	276 i	11 e	124	3 e	374 i
250-499	-	410 i	1	91 i	1	491 i
500-999	-	335	1 e	147	* e	441 i
1,000-4,999	-	429	60	627	D	642 i
5,000-9,999	-	245 i	4	348	* e	269 i
10,000-24,999	-	196	D	541	D	175 i
25,000 or more	-	D	D	516	D	4,459

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; e = estimated; more than 50% of cell value is imputed due to raking of state data; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total because of rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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. Excludes 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: 2004.

TABLE 32. Domestic employment of companies performing industrial R&amp;D in the United States, by industry, by company size: 2004

(Thousands)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
All industries	21–23, 31–33, 42, 44–81	14,820	240	236	356	635	545	610	2,325	1,373	2,243	6,258
Manufacturing industries	31–33	9,399	84	115	216	419	437	461	1,834	952	1,541	3,339
Food	311	876	5	6	8	22	27	49	124	88	123	424
Beverage and tobacco products	312	100	1	D	*	*	2	0	D	D	0	D
Textiles, apparel, and leather	313–16	256	2	D	5	12	10	16	D	30	D	D
Wood products	321	151	1	*	2	3	4	D	31	29	D	D
Paper, printing, and support activities	322, 323	475	2	2	3	10	13	15	71	53	50	256
Petroleum and coal products	324	169	1	*	1	1	2	2	D	D	D	107
Chemicals	325	1,073	11	9	18	34	47	49	275	138	228	264
Basic chemicals	3251	179	1	1	2	5	5	D	90	44	D	0
Resin, synthetic rubber, fibers, and filament	3252	100	*	1	1	1	6	D	21	D	D	D
Pharmaceuticals and medicines	3254	469	1	1	5	12	19	21	85	30	126	169
Other chemicals	other 325	325	9	6	9	17	16	D	79	D	D	D
Plastics and rubber products	326	429	2	10	18	27	39	D	141	65	55	D
Nonmetallic mineral products	327	179	2	3	3	6	9	8	D	D	84	0
Primary metals	331	274	3	1	3	24	8	D	39	56	86	D
Fabricated metal products	332	482	9	18	31	46	51	D	123	71	64	D
Machinery	333	665	15	19	40	75	51	60	165	68	84	90
Computer and electronic products	334	1,373	16	20	33	72	57	72	263	74	261	505
Computers and peripheral equipment	3341	247	2	2	4	18	D	8	39	D	D	D
Communications equipment	3342	210	3	2	6	13	D	18	41	0	D	D
Semiconductor and other electronic components	3344	411	4	5	9	19	D	23	106	D	44	177
Navigational, measuring, electromedical, and control instruments	3345	450	7	9	13	20	D	19	62	D	126	D
Other computer and electronic products	other 334	55	1	1	1	2	D	3	16	0	D	0
Electrical equipment, appliances, and components	335	345	3	4	16	16	20	23	96	47	122	0
Transportation equipment	336	1,956	3	5	11	24	28	42	195	98	193	1,357
Motor vehicles, trailers, and parts	3361–63	1,039	2	3	7	17	18	33	D	D	D	D
Aerospace products and parts	3364	622	1	1	1	3	5	5	D	18	D	545
Other transportation equipment	other 336	295	1	1	4	4	4	5	D	D	D	D
Furniture and related products	337	241	1	5	4	9	37	7	45	57	D	D
Miscellaneous manufacturing	339	355	7	7	22	36	33	37	106	41	66	0
Medical equipment and supplies	3391	211	4	4	6	13	20	18	60	21	66	0
Other miscellaneous manufacturing	other 339	143	4	3	15	24	13	19	46	20	0	0

TABLE 32. Domestic employment of companies performing industrial R&D in the United States, by industry, by company size: 2004

(Thousands)

Industry	NAICS codes	Company size (employees)										
		All companies	5-24	25-49	50-99	100-249	250-499	500-999	1,000-4,999	5,000-9,999	10,000-24,999	25,000 +
Nonmanufacturing industries	21-23, 42, 44-81	5,421	156	120	139	215	109	149	490	421	701	2,919
Mining, extraction, and support activities	21	97	*	1	*	1	1	D	20	21	D	D
Utilities	22	255	*	1	D	1	0	D	21	D	107	D
Construction	23	160	15	D	*	D	4	5	46	D	D	0
Wholesale trade	42	155	18	32	31	37	9	D	2	0	D	0
Retail trade	44, 45	603	12	*	D	D	6	7	35	D	71 i	D
Transportation and warehousing	48, 49	597	1	D	D	*	D	D	7	D	D	D
Information	51	1,233	14	13	20	31	29	29	109	69	169	751
Publishing	511	343	9	10	10	21	16	20	71	D	71	D
Newspaper, periodical, book, and database	5111	105	0	1	*	2	1	2	13	D	D	D
Software	5112	238	9	9	10	20	15	18	58	D	D	D
Broadcasting and telecommunications	513	697 i	1	2	3	2	3	D	7	D	44	D
Telecommunications	5133	D	1	2	D	D	D	0	D	D	44	D
Other broadcasting and telecommunications	other 513	D	0	0	D	D	D	D	D	0	0	D
Other information	other 51	192	4	2	7	8	9	D	31	D	53	D
Finance, insurance, and real estate	52, 53	857	3	D	23	33	D	9	56	29	55	646
Professional, scientific, and technical services	54	957	75	52	44	55	42	51	129	96	93	320
Architectural, engineering, and related services	5413	157	16	16	7	7	D	5	42	30	D	0
Computer systems design and related services	5415	485	25	23	22	24	D	33	55	24	D	D
Scientific R&D services	5417	163	11	13	13	22	13	10	17	D	D	D
Other professional, scientific, and technical services	other 54	152	24	*	1	3	2	2	14	D	D	D
Health care services	621-23	160	6	20	20	3	3	7	16	24	D	D
Other nonmanufacturing <sup>a</sup>	55-56, 61, 624, 71-72, 81	348	12	1	1	4	12	14	49	45	43	167

\* = amount < 500.

D = suppressed to avoid disclosure of confidential information.

i = more than 50% of the value is imputed.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: Detail does not add to total due to rounding or suppression. The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes federally funded research and development centers. Data recorded in March 2004. 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: 2004.

TABLE 33. Total employment in companies performing industrial R&D in the United States, ranked by R&D program size: 1994–2004  
(Percent distribution)

Companies ranked by R&D program size	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All companies	100	100	100	100	100	100	100	100	100	100	100
First 4 (1–4)	6	6	6	5	5	4	2	2	3	2 r	3
Next 4 (5–8)	2	2	2	2	3	2	2	2	2	3	2
Next 12 (9–20)	4	4	4	3	4	5	6	6	5	5 r	6
Next 20 (21–40)	4	4	4	4	4	3	4	4	5	4	3
Next 60 (41–100)	7	7	7	6	7	5	8	4	8	9	9
Next 100 (101–200)	8	7	8	6	8	7	7	8	10	9	9
Next 100 (201–300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6
Next 100 (301–400)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
Next 100 (401–500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
All others <sup>a</sup>	69	70	69	74	69	74	71	74	67	68	54

NA = not available.

r = data significantly revised, replaces previously published data.

<sup>a</sup> Includes companies in 201-500 size categories prior to 2004.

NOTES: This table shows the percentage of total employment in the top R&D-performing companies. The companies are grouped for analysis. For example, if you would like to know the percentage of total employment accounted for by the top 20 R&D performing companies in 1999, you would add the percentages shown for the categories "first 4," "next 4," and "next 12." The result is 11%. Some percentages for 1997 and 1999 have been revised since originally published. Beginning with 2001, statistics exclude data for federally funded research and development centers. Data recorded in March each year. Prior to 2004, this table focused on the top 400 R&D performers. Data for the 201-300 and 301-400 categories were aggregated and data for the 401-500 category were included in all others category. Beginning in 2004, the focus on the table was changed to the top 500 R&D performers. 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: 2004.

TABLE 34. R&amp;D funds per employee spent by companies performing industrial R&amp;D in the United States, by company size: 1999–2004

(Dollars)

R&D funds and company size (employees)	1999 <sup>a</sup>	2000	2001	2002	2003	2004	% change, 2003–04
All R&D	8,025 r	11,425	12,047	12,560	13,094 r	14,055	7.3
5–24	34,057	37,703	30,366	29,559	28,885	26,199	-9.3
25–49	19,590	27,786	21,040	23,695	21,883	25,034	14.4
50–99	20,460	22,381	22,801	22,019	16,317	18,149	11.2
100–249	11,892	15,190	20,206	24,721	15,845	17,405	9.8
250–499	11,861	12,915	16,736	14,755	17,616	15,362	-12.8
500–999	9,031	12,550	12,981	14,384	15,998	17,728	10.8
1,000–4,999	9,276	9,819	11,465	12,307	13,519	13,540	0.2
5,000–9,999	7,897 r	9,160	9,880	12,025	10,486	13,250	26.4
10,000–24,999	8,454 r	7,693	11,292	10,961	10,350 r	13,915	34.4
25,000 or more	6,173 r	10,942	10,758	11,009	12,691 r	12,548	-1.1
Company and other							
All companies	7,044 r	10,344	10,977	11,498	11,933 r	12,688	6.3
5–24	31,087	32,637	26,260	24,083	24,979	23,348	-6.5
25–49	18,072	26,552	19,911	22,096	18,797	22,438	19.4
50–99	18,754	20,797	21,277	20,366	14,429	16,441	13.9
100–249	10,781	14,063	18,792	23,589	14,792	15,738	6.4
250–499	11,132	11,775	15,660	13,499	16,382	14,359	-12.3
500–999	8,272	11,866	12,211	13,614	14,829	16,480	11.1
1,000–4,999	8,942	9,570	11,204	11,883	13,036	13,329	2.2
5,000–9,999	6,837 r	8,273	8,944	10,971	9,738	11,780	21.0
10,000–24,999	8,327 r	10,274	10,915	10,453	9,861 r	13,219	34.1
25,000 or more	7,955 r	9,251	9,411	9,653	11,128 r	10,643	-4.4

r = data significantly revised, replaces previously published data.

<sup>a</sup> Some statistics for 1999 have been revised since originally published.

NOTES: Beginning with 2001, all and federally funded industrial R&D exclude 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. Excludes 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: 2004.

TABLE 35. R&D funds per full-time equivalent R&D scientist or engineer spent by companies performing industrial R&D in the United States, by industry, by company size: 2004  
(Dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
All industries	21–23, 31–33, 42, 44–81	197,793	166,489	153,814	185,101	195,316	185,976	202,046	186,933	186,021	161,974	239,378
Manufacturing industries	31–33	207,986	125,861	107,200 i	155,041	180,402	181,646	227,282	194,725	207,127 i	166,899 i	253,720
Food	311	201,120	D	D	250,479	107,299	189,589	133,265	169,946	228,403	216,570	234,929
Beverage and tobacco products	312	121,378 i	29,626	D	D	D	269,910	0	141,664	D	0	D
Textiles, apparel, and leather	313–16	40,986	241,157	D	117,132	151,782	170,753	193,425	52,854 i	109,522	D	D
Wood products	321	150,389	14,268 i	88,508 i	D	124,931	198,586	243,293	105,540	139,708	D	D
Paper, printing, and support activities	322, 323	149,984 i	176,929	40,287	37,200	94,968	97,488	150,648	160,106	205,818	D	284,915 i
Petroleum and coal products	324	372,324 i	164,129	65,993	161,798	175,751	105,009	D	D	D	D	341,349 i
Chemicals	325	329,836	170,041	176,493	229,926	297,695	298,408	325,528	284,001 i	342,670 i	255,942	458,374 i
Basic chemicals	3251	214,815	143,717	200,137	159,501	190,636	165,605	386,893	227,201	162,788 i	D	0
Resin, synthetic rubber, fibers, and filament	3252	223,939	182,819	556,854	179,566	152,035	167,272	D	185,470	D	D	D
Pharmaceuticals and medicines	3254	387,553	347,556	191,383	361,514	394,768	338,224	337,600	357,705 i	524,004 i	268,215	506,186 i
Other chemicals	other 325	192,830	122,144	129,541	86,738	129,805	200,560	159,148	156,004	159,918	180,628	D
Plastics and rubber products	326	155,296	23,029	109,995 i	180,533 i	109,378	143,610	276,486	166,897	94,117	160,755 i	D
Nonmetallic mineral products	327	129,335 i	38,046 i	155,616	D	82,131	119,426 i	243,580	158,726	D	123,778 i	0
Primary metals	331	165,267 i	D	D	111,916	132,590	224,987	110,968	205,316 i	82,357 i	224,865 i	D
Fabricated metal products	332	118,728	D	103,778	165,831	137,822	160,519	116,815	110,990	95,027	155,311 i	D
Machinery	333	119,745	97,461	105,770	83,359	161,475	142,892	134,296	134,362	85,087 i	104,273	160,074
Computer and electronic products	334	177,795	143,928	161,016	158,876	162,376	156,147	209,958	190,708	221,206 i	184,130 i	160,133 i
Computers and peripheral equipment	3341	130,106	145,499	159,153	211,689	162,509	182,988	243,828	188,944	D	D	48,459
Communications equipment	3342	191,816	126,024	223,781	152,190	174,454	104,140 i	236,074	175,863	0	D	D
Semiconductor and other electronic components	3344	175,003	112,129 i	141,846	167,353	179,120	238,803	212,863	209,876	D	D	146,114 i
Navigational, measuring, electromedical, and control instruments	3345	200,180 i	174,690	164,816	127,907	136,567	158,584	169,511	173,895	142,925 i	155,329	D
Other computer and electronic products	other 334	186,969	149,708	146,659	215,193	226,038	130,486	87,513	193,297	0	D	0
Electrical equipment, appliances, and components	335	151,741	122,989	200,429 i	175,420	180,214	134,439	125,183	139,312 i	144,720	167,533	0
Transportation equipment	336	243,263	123,315	20,450 i	200,832	293,690	204,365	250,173	164,284	236,714	89,035 i	296,659
Motor vehicles, trailers, and parts	3361–63	168,969	D	11,208 i	205,545	222,904	173,069	256,459	172,125	211,609	61,231 i	211,387
Aerospace products and parts	3364	349,444	139,012	444,020	206,060 i	467,758	354,652	266,725	94,461	254,068 i	D	355,365
Other transportation equipment	other 336	712,248 i	63,623 i	113,653	182,397	290,037	89,182	137,385	163,234	D	D	D
Furniture and related products	337	164,358	115,603	136,354 i	166,594 i	163,842	188,380	91,990	202,602	154,210	D	D
Miscellaneous manufacturing	339	222,499	205,150	106,084	143,977	200,410	175,241	196,068	192,389	284,662 i	315,185 i	0
Medical equipment and supplies	3391	260,209	299,970	114,788	242,104	186,840	245,661	218,398	246,513	294,525 i	315,185 i	0
Other miscellaneous manufacturing	other 339	151,999	83,887 i	74,067	83,142	216,057	124,301	136,157	139,196	D	0	0

TABLE 35. R&D funds per full-time equivalent R&D scientist or engineer spent by companies performing industrial R&D in the United States, by industry, by company size: 2004  
(Dollars)

Industry	NAICS codes	Company size (employees)										
		All companies	5–24	25–49	50–99	100–249	250–499	500–999	1,000–4,999	5,000–9,999	10,000–24,999	25,000 +
Nonmanufacturing industries	21–23, 42, 44–81	176,870	177,281	174,922	204,312	207,783	193,003	163,569	167,185	140,089	143,003	194,944
Mining, extraction, and support activities	21	177,309 i	100,000	118,453	95,493	0 i	D	157,715	238,019	D	D	D
Utilities	22	291,238	316,000	0 i	D	122,198	0	D	162,883	269,280	422,303	D
Construction	23	135,878	81,875	D	29,247	D	218,160	D	270,344 i	D	D	0
Wholesale trade	42	170,140	D	162,745	241,838	197,051	165,049	274,922	D	0	D	0
Retail trade	44, 45	176,971	250,849 i	43,783	D	123,986	130,559	163,904	244,001	D	210,613 i	180,300
Transportation and warehousing	48, 49	286,630	D	D	D	D	D	D	D	D	D	D
Information	51	177,368	234,991	151,137	144,102	149,844	150,288	169,683	189,173	154,665	198,327	181,110
Publishing	511	182,029	170,040	140,153	132,404	142,262 i	159,215	167,754	184,817	150,906	201,389	D
Newspaper, periodical, book, and database	5111	146,957	0	14,232	D	255,963 i	D	D	143,346	D	D	D
Software	5112	184,052	170,040	182,249	132,369	139,597 i	157,734	172,584	190,112	150,987	D	D
Broadcasting and telecommunications	513	191,610 i	709,960	240,413	D	D	133,361	D	D	D	D	169,588 i
Telecommunications	5133	181,940 i	709,960	240,413	D	D	106,165	0	D	D	D	157,596 i
Other broadcasting and telecommunications	other 513	581,911	0	0	D	D	D	D	D	0	0	D
Other information	other 51	147,820	187,754	237,124	168,793	151,543	131,940	190,757	219,973	D	161,528	D
Finance, insurance, and real estate	52, 53	87,630	44,678	D	D	302,426	136,086 i	60,030 i	112,192	D	D	53,867
Professional, scientific, and technical services	54	196,213	183,815	231,865	210,227	255,938	221,157	166,988	159,632	118,008	54,026	D
Architectural, engineering, and related services	5413	121,745	151,738 i	160,688	214,572	251,190	171,928	138,307	136,328	D	D	0
Computer systems design and related services	5415	178,679	149,301 i	145,182	136,002	151,169	141,180	160,895	140,742	D	D	D
Scientific R&D services	5417	319,773	335,013	354,551	312,578	354,351	322,196	186,672	737,958	D	D	D
Other professional, scientific, and technical services	other 54	137,719	155,496	214,058	73,695 i	85,071 i	197,926	D	118,027 i	109,702 i	D	D
Health care services	621–23	68,706 i	59,302	5,784 i	D	20,625 i	124,593 i	366,751	165,464 i	D	D	D
Other nonmanufacturing <sup>a</sup>	55–56, 61, 624, 71–72, 81	169,061	D	48,994	140,307	144,516 i	197,125	196,683	53,346	103,306	D	D

D = suppressed to avoid disclosure of confidential data.

i = more than 50% of the value is imputed.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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 2004 and January 2005. This number is then divided into the total R&D expenditures for 2004, and the ratio is attributed to 2004. Data recorded in January represent employment for the previous year. 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: 2004.

TABLE 36. R&D funds per full-time equivalent R&D scientist or engineer spent by the top 500 companies performing industrial R&D in the United States, ranked by R&D program size: 1994–2004 (Dollars)

Companies ranked by R&D program size	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	% change, 2003–04
First 4 (1–4)	218,906	234,791	231,784	229,602 i	242,408	289,072 i	283,219 i	229,610 i	270,753	327,999 r	278,489	-15.1
Next 4 (5–8)	245,626 i	188,928 i	185,032 i	180,389	193,597	192,657	199,586	215,439	193,858	270,642 r	437,109	61.5
Next 12 (9–20)	188,437	190,548	202,670	238,022 i	239,162	266,117 i	261,858 i	254,460 i	255,263	212,871 r	234,473	10.1
Next 20 (21–40)	182,699	204,159	210,552	213,496	196,276	213,047 i,r	219,627 i	236,402	225,623	297,109 r	215,341	-27.5
Next 60 (41–100)	181,163	196,023	202,405	206,350	208,144	206,956 r	230,259	223,650	212,780	210,795 r	221,772	5.2
Next 100 (101–200)	174,524	162,707	160,560	155,255	162,965	162,654	176,239	182,360	158,657	153,877 r	179,392	16.6
Next 100 (201–300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	167,928	na
Next 100 (301–400)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	174,406	na
Next 100 (401–500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	207,597	na
Average for top 500 R&D performers	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	225,846	na

i = more than 50% of the value is imputed; na = not applicable; NA = not available; r = data significantly revised, replaces previously published data.

NOTES: This table shows the average R&D funds spent per each full-time equivalent R&D scientist and engineer by the top R&D-performing companies. The companies are grouped for analysis. For example, if you would like to know the average amount spent on R&D by the top 4 R&D-performing companies in 1999, you would look at the category "first 4." The result is \$289,072. Beginning with 2001, excludes 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 2004 and January 2005. This number is then divided into the total R&D expenditures for 2004, and the ratio is attributed to 2004. Data recorded in January represent employment for the previous year. Prior to 2004, this table focused on the top 400 R&D performers. Beginning in 2004, the focus of the table was changed to the top 500 R&D performers. 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: 2004.



TABLE 37. Full-time equivalent R&D scientists and engineers in companies performing industrial R&D in the United States, by industry and company size, by source of R&D funds: January 2005

(Thousands)

Industry and company size	NAICS codes	All R&D	Federal	Company and other
All industries	21–23, 31–33, 42, 44–81	1,111.3	71.5 i	1,039.8
Manufacturing industries	31–33	717.0	43.9 i	673.2
Food	311	11.7	*	11.6
Beverage and tobacco products	312	4.7 i	0.0	4.7 i
Textiles, apparel, and leather	313–16	5.8	* i	5.8
Wood products	321	D	D	1.2
Paper, printing, and support activities	322, 323	D	D	14.5 i
Petroleum and coal products	324	D	D	5.1 i
Chemicals	325	118.6	0.9 i	117.6
Basic chemicals	3251	10.6	*	10.3
Resin, synthetic rubber, fibers, and filament	3252	9.4	* i	9.4 i
Pharmaceuticals and medicines	3254	79.9	*	79.8
Other chemicals	other 325	18.6	* i	18.1
Plastics and rubber products	326	14.1	* i	13.9
Nonmetallic mineral products	327	6.5 i	* i	6.4 i
Primary metals	331	4.9	*	4.8
Fabricated metal products	332	15.7	* i	15.4
Machinery	333	62.6	0.7 i	61.9
Computer and electronic products	334	273.3	28.0 i	245.3
Computers and peripheral equipment	3341	45.1	*	44.9
Communications equipment	3342	49.9	0.6 i	49.3
Semiconductor and other electronic components	3344	97.4	0.6 i	96.8
Navigational, measuring, electromedical, and control instruments	3345	74.6 i	26.6 i	48.1 i
Other computer and electronic products	other 334	6.2	*	6.2
Electrical equipment, appliances, and components	335	19.4	* i	19.2
Transportation equipment	336	134.1	12.9 i	121.3
Motor vehicles, trailers, and parts	3361–63	D	D	88.8
Aerospace products and parts	3364	37.9	9.9	28.0
Other transportation equipment	other 336	D	D	4.5
Furniture and related products	337	2.9	* i	2.9
Miscellaneous manufacturing	339	21.8	* i	21.5
Medical equipment and supplies	3391	13.9	* i	13.7
Other miscellaneous manufacturing	other 339	7.9	* i	7.8
Nonmanufacturing industries	21–23, 42, 44–81	394.3	27.6	366.6
Mining, extraction, and support activities	21	D	D	4.0 i
Utilities	22	0.8	*	0.7
Construction	23	D	D	11.8 i
Wholesale trade	42	15.5	* i	15.3
Retail trade	44, 45	15.3	0.0	15.3
Transportation and warehousing	48, 49	D	D	2.0
Information	51	131.5	2.1	129.4
Publishing	511	98.5	* i	98.2
Newspaper, periodical, book, and database	5111	4.8	0.0	4.8
Software	5112	93.7	* i	93.4
Broadcasting and telecommunications	513	10.9	0.0	10.9
Telecommunications	5133	10.4	0.0	10.4
Other broadcasting and telecommunications	other 513	*	0.0	*
Other information	other 51	22.0	1.8	20.2
Finance, insurance, and real estate	52, 53	22.3	0.0	22.3
Professional, scientific, and technical services	54	174.1	24.6	149.5
Architectural, engineering, and related services	5413	41.4	9.5	31.9
Computer systems design and related services	5415	74.5	3.0	71.4
Scientific R&D services	5417	44.7	11.7 i	33.0
Other professional, scientific, and technical services	other 54	13.5	* i	13.2
Health care services	621–23	6.0 i	*	5.9
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	10.9	* i	10.4

TABLE 37. Full-time equivalent R&D scientists and engineers in companies performing industrial R&D in the United States, by industry and company size, by source of R&D funds: January 2005

(Thousands)

Industry and company size	NAICS codes	All R&D	Federal	Company and other
Company size (employees)				
All companies	-	1,111.3	71.5 i	1,039.8
5-24	-	66.2	4.5 i	61.6
25-49	-	43.4	3.3	40.0
50-99	-	44.1	3.1	41.1
100-249	-	73.1	5.8	67.3
250-499	-	52.3	3.2	49.1
500-999	-	59.3	5.2	54.1
1,000-4,999	-	173.8	1.7	172.1
5,000-9,999	-	96.6	13.0	83.6
10,000-24,999	-	178.9	6.4	172.5
25,000 or more	-	323.6	25.3	298.4

\* = amount < 50; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes federally funded research and development centers. Data recorded in January represent employment for the previous year. 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: 2004.

TABLE 38. Full-time equivalent R&D scientists and engineers per 1,000 employees in companies performing industrial R&D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	Per 1,000 employees
All industries	21–23, 31–33, 42, 44–81	71.0
Manufacturing industries	31–33	75.0
Food	311	13.0
Beverage and tobacco products	312	46.0 i
Textiles, apparel, and leather	313–16	54.0
Wood products	321	D
Paper, printing, and support activities	322, 323	D
Petroleum and coal products	324	D
Chemicals	325	111.0
Basic chemicals	3251	62.0
Resin, synthetic rubber, fibers, and filament	3252	94.0
Pharmaceuticals and medicines	3254	173.0
Other chemicals	other 325	54.0
Plastics and rubber products	326	29.0
Nonmetallic mineral products	327	34.0 i
Primary metals	331	16.0 i
Fabricated metal products	332	26.0
Machinery	333	83.0
Computer and electronic products	334	198.0
Computers and peripheral equipment	3341	179.0
Communications equipment	3342	213.0
Semiconductor and other electronic components	3344	245.0
Navigational, measuring, electromedical, and control instruments	3345	169.0 i
Other computer and electronic products	other 334	111.0
Electrical equipment, appliances, and components	335	51.0
Transportation equipment	336	70.0
Motor vehicles, trailers, and parts	3361–63	D
Aerospace products and parts	3364	60.0
Other transportation equipment	other 336	D
Furniture and related products	337	10.0
Miscellaneous manufacturing	339	56.0
Medical equipment and supplies	3391	61.0
Other miscellaneous manufacturing	other 339	48.0
Nonmanufacturing industries	21–23, 42, 44–81	64.0
Mining, extraction, and support activities	21	D
Utilities	22	3.0
Construction	23	D
Wholesale trade	42	59.0
Retail trade	44, 45	15.0
Transportation and warehousing	48, 49	D
Information	51	103.0
Publishing	511	278.0
Newspaper, periodical, book, and database	5111	49.0
Software	5112	379.0
Broadcasting and telecommunications	513	17.0 i
Telecommunications	5133	D
Other broadcasting and telecommunications	other 513	D
Other information	other 51	107.0
Finance, insurance, and real estate	52, 53	23.0
Professional, scientific, and technical services	54	153.0
Architectural, engineering, and related services	5413	223.0
Computer systems design and related services	5415	134.0
Scientific R&D services	5417	218.0
Other professional, scientific, and technical services	other 54	72.0 i
Health care services	621–23	45.0 i
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	27.0

TABLE 38. Full-time equivalent R&D scientists and engineers per 1,000 employees in companies performing industrial R&D in the United States, by industry and company size: 2004

Industry and company size	NAICS codes	Per 1,000 employees
Company size (employees)		
All companies	-	71.0
5-24	-	157.0
25-49	-	163.0
50-99	-	98.0
100-249	-	89.0
250-499	-	83.0
500-999	-	88.0
1,000-4,999	-	72.0
5,000-9,999	-	71.0
10,000-24,999	-	86.0
25,000 or more	-	52.0

D = suppressed to avoid disclosure of confidential data.

i = more than 50% of the value is imputed.

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes federally funded research and development centers. The number of full-time-equivalent R&D scientist and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientist and engineers reported for January 2004 and January 2005. This number is then divided into the total R&D expenditures for 2004, and the ratio is attributed to 2004. Data recorded in January represent employment for the previous year. 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: 2004.

## Appendix A. Technical Notes and Technical Tables

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### 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,[3] 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 Business Register (BR), a Bureau of the Census database, containing industry, geographic (state), employment, and payroll information, was the foundation from which the frame used to select the 2004 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)[4] 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 2004 survey, the frame was partitioned into four groups: (1) top 300 R&D-performing companies still in the frame from the 2003 survey year, (2) other companies known to conduct R&D in any of the previous five survey years, (3) companies that previously only reported zero R&D in all of the previous five survey years, and (4) companies for which information about the extent of R&D activity was uncertain. There were 288 companies in the first group, 11,444 companies in the second group, 81,228 companies in the third group, and 2,008,489 companies in the fourth group for a total of 2,101,449 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 is 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 288 companies from the first frame partition, 8,673 companies from the second frame partition, 666 companies from the third frame partition, and 22,373 companies from the fourth frame partition. The overall final sample consisted of 32,000 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 questionnaire 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 Questionnaires**

Two questionnaires are used each year to collect data for the survey. Known large R&D performers are sent a detailed survey form, Form RD-1.[5] 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 data for a prior year 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 questionnaire 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 2004, some item headings and numbers have changed compared with the 2003 survey questionnaires. The five mandatory items, total r&d expenditures, federally funded r&d, net sales, total employment (which are included in the Census Bureau's annual mandatory statistical program), and the distribution of r&d by state are now: Question 5d (columns 3 and 1), question 2, question 3, and question 15, respectively. Some item response categories have been added and the wording of some has been changed for clarification. Question 6, which asks for projected R&D costs for 2005, has been expanded to include columns for reporting the projected cost of federally funded R&D. Question 8, which asks for the type of outside organization that performed R&D for the company, has been expanded to include response categories for federal agencies or laboratories and state government agencies or laboratories. Question 9, which asks for the cost of R&D performed outside the United States by percentage of ownership of the organization performing the R&D, was expanded to include clarifying instructions. Question 10, which asks for the country location of R&D performed outside the United States, was expanded to include response categories for China, India, Ireland, Israel, Italy, Singapore, and Sweden. Question 17, which asks for the type of outside organization with which the company collaborated in the performance of R&D, has been expanded to include a response category for state government agencies.

### **Number of Survey Questionnaires Sent**

For the 2004 survey, a Form RD-1 was mailed to companies that reported R&D expenditures of \$3 million or more in the 2003 survey. Approximately 3,393 companies were mailed Form RD-1 and approximately 28,491 were mailed Form RD-1A. Both survey questionnaires and the instructions provided to respondents are reproduced in appendix B, Survey Documents.

### **Followup for Survey Nonresponse**

The 2004 survey questionnaires were mailed in February 2005. Recipients of Form RD-1A were asked to respond within 30 days, while Form RD-1 recipients were given 60 days. A follow-up questionnaire 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. After questionnaire and letter followups, three additional automated telephone followups were conducted for the remaining delinquent RD-1A recipients.



A letter was mailed to Form RD-1 recipients 30 days after the initial mailing, reminding them that their completed survey questionnaires were due within the next 30 days. A second questionnaire 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 these performers, a special 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 questionnaire, what type of form, and the percentage that responded to the survey.

### **Imputation for Item Nonresponse**

For various reasons, many firms chose to return the survey questionnaire with one or more blank items.[6] 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.[7] Table A-5 contains imputation rates for the principal survey items.

### **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 questionnaire 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% from levels of 88% in 1989 and 89% in 1988. The response rates for the mandatory and voluntary panels were 89% and 69%, 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.

### **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 by character of work 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 Industry 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.

The change of industry classification system affected 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 in the 1999–2003 reports contain only statistics for the study year and previous years back to 1999. However, to provide a bridge for users who wanted to make year-to-year comparisons below the aggregate level, in several tables in *Research and Development in Industry: 1999* and *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.

### **Industry Classification Methodology**

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 survey, 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.

For the 2004 survey, some companies' electronically assigned industry codes were manually examined and changed. Beginning in the late 1990s, increasingly large amounts of R&D were attributed to the wholesale trade industries, resulting from the payroll-based methodology used to assign industry classifications and the change from the SIC system to the NAICS in 1999. Such classification artifacts were of particular concern for companies traditionally thought of as pharmaceutical or computer-manufacturing firms. As these firms increasingly marketed their own products and more of their payroll involved employees in selling and distribution activities, the potential for the companies to be classified among the wholesale trade industries increased. To increase the relevance and usefulness of the industrial R&D statistics, NSF evaluated ways to ameliorate the negative effects of the industry classification methodology and change in classification systems. Beginning in 2004, in addition to firms originally assigned NAICS codes among the wholesale trade (NAICS 42) industries, firms in the information (NAICS 51), professional, scientific, and technical services (NAICS 54) and management of companies and enterprises (NAICS 55) industries using the payroll-based methodology were manually reviewed by NSF and Census. These firms were reclassified based on primary R&D activity, which in most cases corresponded to their primary products or service activities. The result was that most of the R&D previously attributed to NAICS 42 and 55 industries was redistributed. Statistics resulting from the old and new industry classification methods are in tables A-9 and A-10. For detailed information, see NSF 2007.

### **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 the 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 industry 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 the 1999 statistics were revised and included in subsequent reports. R&D estimates for the company also were affected; however, the amount of R&D 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 two problems were discovered. The first involved a very large company classified among the manufacturing industries. The company 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. The second problem involved another very large company that significantly revised the 2003 data preprinted (see Survey Questionnaires above) on its 2004 questionnaire. During 2003, the company had acquired a portion of another company that also had been in the survey in previous years. Through correspondence with the acquiring company, it was discovered that a significant amount of R&D had been reported twice to the 2003 and 2004 surveys. The double-counted portion of the data was corrected in both survey files, and the tables in this report reflect the corrections.

### **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* (NSF 1995b) 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 annual sampling (introduced in 1992), more year-to-year change is evident than when survey panels were used, for two reasons. First, prior to annual sampling, a wedging operation, which was performed when a new sample was selected, adjusted the data series gradually to account for the changes in classification (see the discussion on wedging later under Time-Series Analyses). Second, yearly correlation of R&D data is weakened 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 Industry 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 largest portion 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 questionnaires, 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% of total R&D was performed by firms in nonmanufacturing industries. (See also NSF 1994, 1995a, 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% 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.[8] As a result of the sample redesign, for 1992 the reported nonmanufacturing share was (and has continued to be) 25%–30% of total R&D. (See also NSF 1997a, 1998a, 1999a, 2000a, 2001a, and 2002a.)

### **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 two 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 1995b.)

### **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, federally funded research and development centers, universities, and other nonprofit organizations—using the Survey of Industrial Research and Development and other



surveys (<http://www.nsf.gov/statistics/publication.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 are available from industry and academia, data collected from the federal agency funders of R&D were 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 2006b). NSF continues to identify and examine the factors behind these divergent trends.

## 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 2003 and January 2004 was divided into total 2003 R&D expenditures for a total cost per R&D scientist or engineer in 2003.

**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.

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## Footnotes

[3] 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 Industry Classification System (NAICS) codes or group of NAICS codes used to publish statistics resulting from the survey.

[4] 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.

[5] 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.

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

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

[8] 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.

## Technical Tables

### Table **Table Title**

- A-1 Companies in the target population and selected for the sample, by industry and company size: 2004
- A-2 Relative standard error for survey estimates, by industry and company size: 2004
- A-3 Relative standard error for estimates of all R&D and percentage of estimates attributed to certainty companies, by state: 2004
- A-4 Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004
- A-5 Imputation rates for survey items, by industry and company size: 2004
- A-6 R&D-performing companies that reported nonzero data for major survey items: 2004
- A-7 Funds for and number of companies performing industrial basic research, applied research, and development in the United States and funds, by industry and company size, by source of funds: 2004
- A-8 Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2003–2004
- A-9 Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by original (2003) industry and company size, by original and revised industry classification methodologies: 2004
- A-10 Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by revised industry and company size, by original and revised industry classification methodologies: 2004

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2004

Industry and company size <sup>a</sup>	NAICS codes	Companies in target population	Companies selected for the sample			Companies with imputed R&D expenditures	
			All companies	Noncertainties	Certainties	Greater than or equal to \$3 million	Less than \$3 million
All industries	21–23, 31–33, 42, 44–81	2,101,449	32,001	20,016	11,985	360	42
Manufacturing industries	31–33	168,918	13,560	7,490	6,070	200	11
Food	311	11,995	802	377	425	4	0
Beverage and tobacco products	312	1,404	133	50	83	1	0
Textiles, apparel, and leather	313–16	12,034	590	367	223	2	1
Wood products	321	9,063	516	381	135	0	0
Paper, printing, and support activities	322, 323	19,673	730	486	244	2	1
Petroleum and coal products	324	574	125	44	81	0	0
Chemicals	325	5,445	1,242	580	662	31	2
Basic chemicals	3251	650	240	93	147	8	1
Resin, synthetic rubber, fibers, and filament	3252	351	156	63	93	1	0
Pharmaceuticals and medicines	3254	876	284	125	159	17	1
Other chemicals	other 325	3,568	562	299	263	5	0
Plastics and rubber products	326	8,202	839	404	435	5	0
Nonmetallic mineral products	327	6,784	520	326	194	2	0
Primary metals	331	3,271	407	230	177	4	0
Fabricated metal products	332	33,153	1,228	703	525	4	2
Machinery	333	15,350	1,262	720	542	18	0
Computer and electronic products	334	8,272	1,830	851	979	81	3
Computers and peripheral equipment	3341	789	207	64	143	7	0
Communications equipment	3342	1,036	313	126	187	27	0
Semiconductor and other electronic components	3344	3,133	548	307	241	18	0
Navigational, measuring, electromedical, and control instruments	3345	2,611	566	258	308	27	3
Other computer and electronic products	other 334	703	196	96	100	2	0
Electrical equipment, appliances, and components	335	3,334	526	271	255	19	1
Transportation equipment	336	6,282	1,075	587	488	9	0
Motor vehicles, trailers, and parts	3361–63	4,026	565	310	255	8	0
Aerospace products and parts	3364	846	228	118	110	0	0
Other transportation equipment	other 336	1,410	282	159	123	1	0
Furniture and related products	337	10,472	540	386	154	0	0
Miscellaneous manufacturing	339	12,808	1,099	681	418	18	1
Medical equipment and supplies	3391	4,653	524	304	220	11	1
Other miscellaneous manufacturing	other 339	8,155	575	377	198	7	0
Unclassified		802	96	46	50	0	0

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2004

Industry and company size <sup>a</sup>	NAICS codes	Companies in target population	Companies selected for the sample			Companies with imputed R&D expenditures	
			All companies	Noncertainties	Certainties	Greater than or equal to \$3 million	Less than \$3 million
Nonmanufacturing industries	21–23, 42, 44–81	1,932,531	18,441	12,526	5,915	160	31
Mining, extraction, and support activities	21	7,258	424	310	114	1	0
Utilities	22	1,662	157	61	96	1	1
Construction	23	250,694	1,364	1,020	344	2	0
Wholesale trade	42	144,739	3,326	2,408	918	3	0
Professional and commercial equipment and supplies, including computers	4214	13,851	515	334	181	3	0
Electrical goods	4216	11,229	531	376	155	0	0
Drugs and druggists' sundries	4222	2,316	289	189	100	0	0
Other wholesale trade	other 42	117,343	1,991	1,509	482	0	0
Retail trade	44, 45	294,894	1,483	1,190	293	6	0
Transportation and warehousing	48, 49	55,030	375	219	156	0	0
Information	51	28,610	1,661	986	675	47	4
Publishing	511	10,779	988	606	382	30	3
Newspaper, periodical, book, and database	5111	7,391	397	307	90	0	0
Software	5112	3,388	591	299	292	30	3
Broadcasting and telecommunications	513	7,041	259	96	163	7	0
Telecommunications	5133	3,660	174	80	94	7	0
Other broadcasting and telecommunications	other 513	3,381	85	16	69	0	0
Other information	other 51	10,790	414	284	130	10	1
Finance, insurance, and real estate	52, 53	132,668	953	546	407	6	0
Professional, scientific, and technical services	54	200,982	3,511	2,070	1,441	88	24
Architectural, engineering, and related services	5413	35,534	875	637	238	12	3
Computer systems design and related services	5415	21,199	981	561	420	28	11
Scientific R&D services	5417	3,871	787	301	486	41	9
Other professional, scientific, and technical services	other 54	140,378	868	571	297	7	1
Management of companies and enterprises	55	4,228	619	240	379	0	0
Health care services	621–23	210,529	1,238	864	374	3	1
Other nonmanufacturing	56, 61, 624, 71, 72, 81	596,955	3,075	2,407	668	3	1
Unclassified		4,282	255	205	50	0	0

TABLE A-1. Companies in the target population and selected for the sample, by industry and company size: 2004

Industry and company size <sup>a</sup>	NAICS codes	Companies in target population	Companies selected for the sample			Companies with imputed R&D expenditures	
			All companies	Noncertainties	Certainties	Greater than or equal to \$3 million	Less than \$3 million
Company size (employees)							
All companies	-	2,101,449	32,001	20,016	11,985	360	42
5-24	-	1,673,688	11,137	10,615	522	4	6
25-49	-	236,928	4,395	3,685	710	16	5
50-99	-	107,971	4,422	2,865	1,557	40	13
100-249	-	55,622	5,208	2,108	3,100	80	8
250-499	-	14,050	2,654	478	2,176	66	3
500-999	-	6,491	1,656	146	1,510	39	4
1,000-4,999	-	5,140	1,842	103	1,739	86	0
5,000-9,999	-	750	316	12	304	9	2
10,000-24,999	-	501	228	2	226	13	1
25,000 or more	-	308	143	2	141	7	0

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55) are shown separately to describe the population and sample at the time of sample selection; in most other tables data for NAICS 55 are included in other nonmanufacturing.

NOTES: Certainties are companies whose probability of selection is one including companies whose 2003 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. 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 mailout, that is, the sample was updated before actual mailout 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: 2004.

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004  
(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	0.6	3.1	3.3	8.8	5.1	5.6	6.0
Manufacturing industries	31-33	0.2	2.4	2.3	13.3	2.7	2.9	2.0
Food	311	1.1	8.5	8.5	0.0	2.5	2.4	53.4
Beverage and tobacco products	312	0.7	15.7	15.7	0.0	2.0	2.0	0.0
Textiles, apparel, and leather	313-316	3.1	11.4	11.5	0.0	11.0	11.5	0.0
Wood products	321	0.8	2.8	2.8	0.0	0.8	0.8	0.0
Paper, printing, and support activities	322, 323	0.8	2.8	2.9	0.0	3.1	3.2	0.0
Petroleum and coal products	324	0.3	0.3	0.3	0.0	0.3	0.3	0.0
Chemicals	325	0.2	0.9	0.9	0.1	0.3	0.3	3.5
Basic chemicals	3251	0.2	0.3	0.3	0.0	0.3	0.3	0.3
Resin, synthetic rubber, fibers, and filament	3252	0.1	0.1	0.1	0.0	0.1	0.1	3.7
Pharmaceuticals and medicines	3254	0.2	1.1	1.1	0.1	0.1	0.1	8.9
Other chemicals	other 325	0.8	3.4	3.6	0.0	1.7	1.7	8.2
Plastics and rubber products	326	4.8	1.4	1.4	0.0	4.4	4.4	0.0
Nonmetallic mineral products	327	0.6	0.8	0.8	0.0	0.7	0.7	0.0
Primary metals	331	14.3	31.5	31.5	0.0	21.9	22.1	6.6
Fabricated metal products	332	4.4	25.4	26.0	0.0	13.6	13.9	62.1
Machinery	333	1.8	6.0	6.0	33.4	1.8	1.8	1.2
Computer and electronic products	334	0.4	5.3	0.7	21.9	0.8	0.6	8.0
Computers and peripheral equipment	3341	1.5	1.3	1.3	0.0	9.7	10.4	3.4
Communications equipment	3342	1.8	0.4	0.4	0.0	1.3	1.3	3.0
Semiconductor and other electronic components	3344	0.4	1.7	1.7	8.0	0.5	0.5	25.7
Navigational, measuring, electromedical, and control instruments	3345	0.3	14.9	2.0	22.5	2.7	1.1	8.8
Other computer and electronic products	other 334	0.3	0.2	0.2	0.0	1.6	1.7	0.0
Electrical equipment, appliances, and components	335	1.1	4.8	5.8	0.2	2.4	2.2	21.2
Transportation equipment	336	0.1	1.0	0.3	4.2	0.5	0.8	0.5
Motor vehicles, trailers, and parts	3361-63	0.3	0.9	0.7	8.8	1.0	1.1	0.1
Aerospace products and parts	3364	0.1	1.5	0.0	4.8	0.4	0.4	0.5
Other transportation equipment	other 336	0.1	0.4	0.5	0.2	1.3	0.5	8.7
Furniture and related products	337	4.4	12.7	12.8	0.0	21.5	21.5	0.0
Miscellaneous manufacturing	339	2.0	3.5	3.6	4.1	5.8	5.9	38.8
Medical equipment and supplies	3391	1.1	1.3	1.3	3.2	6.8	6.9	49.2
Other miscellaneous manufacturing	other 339	7.8	26.7	28.5	14.9	3.8	3.7	23.1



TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004  
(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	2.1	6.9	8.6	11.8	14.3	16.1	13.9
Mining, extraction, and support activities	21	0.1	0.9	0.9	0.0	0.3	0.3	0.0
Utilities	22	3.7	1.0	1.0	0.0	6.7	7.1	0.0
Construction	23	3.6	0.1	0.1	0.0	2.8	2.9	0.0
Wholesale trade	42	14.4	58.4	58.4	0.0	26.4	26.7	96.3
Retail trade	44, 45	38.2	26.8	26.8	0.0	52.4	52.4	0.0
Transportation and warehousing	48, 49	18.0	18.1	18.1	0.0	18.0	18.1	0.0
Information	51	0.9	15.7	7.2	98.7	3.6	3.6	69.5
Publishing	511	0.6	23.1	9.7	98.7	1.9	1.9	69.5
Newspaper, periodical, book, and database	5111	1.1	40.3	40.3	0.0	0.3	0.3	0.0
Software	5112	0.6	23.3	9.8	98.7	1.9	1.9	69.5
Broadcasting and telecommunications	513	6.0	3.1	3.1	0.0	11.0	11.0	0.0
Telecommunications	5133	6.4	4.6	4.6	0.0	11.4	11.4	0.0
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other information	other 51	3.3	15.3	15.3	0.0	14.3	14.3	0.0
Finance, insurance, and real estate	52, 53	15.3	0.6	0.6	0.0	56.6	56.6	0.0
Professional, scientific, and technical services	54	3.4	10.0	12.9	8.5	11.4	12.1	14.0
Architectural, engineering, and related services	5413	14.4	14.9	28.0	10.3	19.9	20.7	20.8
Computer systems design and related services	5415	3.8	11.3	0.8	26.1	24.2	26.3	21.1
Scientific R&D services	5417	3.2	7.5	10.5	6.7	5.6	5.7	15.5
Other professional, scientific, and technical services	other 54	32.9	45.2	54.6	0.0	82.6	79.7	93.3
Health care services	621–23	25.0	78.1	86.8	0.0	8.1	8.3	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	18.5	50.8	55.7	1.3	21.6	22.2	6.3

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004

(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	-	0.6	3.1	3.3	8.8	5.1	5.6	6.0
5-24	-	15.2	22.2	21.9	52.4	26.6	26.4	40.5
25-49	-	7.9	22.5	27.6	32.3	15.7	17.6	23.4
50-99	-	6.6	12.7	15.7	19.6	11.4	8.9	35.7
100-249	-	5.1	4.2	4.7	7.4	14.3	15.8	28.2
250-499	-	2.0	0.8	0.9	0.0	0.6	0.6	0.1
500-999	-	2.7	0.1	0.1	0.0	1.1	1.3	0.0
1,000-4,999	-	0.2	0.2	0.2	0.0	0.0	0.0	0.0
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	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: 2004

(Percent)

Industry and company size	NAICS codes	Development			Type of R&D expense				
		Total	Company funded	Federally funded	Wages and salaries of R&D personnel	Fringe benefits of R&D personnel	Materials and supplies	R&D depreciation	Other costs
All industries	21-23, 31-33, 42, 44-81	6.2	6.8	1.4	0.0	0.0	0.0	0.0	0.0
Manufacturing industries	31-33	3.7	4.2	0.7	0.0	0.0	0.0	0.0	0.0
Food	311	1.1	1.1	47.4	0.0	0.0	0.0	0.0	0.0
Beverage and tobacco products	312	3.6	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	3.2	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Wood products	321	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Paper, printing, and support activities	322, 323	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum and coal products	324	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals	325	0.3	0.3	4.0	0.0	0.0	0.0	0.0	0.0
Basic chemicals	3251	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Pharmaceuticals and medicines	3254	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Other chemicals	other 325	0.8	0.8	5.3	0.0	0.0	0.0	0.0	0.0
Plastics and rubber products	326	7.1	7.2	19.0	0.0	0.0	0.0	0.0	0.0
Nonmetallic mineral products	327	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Primary metals	331	12.2	12.7	0.1	0.0	0.0	0.0	0.0	0.0
Fabricated metal products	332	4.8	4.9	1.2	0.0	0.0	0.0	0.0	0.0
Machinery	333	2.2	2.2	2.1	0.0	0.0	0.0	0.0	0.0
Computer and electronic products	334	0.5	0.6	1.3	0.0	0.0	0.0	0.0	0.0
Computers and peripheral equipment	3341	1.1	1.1	8.4	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	2.2	2.3	5.0	0.0	0.0	0.0	0.0	0.0
Semiconductor and other electronic components	3344	0.6	0.5	32.2	0.0	0.0	0.0	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	0.7	0.5	1.3	0.0	0.0	0.0	0.0	0.0
Other computer and electronic products	other 334	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	1.3	1.2	22.6	0.0	0.0	0.0	0.0	0.0
Transportation equipment	336	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles, trailers, and parts	3361-63	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.0
Aerospace products and parts	3364	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other transportation equipment	other 336	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Furniture and related products	337	4.3	4.3	82.1	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	2.5	2.4	25.6	0.0	0.0	0.0	0.0	0.0
Medical equipment and supplies	3391	1.0	1.0	5.9	0.0	0.0	0.0	0.0	0.0
Other miscellaneous manufacturing	other 339	8.9	8.4	89.9	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Development			Type of R&D expense				
		Total	Company funded	Federally funded	Wages and salaries of R&D personnel	Fringe benefits of R&D personnel	Materials and supplies	R&D depreciation	Other costs
Nonmanufacturing industries	21–23, 42, 44–81	19.7	20.8	8.3	0.0	0.0	0.0	0.0	0.0
Mining, extraction, and support activities	21	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Utilities	22	5.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	23	10.8	10.8	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	15.1	15.3	69.3	0.0	0.0	0.0	0.0	0.0
Retail trade	44, 45	41.9	41.9	0.0	0.0	0.0	0.0	0.0	0.0
Transportation and warehousing	48, 49	18.1	18.1	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	0.8	0.8	13.2	0.0	0.0	0.0	0.0	0.0
Publishing	511	0.8	0.8	68.0	0.0	0.0	0.0	0.0	0.0
Newspaper, periodical, book, and database	5111	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Software	5112	0.8	0.8	68.0	0.0	0.0	0.0	0.0	0.0
Broadcasting and telecommunications	513	6.1	6.1	0.0	0.0	0.0	0.0	0.0	0.0
Telecommunications	5133	7.0	7.0	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	3.0	3.0	13.4	0.0	0.0	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	13.4	13.4	0.0	0.0	0.0	0.0	0.0	0.0
Professional, scientific, and technical services	54	4.2	4.4	8.7	0.0	0.0	0.0	0.0	0.0
Architectural, engineering, and related services	5413	21.1	32.2	13.5	0.0	0.0	0.0	0.0	0.0
Computer systems design and related services	5415	3.6	3.6	15.9	0.0	0.0	0.0	0.0	0.0
Scientific R&D services	5417	4.7	5.3	9.7	0.0	0.0	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	19.0	19.3	0.7	0.0	0.0	0.0	0.0	0.0
Health care services	621–23	32.2	32.4	0.0	0.0	0.0	0.0	0.0	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	22.8	23.0	1.3	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Development			Type of R&D expense				
		Total	Company funded	Federally funded	Wages and salaries of R&D personnel	Fringe benefits of R&D personnel	Materials and supplies	R&D depreciation	Other costs
Company size (employees)									
All companies	-	6.2	6.8	1.4	0.0	0.0	0.0	0.0	0.0
5-24	-	18.3	19.4	23.5	0.0	0.0	0.0	0.0	0.0
25-49	-	8.6	8.6	37.9	0.0	0.0	0.0	0.0	0.0
50-99	-	7.5	7.9	19.3	0.0	0.0	0.0	0.0	0.0
100-249	-	3.7	3.8	11.7	0.0	0.0	0.0	0.0	0.0
250-499	-	2.7	2.8	2.2	0.0	0.0	0.0	0.0	0.0
500-999	-	3.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0
1,000-4,999	-	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
5,000-9,999	-	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	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: 2004  
(Percent)

Industry and company size	NAICS codes	Company-funded R&D	Federally funded R&D	Total	Company-funded R&D performed by other organizations				
					For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations
All industries	21-23, 31-33, 42, 44-81	0.6	1.5	2.2	0.0	0.0	0.0	0.0	0.0
Manufacturing industries	31-33	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Food	311	1.1	33.6	2.5	0.0	0.0	0.0	0.0	0.0
Beverage and tobacco products	312	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	3.1	0.0	40.1	0.0	0.0	0.0	0.0	0.0
Wood products	321	0.8	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Paper, printing, and support activities	322, 323	0.9	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Petroleum and coal products	324	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Chemicals	325	0.2	3.2	0.3	0.0	0.0	0.0	0.0	0.0
Basic chemicals	3251	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.1	2.6	1.6	0.0	0.0	0.0	0.0	0.0
Pharmaceuticals and medicines	3254	0.2	5.0	0.3	0.0	0.0	0.0	0.0	0.0
Other chemicals	other 325	0.8	5.6	0.6	0.0	0.0	0.0	0.0	0.0
Plastics and rubber products	326	4.9	18.2	3.9	0.0	0.0	0.0	0.0	0.0
Nonmetallic mineral products	327	0.6	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Primary metals	331	14.7	0.6	3.4	0.0	0.0	0.0	0.0	0.0
Fabricated metal products	332	4.5	11.6	24.8	0.0	0.0	0.0	0.0	0.0
Machinery	333	1.8	1.7	4.0	0.0	0.0	0.0	0.0	0.0
Computer and electronic products	334	0.5	0.6	1.3	0.0	0.0	0.0	0.0	0.0
Computers and peripheral equipment	3341	1.5	3.2	9.9	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	1.8	4.9	0.3	0.0	0.0	0.0	0.0	0.0
Semiconductor and other electronic components	3344	0.4	16.5	2.2	0.0	0.0	0.0	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	0.4	0.5	0.8	0.0	0.0	0.0	0.0	0.0
Other computer and electronic products	other 334	0.3	0.0	4.8	0.0	0.0	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	1.1	16.1	18.3	0.0	0.0	0.0	0.0	0.0
Transportation equipment	336	0.2	0.2	0.6	0.0	0.0	0.0	0.0	0.0
Motor vehicles, trailers, and parts	3361-63	0.3	0.9	0.8	0.0	0.0	0.0	0.0	0.0
Aerospace products and parts	3364	0.1	0.3	0.2	0.0	0.0	0.0	0.0	0.0
Other transportation equipment	other 336	0.4	0.0	2.1	0.0	0.0	0.0	0.0	0.0
Furniture and related products	337	4.2	81.8	7.7	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	1.9	17.1	1.0	0.0	0.0	0.0	0.0	0.0
Medical equipment and supplies	3391	1.0	18.1	0.9	0.0	0.0	0.0	0.0	0.0
Other miscellaneous manufacturing	other 339	7.5	41.8	3.2	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D	Federally funded R&D	Total	Company-funded R&D performed by other organizations				
					For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations
Nonmanufacturing industries	21–23, 42, 44–81	2.1	6.2	8.8	0.0	0.0	0.0	0.0	0.0
Mining, extraction, and support activities	21	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Utilities	22	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	23	3.6	0.0	20.9	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	14.6	61.9	43.8	0.0	0.0	0.0	0.0	0.0
Retail trade	44, 45	38.2	0.0	69.8	0.0	0.0	0.0	0.0	0.0
Transportation and warehousing	48, 49	18.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	0.8	14.7	3.0	0.0	0.0	0.0	0.0	0.0
Publishing	511	0.5	50.8	7.1	0.0	0.0	0.0	0.0	0.0
Newspaper, periodical, book, and database	5111	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Software	5112	0.6	50.8	8.3	0.0	0.0	0.0	0.0	0.0
Broadcasting and telecommunications	513	6.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Telecommunications	5133	6.4	0.0	1.7	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	3.4	13.4	3.5	0.0	0.0	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	15.3	0.0	51.0	0.0	0.0	0.0	0.0	0.0
Professional, scientific, and technical services	54	3.6	6.7	5.3	0.0	0.0	0.0	0.0	0.0
Architectural, engineering, and related services	5413	23.7	10.8	32.9	0.0	0.0	0.0	0.0	0.0
Computer systems design and related services	5415	3.9	14.1	6.7	0.0	0.0	0.0	0.0	0.0
Scientific R&D services	5417	3.5	8.4	6.7	0.0	0.0	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	28.6	81.0	8.4	0.0	0.0	0.0	0.0	0.0
Health care services	621–23	25.3	0.0	7.9	0.0	0.0	0.0	0.0	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	18.7	2.2	11.5	0.0	0.0	0.0	0.0	0.0

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	Company-funded R&D	Federally funded R&D	Total	Company-funded R&D performed by other organizations				
					For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations
Company size (employees)									
All companies	-	0.6	1.5	2.2	0.0	0.0	0.0	0.0	0.0
5-24	-	15.8	25.6	35.5	0.0	0.0	0.0	0.0	0.0
25-49	-	8.4	21.6	12.4	0.0	0.0	0.0	0.0	0.0
50-99	-	6.4	24.9	15.7	0.0	0.0	0.0	0.0	0.0
100-249	-	5.4	14.5	24.5	0.0	0.0	0.0	0.0	0.0
250-499	-	2.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0
500-999	-	2.9	0.0	1.9	0.0	0.0	0.0	0.0	0.0
1,000-4,999	-	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded collaborative R&D performed by other organizations						Sales	Domestic employment
		Total	For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations		
All industries	21-23, 31-33, 42, 44-81	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.6
Manufacturing industries	31-33	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.5
Food	311	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.9
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	4.8	1.4
Textiles, apparel, and leather	313-16	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.3
Wood products	321	0.0	0.0	0.0	0.0	0.0	0.0	4.5	2.5
Paper, printing, and support activities	322, 323	0.0	0.0	0.0	0.0	0.0	0.0	1.6	2.0
Petroleum and coal products	324	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
Chemicals	325	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.3
Basic chemicals	3251	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Pharmaceuticals and medicines	3254	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.2
Other chemicals	other 325	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1
Plastics and rubber products	326	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.5
Nonmetallic mineral products	327	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.5
Primary metals	331	0.0	0.0	0.0	0.0	0.0	0.0	2.2	6.0
Fabricated metal products	332	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.9
Machinery	333	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.2
Computer and electronic products	334	0.0	0.0	0.0	0.0	0.0	0.0	4.3	1.1
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.7
Communications equipment	3342	0.0	0.0	0.0	0.0	0.0	0.0	23.9	4.4
Semiconductor and other electronic components	3344	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7
Navigational, measuring, electromedical, and control instruments	3345	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
Other computer and electronic products	other 334	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5
Electrical equipment, appliances, and components	335	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.6
Transportation equipment	336	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.3
Motor vehicles, trailers, and parts	3361-63	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.6
Aerospace products and parts	3364	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	0.0	11.1	10.6
Miscellaneous manufacturing	339	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.6
Medical equipment and supplies	3391	0.0	0.0	0.0	0.0	0.0	0.0	1.9	3.0
Other miscellaneous manufacturing	other 339	0.0	0.0	0.0	0.0	0.0	0.0	4.3	7.7

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded collaborative R&D performed by other organizations						Sales	Domestic employment
		Total	For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations		
Nonmanufacturing industries	21–23, 42, 44–81	0.0	0.0	0.0	0.0	0.0	0.0	2.8	1.4
Mining, extraction, and support activities	21	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.9
Utilities	22	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.3
Construction	23	0.0	0.0	0.0	0.0	0.0	0.0	15.0	13.9
Wholesale trade	42	0.0	0.0	0.0	0.0	0.0	0.0	14.1	10.3
Retail trade	44, 45	0.0	0.0	0.0	0.0	0.0	0.0	20.7	7.8
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Information	51	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.4
Publishing	511	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.1
Software	5112	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9
Broadcasting and telecommunications	513	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.4
Telecommunications	5133	0.0	0.0	0.0	0.0	0.0	0.0	7.6	0.4
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	1.7	2.1
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	0.0	1.9	4.6
Professional, scientific, and technical services	54	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.6
Architectural, engineering, and related services	5413	0.0	0.0	0.0	0.0	0.0	0.0	4.9	5.1
Computer systems design and related services	5415	0.0	0.0	0.0	0.0	0.0	0.0	1.6	2.1
Scientific R&D services	5417	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.3
Other professional, scientific, and technical services	other 54	0.0	0.0	0.0	0.0	0.0	0.0	4.5	5.4
Health care services	621–23	0.0	0.0	0.0	0.0	0.0	0.0	11.3	15.3
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.2

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded collaborative R&D performed by other organizations						Sales	Domestic employment
		Total	For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations		
Company size (employees)									
All companies	-	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.6
5-24	-	0.0	0.0	0.0	0.0	0.0	0.0	39.5	7.9
25-49	-	0.0	0.0	0.0	0.0	0.0	0.0	7.4	8.0
50-99	-	0.0	0.0	0.0	0.0	0.0	0.0	20.6	9.8
100-249	-	0.0	0.0	0.0	0.0	0.0	0.0	8.1	9.8
250-499	-	0.0	0.0	0.0	0.0	0.0	0.0	14.5	5.7
500-999	-	0.0	0.0	0.0	0.0	0.0	0.0	4.4	3.3
1,000-4,999	-	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.4
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	0.0	2.1	1.1
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	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: 2004  
(Percent)

Industry and company size	NAICS codes	R&D area					Scientists and engineers by source of funds			
		Biotechnology	Software development	Materials synthesis and processing	Other areas	% nanotechnology	Total	Company funded	Federally funded	
All industries	21-23, 31-33, 42, 44-81	2.0	2.3	1.5	1.1	13.4	1.1	1.2	2.4	
Manufacturing industries	31-33	0.3	0.4	0.6	0.5	13.1	0.8	0.8	0.8	
Food	311	12.0	35.8	3.4	1.1	46.0	2.2	2.2	33.3	
Beverage and tobacco products	312	0.0	0.0	1.4	3.2	0.0	0.8	0.8	0.0	
Textiles, apparel, and leather	313-16	0.0	0.4	1.3	7.6	37.9	3.1	3.2	0.0	
Wood products	321	0.0	17.9	5.4	1.3	36.9	4.7	4.7	0.0	
Paper, printing, and support activities	322, 323	0.0	18.4	2.0	6.1	0.0	2.2	2.3	0.0	
Petroleum and coal products	324	0.0	0.0	1.1	0.5	0.0	0.8	0.8	0.0	
Chemicals	325	0.2	8.1	1.2	0.5	22.6	0.4	0.4	3.5	
Basic chemicals	3251	0.6	0.1	0.5	0.2	8.2	0.5	0.5	0.2	
Resin, synthetic rubber, fibers, and filament	3252	0.0	59.7	0.6	0.7	18.0	0.1	0.1	3.9	
Pharmaceuticals and medicines	3254	0.2	22.2	3.7	0.7	6.3	0.3	0.3	13.1	
Other chemicals	other 325	1.8	0.6	1.9	1.3	33.9	2.1	2.1	6.1	
Plastics and rubber products	326	0.0	19.3	4.1	1.8	42.9	8.0	8.1	24.1	
Nonmetallic mineral products	327	0.1	0.4	1.0	1.9	57.8	2.4	2.4	0.0	
Primary metals	331	0.0	77.1	1.1	35.6	41.1	30.6	31.2	5.0	
Fabricated metal products	332	33.6	4.5	16.6	2.8	44.7	4.9	5.0	30.5	
Machinery	333	23.6	1.4	1.6	2.8	40.9	2.1	2.1	1.8	
Computer and electronic products	334	1.7	0.6	0.7	1.3	22.1	1.8	2.0	1.1	
Computers and peripheral equipment	3341	0.0	1.1	0.8	5.5	5.0	3.3	3.4	9.6	
Communications equipment	3342	0.0	0.9	2.5	4.1	54.2	9.1	9.2	12.0	
Semiconductor and other electronic components	3344	0.0	1.9	0.7	0.7	36.5	0.6	0.6	15.4	
Navigational, measuring, electromedical, and control instruments	3345	1.8	1.4	4.9	1.6	34.9	0.7	0.9	1.1	
Other computer and electronic products	other 334	0.0	2.3	0.0	0.3	9.4	0.4	0.4	0.0	
Electrical equipment, appliances, and components	335	5.4	2.2	2.3	1.4	13.9	1.3	1.3	17.5	
Transportation equipment	336	13.8	0.0	1.8	0.2	35.2	0.2	0.2	0.2	
Motor vehicles, trailers, and parts	3361-63	0.0	1.0	1.5	0.5	42.8	0.3	0.3	1.4	
Aerospace products and parts	3364	0.0	0.0	7.4	0.2	30.1	0.2	0.2	0.3	
Other transportation equipment	other 336	52.5	0.1	1.1	0.1	26.8	0.6	0.9	0.4	
Furniture and related products	337	0.0	45.5	9.5	5.7	16.7	5.2	5.0	67.1	
Miscellaneous manufacturing	339	3.8	2.2	1.8	8.1	46.1	3.0	2.8	22.5	
Medical equipment and supplies	3391	3.8	4.1	2.5	3.1	29.4	1.5	1.5	19.0	
Other miscellaneous manufacturing	other 339	0.0	1.9	2.6	20.8	61.2	7.7	7.2	63.0	

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	R&D area					Scientists and engineers by source of funds			
		Biotechnology	Software development	Materials synthesis and processing	Other areas	% nanotechnology	Total	Company funded	Federally funded	
Nonmanufacturing industries	21–23, 42, 44–81	5.4	3.4	9.4	5.6	27.1	2.9	3.0	6.1	
Mining, extraction, and support activities	21	0.0	0.6	0.6	0.2	0.0	3.4	3.4	0.0	
Utilities	22	64.7	0.0	15.0	3.9	33.3	4.3	5.1	0.0	
Construction	23	0.0	53.6	0.0	15.9	0.0	11.7	11.7	0.0	
Wholesale trade	42	44.1	23.7	40.2	16.8	36.3	16.0	16.2	57.8	
Retail trade	44, 45	0.0	66.1	50.0	60.9	97.8	49.6	49.6	0.0	
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	50.3	50.4	0.0	
Information	51	77.9	1.1	0.8	3.9	20.3	0.9	0.9	9.2	
Publishing	511	50.1	1.2	31.6	2.0	25.1	0.8	0.8	45.1	
Newspaper, periodical, book, and database	5111	0.0	4.0	88.8	0.2	88.8	1.9	1.9	0.0	
Software	5112	50.1	1.2	32.6	17.7	26.0	0.9	0.9	45.1	
Broadcasting and telecommunications	513	98.7	5.5	0.0	5.2	0.0	3.7	3.7	0.0	
Telecommunications	5133	98.7	7.5	0.0	5.6	0.0	3.9	3.9	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	87.7	3.4	0.0	11.6	36.3	3.0	3.3	7.2	
Finance, insurance, and real estate	52, 53	0.0	19.2	0.9	2.0	0.0	8.0	8.0	0.0	
Professional, scientific, and technical services	54	5.3	6.7	9.4	5.9	29.1	3.9	4.3	6.7	
Architectural, engineering, and related services	5413	6.4	56.5	16.4	16.4	59.2	10.0	12.4	10.1	
Computer systems design and related services	5415	43.3	4.6	4.1	8.9	61.1	4.7	4.9	20.0	
Scientific R&D services	5417	5.7	10.9	15.5	5.5	33.8	4.0	3.7	10.1	
Other professional, scientific, and technical services	other 54	0.2	30.5	21.4	4.4	0.0	26.6	26.6	68.1	
Health care services	621–23	4.1	68.0	0.0	76.2	0.0	31.8	32.4	0.0	
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	14.6	1.0	13.6	15.8	32.2	23.4	24.2	57.9	

TABLE A-2. Relative standard error for survey estimates, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	R&D area					Scientists and engineers by source of funds		
		Biotechnology	Software development	Materials synthesis and processing	Other areas	% nanotechnology	Total	Company funded	Federally funded
Company size (employees)									
All companies	-	2.0	2.3	1.5	1.1	13.4	1.1	1.2	2.4
5-24	-	23.2	29.1	28.5	20.4	25.9	11.3	11.8	20.8
25-49	-	16.1	10.9	14.1	18.0	27.5	8.2	8.6	20.6
50-99	-	13.2	12.3	16.1	11.8	17.5	6.4	6.5	20.1
100-249	-	4.9	10.1	12.9	12.6	8.9	10.5	11.2	19.4
250-499	-	0.3	1.8	3.4	6.0	11.6	8.8	9.3	1.2
500-999	-	0.0	13.0	1.7	0.6	11.1	3.4	3.7	0.0
1,000-4,999	-	0.0	0.4	0.4	0.1	6.5	0.2	0.2	0.0
5,000-9,999	-	0.0	0.0	0.0	0.1	8.2	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC								
		Total	By organizations more than 50% owned by the company						India	Ireland
			Puerto Rico	Canada	China	France	Germany			
All industries	21-23, 31-33, 42, 44-81	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing industries	31-33	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food	311	0.2	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	0.0
Textiles, apparel, and leather	313-16	1.7	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	0.0
Paper, printing, and support activities	322, 323	0.1	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	0.0
Chemicals	325	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Basic chemicals	3251	0.0	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	0.0
Pharmaceuticals and medicines	3254	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other chemicals	other 325	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plastics and rubber products	326	0.1	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	0.0
Primary metals	331	34.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fabricated metal products	332	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Machinery	333	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer and electronic products	334	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Semiconductor and other electronic components	3344	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Navigational, measuring, electromedical, and control instruments	3345	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other computer and electronic products	other 334	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	0.1	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	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	0.0
Aerospace products and parts	3364	0.0	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	0.0
Furniture and related products	337	4.3	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	0.0
Medical equipment and supplies	3391	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other miscellaneous manufacturing	other 339	0.6	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC								
		Total	By organizations more than 50% owned by the company						India	Ireland
			Puerto Rico	Canada	China	France	Germany			
Nonmanufacturing industries	21–23, 42, 44–81	3.3	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	0.0
Utilities	22	0.0	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	0.0
Wholesale trade	42	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail trade	44, 45	0.4	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	0.0
Information	51	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Publishing	511	0.8	0.0	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	0.0
Software	5112	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broadcasting and telecommunications	513	48.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Telecommunications	5133	64.2	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	0.0
Other information	other 51	2.0	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	0.0
Professional, scientific, and technical services	54	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Architectural, engineering, and related services	5413	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer systems design and related services	5415	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scientific R&D services	5417	28.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	0.5	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	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	3.3	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC							
		Total	By organizations more than 50% owned by the company						
			Puerto Rico	Canada	China	France	Germany	India	Ireland
Company size (employees)									
All companies	-	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-24	-	26.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	-	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-99	-	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-249	-	23.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250-499	-	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
500-999	-	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1,000-4,999	-	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC						
		By organizations more than 50% owned by the company						
		Israel	Italy	Japan	Singapore	Sweden	United Kingdom	Other locations
All industries	21–23, 31–33, 42, 44–81	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing industries	31–33	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food	311	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
Textiles, apparel, and leather	313–16	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
Paper, printing, and support activities	322, 323	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
Chemicals	325	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Basic chemicals	3251	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
Pharmaceuticals and medicines	3254	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other chemicals	other 325	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
Nonmetallic mineral products	327	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
Fabricated metal products	332	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
Computer and electronic products	334	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Semiconductor and other electronic components	3344	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
Other computer and electronic products	other 334	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
Transportation equipment	336	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
Aerospace products and parts	3364	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
Furniture and related products	337	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
Medical equipment and supplies	3391	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other miscellaneous manufacturing	other 339	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC						
		By organizations more than 50% owned by the company						
		Israel	Italy	Japan	Singapore	Sweden	United Kingdom	Other locations
Nonmanufacturing industries	21–23, 42, 44–81	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
Utilities	22	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
Wholesale trade	42	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
Transportation and warehousing	48, 49	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
Publishing	511	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
Software	5112	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
Telecommunications	5133	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
Other information	other 51	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
Professional, scientific, and technical services	54	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
Computer systems design and related services	5415	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
Other professional, scientific, and technical services	other 54	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
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC						
		By organizations more than 50% owned by the company						
		Israel	Italy	Japan	Singapore	Sweden	United Kingdom	Other locations
Company size (employees)								
All companies	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-24	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-99	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-249	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250-499	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
500-999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1,000-4,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	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: 2004

(Percent)

Industry and company size	NAICS codes	Energy R&D							
		Total				Federally funded			
		Fossil fuels	Geothermal and solar	Nuclear	All other energy sources	Fossil fuels	Geothermal and solar	Nuclear	All other energy sources
All industries	21-23, 31-33, 42, 44-81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing industries	31-33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food	311	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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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	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0
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	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: 2004

(Percent)

Industry and company size	NAICS codes	Energy R&D							
		Total				Federally funded			
		Fossil fuels	Geothermal and solar	Nuclear	All other energy sources	Fossil fuels	Geothermal and solar	Nuclear	All other energy sources
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
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	0.0
Publishing	511	0.0	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	0.0	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	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
Health care services	621–23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	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: 2004  
(Percent)

Industry and company size	NAICS codes	Energy R&D							
		Total				Federally funded			
		Fossil fuels	Geothermal and solar	Nuclear	All other energy sources	Fossil fuels	Geothermal and solar	Nuclear	All other energy sources
Company size (employees)									
All companies	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-24	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-99	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-249	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250-499	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
500-999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1,000-4,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. The percentage (or relative) standard errors (RSE) 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 0.8% and the associated company-funded R&D estimate for this industry is shown as \$152 million in table 10. The standard error of estimate is 0.008 times \$152 million, or \$1.2 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. However, for data items only collected on Form RD-1 but imputed for companies receiving Form RD-1A, the respective RSEs are equal to some positive value. 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: 2004.

TABLE A-3. Relative standard error for estimates of total R&D and percentage of estimates attributed to certainty companies, by state: 2004

State	All R&D (\$millions)	Relative standard errors (%)	% of estimate from certainty companies
United States	208,301	0.6	90.4
Alabama	1,227	3.2	76.8
Alaska	35 e	13.6	14.9
Arizona	2,570	2.0	88.4
Arkansas	287	2.7	68.3
California	46,614	0.5	91.4
Colorado	4,008	1.3	90.0
Connecticut	7,177	0.3	95.9
Delaware	1,059	0.4	95.7
District of Columbia	182 e	8.8	48.6
Florida	3,486	2.0	79.4
Georgia	2,160	1.9	76.0
Hawaii	131	4.2	66.7
Idaho	681	0.9	92.6
Illinois	8,554	0.8	89.7
Indiana	4,208	0.5	93.2
Iowa	963	1.0	88.0
Kansas	1,804 i	0.6	93.1 i
Kentucky	565	2.2	76.4
Louisiana	311	4.6	61.9
Maine	213	2.3	78.9
Maryland	3,826	1.0	86.2
Massachusetts	11,819	0.6	90.2
Michigan	15,170	0.3	95.7
Minnesota	5,199	0.5	92.9
Mississippi	160	3.9	64.9
Missouri	2,151	1.4	85.7
Montana	70	4.4	64.9
Nebraska	383	1.6	82.8
Nevada	417	2.8	76.3
New Hampshire	1,330	0.5	92.1
New Jersey	10,993	0.5	92.3
New Mexico	450	1.3	84.7
New York	8,793	1.2	87.3
North Carolina	4,565	0.8	89.4
North Dakota	379 i	0.5	95.2 i
Ohio	5,516	0.9	87.0
Oklahoma	410	2.5	73.4
Oregon	3,057	0.7	92.8
Pennsylvania	8,005	0.9	84.9
Rhode Island	1,320 i	0.4	96.0 i
South Carolina	961	1.3	86.4
South Dakota	72	3.1	69.9 i
Tennessee	1,630	1.2	86.4
Texas	10,992	0.8	89.5
Utah	1,089	2.0	84.9



TABLE A-3. Relative standard error for estimates of total R&D and percentage of estimates attributed to certainty companies, by state: 2004

State	All R&D (\$millions)	Relative standard errors (%)	% of estimate from certainty companies
Vermont	423	0.9	91.6
Virginia	4,006	1.4	83.7
Washington	8,840 i	0.4	95.0 i
West Virginia	202	2.0	82.1
Wisconsin	2,645	0.8	87.8
Wyoming	23	7.1	49.1
Undistributed funds	7,169	0.0	100.0

e = estimated; more than 50% of cell value is imputed due to raking of state data.

i = more than 50% of the 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 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 0.6% and the associated R&D estimate is shown as \$208.3 billion. The standard error of estimate is 0.006 times \$208.3 billion, or \$1.2 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: 2004

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
All industries	21-23, 31-33, 42, 44-81	31,916	25,808	80.9	31.0
Manufacturing industries	31-33	14,221	11,467	80.6	50.5
Food	311	840	681	81.1	44.6
Beverage and tobacco products	312	140	112	80.0	24.1
Textiles, apparel, and leather	313-16	606	441	72.8	35.4
Wood products	321	520	420	80.8	15.0
Paper, printing, and support activities	322, 323	732	594	81.1	25.1
Petroleum and coal products	324	131	107	81.7	43.0
Chemicals	325	1,435	1,190	82.9	70.3
Basic chemicals	3251	259	212	81.9	62.7
Resin, synthetic rubber, fibers, and filament	3252	161	133	82.6	57.9
Pharmaceuticals and medicines	3254	382	317	83.0	80.4
Other chemicals	other 325	633	528	83.4	70.3
Plastics and rubber products	326	855	722	84.4	52.6
Nonmetallic mineral products	327	523	407	77.8	28.5
Primary metals	331	412	324	78.6	34.0
Fabricated metal products	332	1,258	1,070	85.1	40.1
Machinery	333	1,332	1,104	82.9	64.8
Computer and electronic products	334	2,012	1,542	76.6	75.0
Computers and peripheral equipment	3341	242	194	80.2	83.0
Communications equipment	3342	369	268	72.6	78.4
Semiconductor and other electronic components	3344	592	445	75.2	66.7
Navigational, measuring, electromedical, and control instruments	3345	603	480	79.6	85.6
Other computer and electronic products	other 334	206	155	75.2	49.7
Electrical equipment, appliances, and components	335	550	421	76.5	64.1
Transportation equipment	336	1,102	896	81.3	47.9
Motor vehicles, trailers, and parts	3361-63	587	485	82.6	52.2
Aerospace products and parts	3364	228	182	79.8	44.0
Other transportation equipment	other 336	287	229	79.8	41.9
Furniture and related products	337	544	444	81.6	28.2
Miscellaneous manufacturing	339	1,156	945	81.7	50.9
Medical equipment and supplies	3391	552	449	81.3	59.2
Other miscellaneous manufacturing	other 339	604	496	82.1	43.3
Unclassified manufacturing	-	73	47	64.4	0.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Nonmanufacturing industries	21–23, 42, 44–81	17,695	14,341	81.0	15.5
Mining, extraction, and support activities	21	432	357	82.6	9.8
Utilities	22	155	139	89.7	24.5
Construction	23	1,371	1,161	84.7	3.4
Wholesale trade	42	2,939	2,411	82.0	8.0
Retail trade	44, 45	1,527	1,214	79.5	5.5
Transportation and warehousing	48, 49	376	301	80.1	7.3
Information	51	1,707	1,304	76.4	40.0
Publishing	511	1,026	784	76.4	50.5
Newspaper, periodical, book, and database	5111	395	324	82.0	8.3
Software	5112	631	460	72.9	80.2
Broadcasting and telecommunications	513	260	196	75.4	19.9
Telecommunications	5133	174	127	73.0	23.6
Other broadcasting and telecommunications	other 513	86	69	80.2	13.0
Other information	other 51	421	324	77.0	26.5
Finance, insurance, and real estate	52, 53	976	821	84.1	7.7
Professional, scientific, and technical services	54	3,472	2,816	81.1	37.9
Architectural, engineering, and related services	5413	884	752	85.1	19.9
Computer systems design and related services	5415	989	754	76.2	52.1
Scientific R&D services	5417	728	570	78.3	80.7
Other professional, scientific, and technical services	other 54	871	740	85.0	8.6
Health care services	621–23	1,246	1,057	84.8	6.1
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	3,245	2,601	80.2	4.4
Unclassified nonmanufacturing	-	249	159	63.9	0.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Company size (employees)					
All companies	-	31,916	25,808	80.9	31.0
5-24	-	11,083	9,000	81.2	8.0
25-49	-	4,461	3,682	82.5	25.7
50-99	-	4,497	3,692	82.1	37.3
100-249	-	5,177	4,176	80.7	45.7
250-499	-	2,600	2,024	77.8	52.7
500-999	-	1,654	1,279	77.3	56.2
1,000-4,999	-	1,806	1,413	78.2	62.0
5,000-9,999	-	303	257	84.8	68.5
10,000-24,999	-	196	164	83.7	76.8
25,000 or more	-	139	121	87.1	76.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	Top 500 R&D-performing companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
All industries	21-23, 31-33, 42, 44-81	500	452	90.4	96.9
Manufacturing industries	31-33	362	329	90.9	97.0
Food	311	12	12	100.0	100.0
Beverage and tobacco products	312	2	2	100.0	50.0
Textiles, apparel, and leather	313-16	1	1	100.0	100.0
Wood products	321	0	0	0.0	0.0
Paper, printing, and support activities	322, 323	7	7	100.0	85.7
Petroleum and coal products	324	6	6	100.0	100.0
Chemicals	325	107	97	90.7	95.9
Basic chemicals	3251	15	14	93.3	100.0
Resin, synthetic rubber, fibers, and filament	3252	4	4	100.0	100.0
Pharmaceuticals and medicines	3254	73	64	87.7	96.9
Other chemicals	other 325	15	15	100.0	86.7
Plastics and rubber products	326	6	6	100.0	100.0
Nonmetallic mineral products	327	3	3	100.0	100.0
Primary metals	331	2	2	100.0	100.0
Fabricated metal products	332	3	3	100.0	100.0
Machinery	333	19	19	100.0	94.7
Computer and electronic products	334	126	108	85.7	99.1
Computers and peripheral equipment	3341	20	19	95.0	94.7
Communications equipment	3342	24	19	79.2	100.0
Semiconductor and other electronic components	3344	42	34	81.0	100.0
Navigational, measuring, electromedical, and control instruments	3345	33	31	93.9	100.0
Other computer and electronic products	other 334	7	5	71.4	100.0
Electrical equipment, appliances, and components	335	12	12	100.0	100.0
Transportation equipment	336	42	38	90.5	97.4
Motor vehicles, trailers, and parts	3361-63	25	21	84.0	95.2
Aerospace products and parts	3364	12	12	100.0	100.0
Other transportation equipment	other 336	5	5	100.0	100.0
Furniture and related products	337	0	0	0.0	0.0
Miscellaneous manufacturing	339	14	13	92.9	92.3
Medical equipment and supplies	3391	9	8	88.9	87.5
Other miscellaneous manufacturing	other 339	5	5	100.0	100.0
Unclassified manufacturing	-	0	0	0.0	0.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	Top 500 R&D-performing companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Nonmanufacturing industries	21–23, 42, 44–81	138	123	89.1	96.7
Mining, extraction, and support activities	21	2	1	50.0	100.0
Utilities	22	0	0	0.0	0.0
Construction	23	2	2	100.0	100.0
Wholesale trade	42	0	0	0.0	0.0
Retail trade	44, 45	2	2	100.0	100.0
Transportation and warehousing	48, 49	1	1	100.0	100.0
Information	51	56	49	87.5	98.0
Publishing	511	39	35	89.7	97.1
Newspaper, periodical, book, and database	5111	3	3	100.0	66.7
Software	5112	36	32	88.9	100.0
Broadcasting and telecommunications	513	9	7	77.8	100.0
Telecommunications	5133	8	6	75.0	100.0
Other broadcasting and telecommunications	other 513	1	1	100.0	100.0
Other information	other 51	8	7	87.5	100.0
Finance, insurance, and real estate	52, 53	8	8	100.0	75.0
Professional, scientific, and technical services	54	59	54	91.5	98.1
Architectural, engineering, and related services	5413	11	11	100.0	90.9
Computer systems design and related services	5415	15	12	80.0	100.0
Scientific R&D services	5417	30	28	93.3	100.0
Other professional, scientific, and technical services	other 54	3	3	100.0	100.0
Health care services	621–23	2	1	50.0	100.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	6	5	83.3	100.0
Unclassified nonmanufacturing	-	0	0	0.0	0.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	Top 500 R&D-performing companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Company size (employees)					
All companies	-	500	452	90.4	96.9
5-24	-	0	0	0.0	0.0
25-49	-	0	0	0.0	0.0
50-99	-	2	2	100.0	100.0
100-249	-	18	18	100.0	94.4
250-499	-	33	28	84.8	100.0
500-999	-	61	52	85.2	98.1
1,000-4,999	-	176	155	88.1	97.4
5,000-9,999	-	58	54	93.1	98.1
10,000-24,999	-	79	74	93.7	95.9
25,000 or more	-	73	69	94.5	94.2

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Form RD-1					
All industries	21-23, 31-33, 42, 44-81	3,022	2,520	83.4	89.4
Manufacturing industries	31-33	1,813	1,555	85.8	93.8
Food	311	65	60	92.3	98.3
Beverage and tobacco products	312	12	11	91.7	90.9
Textiles, apparel, and leather	313-16	31	26	83.9	96.2
Wood products	321	8	8	100.0	87.5
Paper, printing, and support activities	322, 323	45	43	95.6	79.1
Petroleum and coal products	324	9	9	100.0	100.0
Chemicals	325	316	276	87.3	95.3
Basic chemicals	3251	71	58	81.7	93.1
Resin, synthetic rubber, fibers, and filament	3252	23	22	95.7	100.0
Pharmaceuticals and medicines	3254	149	131	87.9	95.4
Other chemicals	other 325	73	65	89.0	95.4
Plastics and rubber products	326	82	73	89.0	90.4
Nonmetallic mineral products	327	29	25	86.2	92.0
Primary metals	331	33	29	87.9	86.2
Fabricated metal products	332	71	62	87.3	87.1
Machinery	333	182	160	87.9	93.1
Computer and electronic products	334	543	439	80.8	95.0
Computers and peripheral equipment	3341	75	68	90.7	92.6
Communications equipment	3342	134	104	77.6	91.3
Semiconductor and other electronic components	3344	151	125	82.8	98.4
Navigational, measuring, electromedical, and control instruments	3345	163	126	77.3	95.2
Other computer and electronic products	other 334	20	16	80.0	100.0
Electrical equipment, appliances, and components	335	100	78	78.0	94.9
Transportation equipment	336	141	129	91.5	95.3
Motor vehicles, trailers, and parts	3361-63	94	84	89.4	96.4
Aerospace products and parts	3364	26	25	96.2	96.0
Other transportation equipment	other 336	21	20	95.2	90.0
Furniture and related products	337	15	15	100.0	100.0
Miscellaneous manufacturing	339	131	112	85.5	94.6
Medical equipment and supplies	3391	91	78	85.7	96.2
Other miscellaneous manufacturing	other 339	40	34	85.0	91.2
Unclassified manufacturing	-	0	0	0.0	0.0



TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Nonmanufacturing industries	21–23, 42, 44–81	1,209	965	79.8	82.2
Mining, extraction, and support activities	21	18	16	88.9	93.8
Utilities	22	20	18	90.0	66.7
Construction	23	14	13	92.9	92.3
Wholesale trade	42	39	28	71.8	28.6
Retail trade	44, 45	38	29	76.3	69.0
Transportation and warehousing	48, 49	12	11	91.7	72.7
Information	51	272	214	78.7	90.7
Publishing	511	206	169	82.0	91.7
Newspaper, periodical, book, and database	5111	11	11	100.0	90.9
Software	5112	195	158	81.0	91.8
Broadcasting and telecommunications	513	18	11	61.1	81.8
Telecommunications	5133	17	10	58.8	80.0
Other broadcasting and telecommunications	other 513	1	1	100.0	100.0
Other information	other 51	48	34	70.8	88.2
Finance, insurance, and real estate	52, 53	62	53	85.5	62.3
Professional, scientific, and technical services	54	649	517	79.7	88.0
Architectural, engineering, and related services	5413	80	60	75.0	90.0
Computer systems design and related services	5415	220	176	80.0	86.9
Scientific R&D services	5417	297	241	81.1	92.9
Other professional, scientific, and technical services	other 54	52	40	76.9	60.0
Health care services	621–23	23	15	65.2	53.3
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	62	51	82.3	54.9
Unclassified nonmanufacturing	-	0	0	0.0	0.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Company size (employees)					
All companies	-	3,022	2,520	83.4	89.4
5-24	-	44	31	70.5	58.1
25-49	-	139	116	83.5	88.8
50-99	-	263	205	77.9	85.4
100-249	-	517	419	81.0	89.5
250-499	-	451	363	80.5	87.6
500-999	-	435	371	85.3	89.2
1,000-4,999	-	751	632	84.2	92.6
5,000-9,999	-	175	158	90.3	93.0
10,000-24,999	-	143	129	90.2	90.7
25,000 or more	-	104	96	92.3	86.5

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Form RD-1A					
All industries	21-23, 31-33, 42, 44-81	28,894	23,288	80.6	24.7
Manufacturing industries	31-33	12,408	9,912	79.9	43.7
Food	311	775	621	80.1	39.5
Beverage and tobacco products	312	128	101	78.9	16.8
Textiles, apparel, and leather	313-16	575	415	72.2	31.6
Wood products	321	512	412	80.5	13.6
Paper, printing, and support activities	322, 323	687	551	80.2	20.9
Petroleum and coal products	324	122	98	80.3	37.8
Chemicals	325	1,119	914	81.7	62.7
Basic chemicals	3251	188	154	81.9	51.3
Resin, synthetic rubber, fibers, and filament	3252	138	111	80.4	49.5
Pharmaceuticals and medicines	3254	233	186	79.8	69.9
Other chemicals	other 325	560	463	82.7	66.7
Plastics and rubber products	326	773	649	84.0	48.4
Nonmetallic mineral products	327	494	382	77.3	24.3
Primary metals	331	379	295	77.8	28.8
Fabricated metal products	332	1,187	1,008	84.9	37.2
Machinery	333	1,150	944	82.1	60.0
Computer and electronic products	334	1,469	1,103	75.1	67.0
Computers and peripheral equipment	3341	167	126	75.4	77.8
Communications equipment	3342	235	164	69.8	70.1
Semiconductor and other electronic components	3344	441	320	72.6	54.4
Navigational, measuring, electromedical, and control instruments	3345	440	354	80.5	82.2
Other computer and electronic products	other 334	186	139	74.7	43.9
Electrical equipment, appliances, and components	335	450	343	76.2	57.1
Transportation equipment	336	961	767	79.8	39.9
Motor vehicles, trailers, and parts	3361-63	493	401	81.3	42.9
Aerospace products and parts	3364	202	157	77.7	35.7
Other transportation equipment	other 336	266	209	78.6	37.3
Furniture and related products	337	529	429	81.1	25.6
Miscellaneous manufacturing	339	1,025	833	81.3	45.0
Medical equipment and supplies	3391	461	371	80.5	51.5
Other miscellaneous manufacturing	other 339	564	462	81.9	39.8
Unclassified manufacturing	-	73	47	64.4	0.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Nonmanufacturing industries	21–23, 42, 44–81	16,486	13,376	81.1	10.7
Mining, extraction, and support activities	21	414	341	82.4	5.9
Utilities	22	135	121	89.6	18.2
Construction	23	1,357	1,148	84.6	2.4
Wholesale trade	42	2,900	2,383	82.2	7.7
Retail trade	44, 45	1,489	1,185	79.6	4.0
Transportation and warehousing	48, 49	364	290	79.7	4.8
Information	51	1,435	1,090	76.0	30.0
Publishing	511	820	615	75.0	39.2
Newspaper, periodical, book, and database	5111	384	313	81.5	5.4
Software	5112	436	302	69.3	74.2
Broadcasting and telecommunications	513	242	185	76.4	16.2
Telecommunications	5133	157	117	74.5	18.8
Other broadcasting and telecommunications	other 513	85	68	80.0	11.8
Other information	other 51	373	290	77.7	19.3
Finance, insurance, and real estate	52, 53	914	768	84.0	3.9
Professional, scientific, and technical services	54	2,823	2,299	81.4	26.6
Architectural, engineering, and related services	5413	804	692	86.1	13.9
Computer systems design and related services	5415	769	578	75.2	41.5
Scientific R&D services	5417	431	329	76.3	71.7
Other professional, scientific, and technical services	other 54	819	700	85.5	5.7
Health care services	621–23	1,223	1,042	85.2	5.4
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	3,183	2,550	80.1	3.4
Unclassified nonmanufacturing	-	249	159	63.9	0.0

TABLE A-4. Unit response rates and percentage of companies performing R&D, by industry and type of survey form: 2004

Industry and company size	NAICS codes	All companies			
		Companies receiving a questionnaire	Companies responding to the survey	% of companies responding to the survey	% of responding companies reporting R&D
Company size (employees)					
All companies	-	28,894	23,288	80.6	24.7
5-24	-	11,039	8,969	81.2	7.9
25-49	-	4,322	3,566	82.5	23.7
50-99	-	4,234	3,487	82.4	34.5
100-249	-	4,660	3,757	80.6	40.8
250-499	-	2,149	1,661	77.3	45.1
500-999	-	1,219	908	74.5	42.7
1,000-4,999	-	1,055	781	74.0	37.3
5,000-9,999	-	128	99	77.3	29.3
10,000-24,999	-	53	35	66.0	25.7
25,000 or more	-	35	25	71.4	36.0

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. The calculation of the percent of companies responding to the survey was based on all companies responding 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. The total number of "companies that received a questionnaire" may be larger than the number of "companies selected for the sample" in table A-1 because some companies, especially those originally assigned nonmanufacturing industry classifications, were reclassified among manufacturing industries. 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: 2004.

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(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	8.1	18.5	20.3	6.4	11.7	12.4	5.6
Manufacturing industries	31–33	8.0	22.9	24.0	11.0	15.3	16.9	3.6
Food	311	1.4	8.8	8.8	0.0	3.8	2.9	0.0
Beverage and tobacco products	312	71.6	0.0	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313–16	3.1	0.0	0.0	0.0	2.0	2.1	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	28.2	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	0.1	0.0
Chemicals	325	9.3	26.5	26.5	31.1	15.5	15.3	36.3
Basic chemicals	3251	12.7	42.9	43.9	0.0	5.8	6.3	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.8	10.3	10.3	0.0	17.9	17.9	23.9
Pharmaceuticals and medicines	3254	10.0	24.9	25.0	0.0	13.1	13.2	0.9
Other chemicals	other 325	5.0	64.9	63.1	84.5	33.3	30.6	85.7
Plastics and rubber products	326	4.0	4.7	32.9	0.0	4.4	3.4	6.9
Nonmetallic mineral products	327	2.9	4.7	4.7	0.0	0.0	0.0	0.0
Primary metals	331	4.8	23.8	1.4	0.0	1.7	1.6	0.0
Fabricated metal products	332	5.4	18.9	30.0	0.0	0.3	2.1	0.0
Machinery	333	6.7	2.0	1.6	0.0	4.5	17.5	6.2
Computer and electronic products	334	6.9	27.9	27.8	22.3	19.9	19.9	12.1
Computers and peripheral equipment	3341	4.2	4.6	4.6	0.0	14.3	15.8	0.0
Communications equipment	3342	9.7	47.4	47.6	0.0	39.4	39.3	0.0
Semiconductor and other electronic components	3344	6.8	12.5	10.3	81.4	17.5	17.3	0.1
Navigational, measuring, electromedical, and control instruments	3345	5.1	24.9	27.1	17.9	6.3	5.3	19.4
Other computer and electronic products	other 334	25.6	0.2	0.2	0.0	40.8	40.5	88.3
Electrical equipment, appliances, and components	335	10.4	12.0	3.4	48.4	15.8	16.2	0.1
Transportation equipment	336	4.3	11.2	14.4	0.0	14.8	29.4	0.2
Motor vehicles, trailers, and parts	3361–63	8.9	2.2	2.3	0.0	22.8	29.8	3.4
Aerospace products and parts	3364	0.0	14.6	20.6	0.0	9.8	30.8	0.2
Other transportation equipment	other 336	0.9	0.4	0.4	0.0	9.1	0.2	0.0
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	31.3	17.9	14.2	68.4	29.5	11.7	0.0
Medical equipment and supplies	3391	38.9	18.7	14.2	86.5	32.7	10.2	0.0
Other miscellaneous manufacturing	other 339	6.9	13.7	14.6	0.0	16.6	17.8	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(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	8.4	6.5	7.0	4.3	4.2	2.5	8.2
Mining, extraction, and support activities	21	43.9	6.1	6.1	0.0	7.6	3.6	0.0
Utilities	22	4.9	0.0	0.0	0.0	0.0	0.0	0.0
Construction	23	2.5	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	4.3	0.0	0.0	0.0	3.4	1.1	0.0
Retail trade	44, 45	5.0	0.2	0.2	0.0	0.1	0.1	0.0
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	7.1	8.2	10.8	0.0	2.5	2.4	0.0
Publishing	511	4.4	2.9	6.4	0.0	0.0	0.1	0.0
Newspaper, periodical, book, and database	5111	9.6	6.3	0.0	0.0	3.0	0.0	0.0
Software	5112	4.2	2.8	6.6	0.0	0.0	0.1	0.0
Broadcasting and telecommunications	513	30.4	57.0	57.0	0.0	2.8	2.4	0.0
Telecommunications	5133	32.8	100.0	100.0	0.0	1.1	0.7	0.0
Other broadcasting and telecommunications	other 513	0.0	3.3	3.3	0.0	28.5	28.5	0.0
Other information	other 51	5.5	0.2	0.2	0.0	10.9	10.9	0.0
Finance, insurance, and real estate	52, 53	17.2	4.3	4.3	0.0	1.2	1.2	0.0
Professional, scientific, and technical services	54	8.4	7.9	9.1	4.6	5.9	3.5	8.5
Architectural, engineering, and related services	5413	5.6	0.3	0.0	0.0	5.0	2.2	4.2
Computer systems design and related services	5415	4.5	10.2	7.0	15.1	5.1	0.0	11.1
Scientific R&D services	5417	13.6	8.2	10.8	1.6	7.1	5.3	12.9
Other professional, scientific, and technical services	other 54	7.2	19.6	2.3	100.0	0.8	0.6	1.6
Health care services	621–23	33.4	1.1	1.2	0.0	9.8	9.6	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	7.1	0.0	0.0	0.0	20.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(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	-	8.1	18.5	20.3	6.4	11.7	12.4	5.6
5-24	-	2.8	3.3	9.2	0.7	0.9	1.8	0.8
25-49	-	3.4	4.5	2.8	3.4	4.3	0.9	2.9
50-99	-	6.1	13.4	9.9	4.9	6.0	5.3	7.4
100-249	-	10.1	11.3	11.2	12.2	6.0	4.8	12.8
250-499	-	16.5	11.0	10.4	20.4	9.0	7.7	14.2
500-999	-	13.2	16.0	30.0	5.4	9.1	6.5	14.5
1,000-4,999	-	14.8	28.0	28.6	0.0	10.3	11.8	1.3
5,000-9,999	-	12.0	47.2	48.3	0.0	19.5	20.3	1.5
10,000-24,999	-	6.8	11.4	11.5	3.3	16.8	15.8	7.1
25,000 or more	-	4.2	19.6	20.9	5.8	12.8	18.1	3.1



TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	Development			Type of R&D expense				
		Total	Company funded	Federally funded	Wages and salaries of R&D personnel	Fringe benefits of R&D personnel	Materials and supplies	R&D depreciation	Other costs
All industries	21-23, 31-33, 42, 44-81	15.3	14.4	27.3	45.5	48.4	47.8	46.9	50.4
Manufacturing industries	31-33	18.0	17.0	36.6	47.2	48.9	48.7	45.9	52.7
Food	311	4.3	4.5	0.0	27.8	25.3	35.5	26.9	14.5
Beverage and tobacco products	312	17.9	17.9	0.0	78.4	78.1	85.8	63.5	78.5
Textiles, apparel, and leather	313-16	12.1	10.3	0.0	14.8	18.2	46.8	30.8	9.2
Wood products	321	0.6	0.0	0.0	42.5	41.0	44.2	42.9	43.1
Paper, printing, and support activities	322, 323	25.4	22.4	0.0	84.4	63.0	82.8	83.2	91.3
Petroleum and coal products	324	0.0	0.2	0.0	75.7	68.1	71.1	81.7	74.3
Chemicals	325	13.9	13.3	67.5	50.3	48.6	50.1	47.4	56.2
Basic chemicals	3251	34.1	34.5	10.4	37.9	40.3	51.8	40.5	46.2
Resin, synthetic rubber, fibers, and filament	3252	4.6	4.6	0.0	14.8	28.7	18.7	9.7	62.0
Pharmaceuticals and medicines	3254	10.5	10.2	56.4	54.1	48.6	50.0	54.6	56.9
Other chemicals	other 325	40.9	38.1	84.8	55.5	57.2	68.9	34.1	41.5
Plastics and rubber products	326	6.7	23.7	0.1	39.7	28.0	24.8	33.0	39.3
Nonmetallic mineral products	327	16.4	16.4	0.0	42.4	38.2	35.1	30.3	48.5
Primary metals	331	9.0	9.3	0.0	12.7	31.3	16.7	9.5	24.8
Fabricated metal products	332	8.3	5.9	68.8	22.9	7.4	48.5	20.3	27.1
Machinery	333	6.6	15.2	5.8	42.0	26.6	50.5	23.5	22.4
Computer and electronic products	334	27.2	25.0	62.3	44.1	57.5	54.3	44.3	53.0
Computers and peripheral equipment	3341	5.5	5.5	0.0	42.3	35.8	46.2	40.7	44.9
Communications equipment	3342	46.3	43.3	72.6	18.8	49.9	60.7	52.0	62.0
Semiconductor and other electronic components	3344	17.2	16.9	7.9	33.2	52.7	32.4	31.0	44.9
Navigational, measuring, electromedical, and control instruments	3345	37.3	32.3	64.0	70.9	71.8	72.5	74.0	60.9
Other computer and electronic products	other 334	26.4	24.9	0.0	70.3	57.8	70.4	74.0	45.9
Electrical equipment, appliances, and components	335	8.6	9.0	0.0	26.1	26.2	31.4	32.5	25.9
Transportation equipment	336	13.2	12.3	22.0	50.7	47.3	42.4	52.4	53.4
Motor vehicles, trailers, and parts	3361-63	7.3	7.6	48.6	66.8	35.3	48.0	51.2	68.0
Aerospace products and parts	3364	19.1	17.8	24.9	19.1	65.5	13.1	34.1	39.2
Other transportation equipment	other 336	3.7	1.5	0.0	85.7	77.2	80.6	80.6	85.9
Furniture and related products	337	3.8	3.8	0.0	17.4	20.6	14.2	25.5	24.0
Miscellaneous manufacturing	339	40.0	24.1	0.0	54.6	39.8	61.9	51.9	48.2
Medical equipment and supplies	3391	55.4	31.8	0.0	58.5	40.9	63.9	47.8	50.2
Other miscellaneous manufacturing	other 339	7.7	8.0	0.0	43.5	37.1	47.7	64.5	36.4

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	Development			Type of R&D expense				
		Total	Company funded	Federally funded	Wages and salaries of R&D personnel	Fringe benefits of R&D personnel	Materials and supplies	R&D depreciation	Other costs
Nonmanufacturing industries	21–23, 42, 44–81	8.5	7.4	9.3	41.2	47.2	40.7	50.4	41.7
Mining, extraction, and support activities	21	1.4	1.0	0.0	63.0	20.2	24.2	60.8	77.1
Utilities	22	0.7	0.8	0.0	22.0	30.3	25.0	14.1	28.4
Construction	23	8.1	1.2	0.0	90.0	93.2	72.1	97.8	78.3
Wholesale trade	42	4.6	6.5	0.0	29.1	29.6	35.6	31.4	42.8
Retail trade	44, 45	8.6	8.3	0.0	18.3	28.5	24.4	19.9	13.5
Transportation and warehousing	48, 49	0.0	0.0	0.0	70.6	80.7	37.1	0.0	77.7
Information	51	8.3	7.9	0.0	52.5	58.5	58.0	72.6	55.6
Publishing	511	8.6	7.7	0.0	58.4	58.9	64.4	77.0	62.2
Newspaper, periodical, book, and database	5111	10.3	0.0	0.0	1.6	2.8	1.8	0.1	6.9
Software	5112	8.4	8.6	0.0	61.2	61.4	65.4	81.8	64.1
Broadcasting and telecommunications	513	25.7	25.6	0.0	58.7	66.4	20.9	59.2	40.8
Telecommunications	5133	30.3	30.3	0.0	58.0	65.9	20.6	58.7	40.2
Other broadcasting and telecommunications	other 513	7.0	7.0	0.0	100.0	100.0	100.0	100.0	100.0
Other information	other 51	4.2	4.7	0.0	16.2	35.7	18.0	21.9	16.0
Finance, insurance, and real estate	52, 53	34.6	18.7	0.0	25.1	18.9	15.7	26.1	21.6
Professional, scientific, and technical services	54	6.4	5.8	11.2	24.0	30.6	32.1	24.5	29.6
Architectural, engineering, and related services	5413	7.3	5.4	15.8	32.3	43.8	19.6	51.7	33.5
Computer systems design and related services	5415	6.3	6.0	7.3	10.9	10.9	11.9	5.9	10.3
Scientific R&D services	5417	5.9	5.4	8.3	48.5	50.3	46.3	49.0	49.1
Other professional, scientific, and technical services	other 54	7.7	6.7	0.0	22.3	29.2	35.8	34.3	22.5
Health care services	621–23	46.1	46.2	29.0	90.5	90.2	99.1	78.9	92.9
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	2.1	2.0	0.0	12.3	15.5	7.2	21.2	10.6

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Development			Type of R&D expense				
		Total	Company funded	Federally funded	Wages and salaries of R&D personnel	Fringe benefits of R&D personnel	Materials and supplies	R&D depreciation	Other costs
Company size (employees)									
All companies	-	15.3	14.4	27.3	45.5	48.4	47.8	46.9	50.4
5-24	-	4.2	4.2	0.1	53.7	55.3	42.0	54.1	47.8
25-49	-	5.4	3.2	35.7	41.6	40.8	36.0	43.0	37.9
50-99	-	7.1	6.7	12.5	40.3	37.4	38.5	41.0	36.5
100-249	-	12.7	10.6	7.4	41.6	46.4	38.4	37.3	40.4
250-499	-	17.0	14.6	0.5	35.7	37.4	31.8	32.6	29.5
500-999	-	16.7	19.1	29.9	35.6	38.4	24.9	37.2	39.2
1,000-4,999	-	18.3	17.5	13.2	39.1	42.5	43.5	46.9	44.4
5,000-9,999	-	17.8	16.7	41.6	31.6	32.0	28.3	42.9	37.4
10,000-24,999	-	24.6	21.2	27.9	32.4	34.8	49.7	43.6	44.2
25,000 or more	-	12.0	11.6	36.1	58.3	63.2	56.9	51.4	64.3

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	Company-funded R&D	Federally funded R&D	Total	Company-funded R&D performed by other organizations				
					For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations
All industries	21-23, 31-33, 42, 44-81	8.8	1.2	21.1	19.0	0.0	0.0	38.5	41.5
Manufacturing industries	31-33	8.6	0.3	24.0	20.6	0.0	0.0	43.4	35.1
Food	311	1.3	0.0	8.7	69.4	0.0	0.0	95.0	51.7
Beverage and tobacco products	312	71.6	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Textiles, apparel, and leather	313-16	2.9	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Wood products	321	0.0	0.0	8.7	100.0	0.0	0.0	100.0	0.0
Paper, printing, and support activities	322, 323	0.8	0.0	95.1	0.0	0.0	0.0	0.0	0.0
Petroleum and coal products	324	0.1	0.0	75.2	19.0	0.0	0.0	16.8	79.9
Chemicals	325	9.4	1.1	30.6	29.6	0.0	0.0	41.4	20.9
Basic chemicals	3251	13.1	0.0	28.2	25.8	0.0	0.0	18.9	0.0
Resin, synthetic rubber, fibers, and filament	3252	0.8	0.0	1.0	3.8	0.0	0.0	0.1	0.0
Pharmaceuticals and medicines	3254	10.1	6.5	31.9	30.7	0.0	0.0	45.7	23.2
Other chemicals	other 325	5.5	0.6	2.0	1.8	0.0	0.0	8.0	0.0
Plastics and rubber products	326	15.5	0.0	3.4	17.2	0.0	0.0	0.0	0.0
Nonmetallic mineral products	327	2.9	0.0	51.4	88.3	0.0	0.0	0.0	0.0
Primary metals	331	4.3	0.0	0.4	4.2	0.0	0.0	13.5	25.4
Fabricated metal products	332	8.5	3.2	3.2	7.8	0.0	0.0	100.0	0.0
Machinery	333	16.3	4.1	26.1	27.4	0.0	0.0	41.5	0.0
Computer and electronic products	334	7.7	0.2	7.2	2.6	0.0	0.0	13.3	70.0
Computers and peripheral equipment	3341	4.2	0.0	2.9	2.9	0.0	0.0	0.0	0.0
Communications equipment	3342	7.9	0.0	1.0	0.8	0.0	0.0	0.0	0.0
Semiconductor and other electronic components	3344	6.8	0.1	7.2	6.6	0.0	0.0	43.9	72.2
Navigational, measuring, electromedical, and control instruments	3345	9.4	0.2	11.7	1.9	0.0	0.0	10.1	69.4
Other computer and electronic products	other 334	25.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electrical equipment, appliances, and components	335	10.8	6.5	19.9	9.8	0.0	0.0	0.0	0.0
Transportation equipment	336	5.5	0.2	2.9	2.5	0.0	0.0	16.9	0.0
Motor vehicles, trailers, and parts	3361-63	8.9	22.6	1.3	1.2	0.0	0.0	18.2	0.0
Aerospace products and parts	3364	0.0	0.0	7.8	6.7	0.0	0.0	0.0	0.0
Other transportation equipment	other 336	2.6	0.0	14.3	16.1	0.0	0.0	98.7	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	21.1	7.7	6.0	9.1	0.0	0.0	3.4	0.0
Medical equipment and supplies	3391	25.4	10.2	5.7	10.2	0.0	0.0	2.5	0.0
Other miscellaneous manufacturing	other 339	7.3	0.0	7.1	4.0	0.0	0.0	61.7	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D	Federally funded R&D	Total	Company-funded R&D performed by other organizations				
					For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations
Nonmanufacturing industries	21–23, 42, 44–81	9.0	4.1	12.5	10.9	0.0	0.0	7.9	49.5
Mining, extraction, and support activities	21	43.9	0.0	72.1	79.9	0.0	0.0	0.0	0.0
Utilities	22	5.6	0.0	11.8	18.0	0.0	0.0	0.0	56.0
Construction	23	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale trade	42	8.1	0.0	15.9	0.0	0.0	0.0	0.0	0.0
Retail trade	44, 45	7.4	0.0	0.2	3.1	0.0	0.0	18.4	1.9
Transportation and warehousing	48, 49	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information	51	8.1	0.0	8.3	5.7	0.0	0.0	0.0	0.0
Publishing	511	5.2	0.0	12.4	12.1	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	5.5	0.0	14.4	14.6	0.0	0.0	0.0	0.0
Broadcasting and telecommunications	513	33.7	0.0	7.0	0.0	0.0	0.0	0.0	0.0
Telecommunications	5133	36.4	0.0	9.8	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	5.8	0.0	5.4	3.1	0.0	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	10.6	0.0	1.5	0.6	0.0	0.0	0.0	0.0
Professional, scientific, and technical services	54	8.9	4.5	15.3	7.8	0.0	0.0	8.2	6.7
Architectural, engineering, and related services	5413	6.8	0.8	11.5	9.5	0.0	0.0	0.0	0.0
Computer systems design and related services	5415	4.6	11.1	4.7	0.4	0.0	0.0	54.4	0.0
Scientific R&D services	5417	14.6	7.0	18.2	12.3	0.0	0.0	9.3	6.7
Other professional, scientific, and technical services	other 54	8.2	4.3	5.2	1.7	0.0	0.0	0.0	0.0
Health care services	621–23	34.2	0.0	76.1	74.0	0.0	0.0	100.0	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	8.5	1.8	0.3	0.9	0.0	0.0	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D	Federally funded R&D	Total	Company-funded R&D performed by other organizations				
					For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations
Company size (employees)									
All companies	-	8.8	1.2	21.1	19.0	0.0	0.0	38.5	41.5
5-24	-	5.2	1.5	2.5	0.0	0.0	0.0	0.0	0.0
25-49	-	3.7	3.5	16.0	12.0	0.0	0.0	35.0	0.0
50-99	-	7.3	6.0	12.7	12.9	0.0	0.0	0.9	0.0
100-249	-	10.8	5.9	16.0	21.8	0.0	0.0	9.7	4.5
250-499	-	15.7	6.1	17.1	4.2	0.0	0.0	59.2	0.0
500-999	-	16.2	7.7	4.0	1.7	0.0	0.0	1.4	78.4
1,000-4,999	-	15.0	4.2	21.3	28.5	0.0	0.0	15.0	38.4
5,000-9,999	-	13.5	0.0	59.2	59.6	0.0	0.0	95.0	0.3
10,000-24,999	-	5.4	0.1	11.4	0.7	0.0	0.0	3.6	20.5
25,000 or more	-	4.8	0.0	16.6	6.9	0.0	0.0	39.2	72.8

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	Company-funded collaborative R&D performed by other organizations						Sales	Domestic employment
		Total	For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations		
All industries	21-23, 31-33, 42, 44-81	5.2	5.5	14.5	0.0	0.9	20.4	8.5	9.1
Manufacturing industries	31-33	5.1	5.3	14.6	0.0	1.3	7.7	4.7	5.2
Food	311	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.6
Beverage and tobacco products	312	0.0	0.0	0.0	0.0	0.0	0.0	4.1	25.4
Textiles, apparel, and leather	313-16	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5
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	1.4	2.6
Petroleum and coal products	324	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Chemicals	325	0.6	0.4	78.1	0.0	0.0	0.0	7.1	4.3
Basic chemicals	3251	0.0	0.0	0.0	0.0	0.0	0.0	9.8	8.7
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	0.0	0.0	0.0	0.0	10.1	1.5
Pharmaceuticals and medicines	3254	0.6	0.5	78.6	0.0	0.0	0.0	6.7	6.0
Other chemicals	other 325	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.4
Plastics and rubber products	326	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.8
Nonmetallic mineral products	327	0.0	0.0	0.0	0.0	0.0	0.0	12.9	9.9
Primary metals	331	0.0	0.0	0.0	0.0	0.0	28.1	8.4	7.3
Fabricated metal products	332	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.3
Machinery	333	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.5
Computer and electronic products	334	25.6	26.0	0.0	0.0	0.0	45.9	6.4	6.3
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.5
Communications equipment	3342	43.7	44.6	0.0	0.0	0.0	0.0	4.5	5.6
Semiconductor and other electronic components	3344	49.1	50.4	0.0	0.0	0.0	0.0	7.3	5.9
Navigational, measuring, electromedical, and control instruments	3345	1.0	1.0	0.0	0.0	0.0	100.0	4.8	5.3
Other computer and electronic products	other 334	0.0	0.0	0.0	0.0	0.0	0.0	43.8	40.5
Electrical equipment, appliances, and components	335	0.0	0.0	0.0	0.0	0.0	0.0	9.2	10.5
Transportation equipment	336	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.9
Motor vehicles, trailers, and parts	3361-63	0.0	0.0	0.0	0.0	0.0	0.0	3.2	5.8
Aerospace products and parts	3364	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	0.0	18.1	18.5
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0
Miscellaneous manufacturing	339	9.3	7.6	0.0	0.0	16.8	0.0	19.3	12.7
Medical equipment and supplies	3391	11.0	9.4	0.0	0.0	17.2	0.0	26.3	18.9
Other miscellaneous manufacturing	other 339	0.0	0.0	0.0	0.0	0.0	0.0	7.0	3.5

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded collaborative R&D performed by other organizations						Sales	Domestic employment
		Total	For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations		
Nonmanufacturing industries	21–23, 42, 44–81	5.4	6.0	14.1	0.0	0.1	29.5	17.2	16.0
Mining, extraction, and support activities	21	18.0	18.0	0.0	0.0	0.0	0.0	15.5	14.6
Utilities	22	14.9	0.0	0.0	0.0	0.0	8.3	2.4	7.3
Construction	23	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.1
Wholesale trade	42	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7
Retail trade	44, 45	0.0	0.0	0.0	0.0	0.0	100.0	28.2	7.2
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	33.3	33.8
Publishing	511	0.0	0.0	0.0	0.0	0.0	0.0	3.7	4.0
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Software	5112	0.0	0.0	0.0	0.0	0.0	0.0	4.7	5.8
Broadcasting and telecommunications	513	0.0	0.0	0.0	0.0	0.0	0.0	48.3	55.8
Telecommunications	5133	0.0	0.0	0.0	0.0	0.0	0.0	57.2	62.8
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Other information	other 51	0.0	0.0	0.0	0.0	0.0	0.0	6.3	6.8
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	0.0	9.1	24.1
Professional, scientific, and technical services	54	11.4	13.4	14.5	0.0	0.3	87.6	12.2	8.2
Architectural, engineering, and related services	5413	45.4	45.8	0.0	0.0	0.0	0.0	6.0	4.8
Computer systems design and related services	5415	16.7	16.7	0.0	0.0	0.0	0.0	7.9	4.5
Scientific R&D services	5417	7.7	11.3	14.5	0.0	0.3	87.6	33.9	23.0
Other professional, scientific, and technical services	other 54	0.0	0.0	0.0	0.0	0.0	0.0	9.3	7.6
Health care services	621–23	0.0	0.0	0.0	0.0	0.0	0.0	47.7	18.6
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	0.0	0.0	0.0	0.0	0.0	0.0	16.9	16.2



TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded collaborative R&D performed by other organizations						Sales	Domestic employment
		Total	For-profit companies	Federal agencies or laboratories	State government agencies or laboratories	Universities or colleges	Other nonprofit organizations		
Company size (employees)									
All companies	-	5.2	5.5	14.5	0.0	0.9	20.4	8.5	9.1
5-24	-	0.0	0.0	0.0	0.0	0.0	0.0	57.9	1.4
25-49	-	11.8	12.6	0.0	0.0	1.1	0.0	12.7	1.8
50-99	-	26.4	28.9	0.0	0.0	0.0	0.0	3.2	3.5
100-249	-	8.1	16.8	49.8	0.0	0.1	69.8	4.6	2.5
250-499	-	10.4	10.6	0.6	0.0	0.0	0.0	5.8	5.5
500-999	-	0.0	0.0	0.0	0.0	0.0	0.0	4.9	5.3
1,000-4,999	-	22.9	24.8	65.6	0.0	5.2	0.0	10.0	9.1
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	3.2	7.8	7.2
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	12.5	6.2	9.4
25,000 or more	-	0.1	0.0	0.0	0.0	0.0	95.4	7.8	11.7

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	R&D area					Scientists and engineers by source of funds		
		Biotechnology	Software development	Materials synthesis and processing	Other areas	% nanotechnology	Total	Company funded	Federally funded
All industries	21-23, 31-33, 42, 44-81	15.5	9.1	13.4	15.2	0.0	31.8	32.9	66.6
Manufacturing industries	31-33	20.3	14.7	14.2	16.0	0.0	37.8	38.9	78.5
Food	311	3.7	0.0	2.7	19.8	0.0	26.4	27.3	36.5
Beverage and tobacco products	312	0.0	0.0	8.4	9.1	0.0	81.8	81.5	0.0
Textiles, apparel, and leather	313-16	0.0	0.9	3.5	20.3	0.0	39.5	35.4	100.0
Wood products	321	0.0	0.0	0.0	0.0	0.0	32.4	29.5	100.0
Paper, printing, and support activities	322, 323	0.0	55.2	0.4	5.7	0.0	66.6	64.7	100.0
Petroleum and coal products	324	0.0	0.0	56.2	0.2	0.0	54.2	82.4	100.0
Chemicals	325	22.4	59.1	33.6	13.2	0.0	40.2	46.7	54.3
Basic chemicals	3251	12.5	8.5	28.2	29.5	0.0	38.0	49.1	16.2
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	9.4	39.1	0.0	19.5	84.3	97.2
Pharmaceuticals and medicines	3254	22.8	0.3	1.6	5.2	0.0	44.7	45.6	37.6
Other chemicals	other 325	21.2	98.6	61.5	33.4	0.0	32.7	30.5	74.3
Plastics and rubber products	326	0.5	0.0	8.1	10.1	0.0	32.0	23.4	69.7
Nonmetallic mineral products	327	0.0	0.0	21.8	2.3	0.0	56.1	57.2	77.0
Primary metals	331	0.0	0.0	76.2	8.3	0.0	31.7	30.9	44.6
Fabricated metal products	332	64.2	0.8	19.3	5.7	0.0	16.4	14.7	96.3
Machinery	333	14.8	40.0	3.0	15.5	0.0	29.0	33.1	61.7
Computer and electronic products	334	14.4	23.8	6.1	22.1	0.0	40.5	39.0	91.9
Computers and peripheral equipment	3341	0.0	10.4	45.7	7.1	0.0	21.0	21.0	15.9
Communications equipment	3342	0.0	40.4	42.9	39.2	0.0	33.6	34.9	67.4
Semiconductor and other electronic components	3344	0.0	18.0	2.8	23.0	0.0	43.9	44.2	83.9
Navigational, measuring, electromedical, and control instruments	3345	15.3	8.5	7.0	5.6	0.0	54.1	52.0	93.2
Other computer and electronic products	other 334	0.0	10.9	5.8	20.3	0.0	19.5	20.6	33.3
Electrical equipment, appliances, and components	335	0.0	6.8	12.5	10.1	0.0	27.0	28.6	87.1
Transportation equipment	336	0.0	0.4	1.9	14.7	0.0	35.7	36.3	52.0
Motor vehicles, trailers, and parts	3361-63	0.0	12.4	2.5	25.0	0.0	44.8	43.9	30.2
Aerospace products and parts	3364	0.0	0.0	0.0	4.0	0.0	17.8	14.0	43.6
Other transportation equipment	other 336	0.0	0.0	0.0	2.6	0.0	16.4	26.8	87.9
Furniture and related products	337	0.0	0.3	1.2	0.1	0.0	33.5	26.9	100.0
Miscellaneous manufacturing	339	2.1	12.3	3.0	7.0	0.0	26.8	31.0	79.8
Medical equipment and supplies	3391	2.1	24.7	1.2	9.2	0.0	29.0	29.7	73.1
Other miscellaneous manufacturing	other 339	0.0	1.3	4.8	3.4	0.0	22.9	33.3	96.6

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	R&D area					Scientists and engineers by source of funds			
		Biotechnology	Software development	Materials synthesis and processing	Other areas	% nanotechnology	Total	Company funded	Federally funded	
Nonmanufacturing industries	21–23, 42, 44–81	7.4	6.4	9.0	12.0	0.0	20.9	21.8	47.6	
Mining, extraction, and support activities	21	0.0	82.7	4.1	59.5	0.0	55.1	73.1	100.0	
Utilities	22	0.0	78.0	0.0	1.1	0.0	22.3	12.4	47.9	
Construction	23	0.0	0.0	0.0	0.1	0.0	13.5	81.1	65.5	
Wholesale trade	42	0.5	0.0	0.2	6.1	0.0	16.8	13.2	100.0	
Retail trade	44, 45	0.0	2.9	0.0	2.9	0.0	7.3	7.3	0.0	
Transportation and warehousing	48, 49	0.0	0.0	0.0	0.0	0.0	27.3	22.4	100.0	
Information	51	0.0	4.5	0.0	16.5	0.0	18.7	17.6	18.1	
Publishing	511	0.0	4.1	0.0	38.8	0.0	16.2	15.4	99.4	
Newspaper, periodical, book, and database	5111	0.0	20.0	0.0	42.9	0.0	13.7	11.1	0.0	
Software	5112	0.0	3.7	0.0	7.5	0.0	16.3	15.7	99.4	
Broadcasting and telecommunications	513	0.0	17.3	0.0	12.1	0.0	45.1	41.6	0.0	
Telecommunications	5133	0.0	23.6	0.0	12.9	0.0	47.0	42.9	0.0	
Other broadcasting and telecommunications	other 513	0.0	0.0	0.0	0.0	0.0	1.7	13.7	0.0	
Other information	other 51	0.0	4.2	0.0	0.0	0.0	16.7	15.1	3.2	
Finance, insurance, and real estate	52, 53	0.0	19.0	0.0	3.0	0.0	32.5	22.4	0.0	
Professional, scientific, and technical services	54	7.6	6.9	12.3	11.8	0.0	19.4	21.8	49.6	
Architectural, engineering, and related services	5413	4.9	2.1	0.0	20.4	0.0	7.7	11.7	40.8	
Computer systems design and related services	5415	0.0	7.0	26.1	5.7	0.0	18.5	14.9	46.7	
Scientific R&D services	5417	8.1	15.5	8.2	13.1	0.0	26.3	39.4	56.7	
Other professional, scientific, and technical services	other 54	0.0	5.4	2.2	6.7	0.0	37.4	39.7	73.2	
Health care services	621–23	27.4	0.0	0.0	0.2	0.0	64.6	35.8	24.2	
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	0.1	0.2	6.1	0.0	0.0	41.8	12.9	65.0	

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	R&D area					Scientists and engineers by source of funds		
		Biotechnology	Software development	Materials synthesis and processing	Other areas	% nanotechnology	Total	Company funded	Federally funded
Company size (employees)									
All companies	-	15.5	9.1	13.4	15.2	0.0	31.8	32.9	66.6
5-24	-	3.9	2.2	5.4	6.1	0.0	20.7	18.1	81.6
25-49	-	2.4	2.4	10.7	4.1	0.0	15.4	15.7	63.8
50-99	-	8.4	12.5	6.4	6.2	0.0	24.4	16.2	63.3
100-249	-	12.3	10.7	7.2	7.7	0.0	18.6	19.0	67.7
250-499	-	17.2	18.1	12.8	16.1	0.0	22.1	22.3	33.9
500-999	-	2.5	7.8	20.7	17.0	0.0	24.8	26.2	30.2
1,000-4,999	-	43.5	7.3	13.5	15.5	0.0	30.6	31.9	25.2
5,000-9,999	-	28.4	5.6	6.6	3.7	0.0	41.0	36.1	68.6
10,000-24,999	-	0.1	16.7	21.5	28.4	0.0	44.1	54.5	81.0
25,000 or more	-	5.3	8.1	14.3	17.2	0.0	34.1	33.7	74.1

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC								
		Total	By organizations more than 50% owned by the company						India	Ireland
			Puerto Rico	Canada	China	France	Germany			
All industries	21–23, 31–33, 42, 44–81	13.8	3.4	3.8	1.4	7.5	24.0	0.2	0.0	
Manufacturing industries	31–33	14.9	3.4	4.3	1.9	7.6	26.5	0.0	0.0	
Food	311	0.4	0.0	0.1	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	18.1	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	83.9	100.0	84.5	0.0	48.4	93.9	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	14.2	0.0	5.7	0.0	6.1	15.0	0.0	0.0	
Basic chemicals	3251	2.5	0.0	38.0	0.0	13.6	0.0	0.0	0.0	
Resin, synthetic rubber, fibers, and filament	3252	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pharmaceuticals and medicines	3254	15.5	0.0	5.5	0.0	6.2	30.9	0.0	0.0	
Other chemicals	other 325	15.4	0.0	7.7	0.0	2.4	4.8	0.0	0.0	
Plastics and rubber products	326	40.8	0.0	1.3	0.0	6.8	0.0	0.0	0.0	
Nonmetallic mineral products	327	7.7	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	0.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	
Machinery	333	14.9	0.0	19.1	0.0	23.0	6.2	0.0	0.0	
Computer and electronic products	334	7.3	96.1	7.1	3.8	20.3	9.1	0.0	0.0	
Computers and peripheral equipment	3341	3.7	0.0	11.0	0.0	0.0	0.0	0.0	0.0	
Communications equipment	3342	9.4	100.0	6.8	0.0	72.4	58.4	0.0	0.0	
Semiconductor and other electronic components	3344	14.4	0.0	6.6	4.1	40.6	10.5	0.0	0.0	
Navigational, measuring, electromedical, and control instruments	3345	9.2	0.0	0.0	0.0	1.8	0.0	0.0	0.0	
Other computer and electronic products	other 334	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Electrical equipment, appliances, and components	335	0.5	0.0	0.0	0.0	3.3	0.0	0.0	0.0	
Transportation equipment	336	19.5	0.0	0.0	0.0	0.0	32.2	0.0	0.0	
Motor vehicles, trailers, and parts	3361–63	21.5	0.0	0.0	0.0	0.0	33.2	0.0	0.0	
Aerospace products and parts	3364	6.3	0.0	0.0	0.0	0.0	6.6	0.0	0.0	
Other transportation equipment	other 336	32.6	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	15.0	0.0	4.3	0.0	4.4	9.8	0.0	0.0	
Medical equipment and supplies	3391	19.1	0.0	5.5	0.0	4.5	10.9	0.0	0.0	
Other miscellaneous manufacturing	other 339	0.6	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC							
		Total	By organizations more than 50% owned by the company						
			Puerto Rico	Canada	China	France	Germany	India	Ireland
Nonmanufacturing industries	21–23, 42, 44–81	8.3	0.0	2.4	0.0	5.5	2.6	0.3	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	38.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Retail trade	44, 45	23.8	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	5.7	0.0	1.0	0.0	0.9	4.0	0.4	0.0
Publishing	511	7.8	0.0	1.5	0.0	1.9	16.7	0.6	0.0
Newspaper, periodical, book, and database	5111	73.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Software	5112	6.8	0.0	1.5	0.0	1.9	16.7	0.6	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	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Finance, insurance, and real estate	52, 53	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Professional, scientific, and technical services	54	10.7	0.0	7.9	0.0	15.2	1.7	0.2	0.0
Architectural, engineering, and related services	5413	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer systems design and related services	5415	14.2	0.0	7.0	0.0	17.6	1.0	0.3	0.0
Scientific R&D services	5417	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other professional, scientific, and technical services	other 54	91.7	0.0	96.9	0.0	72.6	93.0	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 <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	0.9	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC							
		Total	By organizations more than 50% owned by the company						
			Puerto Rico	Canada	China	France	Germany	India	Ireland
Company size (employees)									
All companies	-	13.8	3.4	3.8	1.4	7.5	24.0	0.2	0.0
5-24	-	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	-	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-99	-	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-249	-	16.8	0.0	25.1	0.0	0.0	19.4	0.3	0.0
250-499	-	22.1	0.0	27.9	0.0	4.6	60.5	11.6	0.0
500-999	-	10.4	85.9	1.3	11.3	10.4	20.8	0.0	0.0
1,000-4,999	-	14.9	0.0	3.8	0.0	23.3	9.0	0.0	0.0
5,000-9,999	-	12.0	0.0	11.6	0.0	4.0	30.8	0.0	0.0
10,000-24,999	-	24.1	0.0	0.5	9.8	0.0	0.0	0.0	0.0
25,000 or more	-	11.7	1.9	2.3	0.0	5.8	28.6	0.0	0.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC						
		By organizations more than 50% owned by the company						
		Israel	Italy	Japan	Singapore	Sweden	United Kingdom	Other locations
All industries	21-23, 31-33, 42, 44-81	0.0	2.7	14.0	2.0	0.0	24.4	16.3
Manufacturing industries	31-33	0.0	2.9	17.2	2.1	0.0	28.2	13.9
Food	311	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
Textiles, apparel, and leather	313-16	0.0	0.0	0.0	0.0	0.0	0.0	10.4
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	0.0	99.8	0.0	0.0	85.4	93.8
Petroleum and coal products	324	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals	325	0.0	0.0	4.5	0.0	0.0	16.4	7.2
Basic chemicals	3251	0.0	0.0	26.0	0.0	0.0	3.1	6.7
Resin, synthetic rubber, fibers, and filament	3252	0.0	0.0	0.0	0.0	0.0	14.2	1.5
Pharmaceuticals and medicines	3254	0.0	0.0	3.2	0.0	0.0	17.4	7.4
Other chemicals	other 325	0.0	0.0	45.6	0.0	0.0	28.9	10.4
Plastics and rubber products	326	0.0	0.0	0.3	0.0	0.0	0.0	13.9
Nonmetallic mineral products	327	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
Fabricated metal products	332	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	43.0	52.8
Computer and electronic products	334	0.0	45.5	26.8	2.4	0.0	15.8	2.7
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	2.0	1.2
Communications equipment	3342	0.0	0.0	83.3	0.0	0.0	28.1	45.5
Semiconductor and other electronic components	3344	0.0	78.0	50.6	45.9	0.0	40.8	2.7
Navigational, measuring, electromedical, and control instruments	3345	0.0	0.0	0.0	0.0	0.0	5.6	5.2
Other computer and electronic products	other 334	0.0	0.0	69.1	0.0	0.0	0.0	1.6
Electrical equipment, appliances, and components	335	0.0	0.0	0.0	0.0	0.0	4.0	0.2
Transportation equipment	336	0.0	0.0	0.0	0.0	0.0	60.2	77.6
Motor vehicles, trailers, and parts	3361-63	0.0	0.0	0.0	0.0	0.0	69.3	91.3
Aerospace products and parts	3364	0.0	0.0	0.0	0.0	0.0	0.0	3.5
Other transportation equipment	other 336	0.0	0.0	0.0	0.0	0.0	0.0	50.5
Furniture and related products	337	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous manufacturing	339	0.0	0.0	24.9	0.0	0.0	15.7	39.9
Medical equipment and supplies	3391	0.0	0.0	26.9	0.0	0.0	54.9	54.0
Other miscellaneous manufacturing	other 339	0.0	0.0	2.2	0.0	0.0	0.5	1.0



TABLE A-5. Imputation rates for survey items, by industry and company size: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC						
		By organizations more than 50% owned by the company						
		Israel	Italy	Japan	Singapore	Sweden	United Kingdom	Other locations
Nonmanufacturing industries	21–23, 42, 44–81	0.0	0.0	1.1	0.0	0.0	11.7	49.9
Mining, extraction, and support activities	21	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
Construction	23	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
Retail trade	44, 45	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
Information	51	0.0	0.0	1.7	0.0	0.0	6.6	64.4
Publishing	511	0.0	0.0	1.8	0.0	0.0	9.4	44.5
Newspaper, periodical, book, and database	5111	0.0	0.0	0.0	0.0	0.0	9.0	0.0
Software	5112	0.0	0.0	1.8	0.0	0.0	9.4	44.5
Broadcasting and telecommunications	513	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
Other broadcasting and telecommunications	other 513	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	99.7
Finance, insurance, and real estate	52, 53	0.0	0.0	0.0	0.0	0.0	0.0	13.9
Professional, scientific, and technical services	54	0.0	0.0	0.1	0.0	0.0	26.5	28.7
Architectural, engineering, and related services	5413	0.0	0.0	0.0	0.0	0.0	0.0	34.4
Computer systems design and related services	5415	0.0	0.0	0.1	0.0	0.0	35.6	30.3
Scientific R&D services	5417	0.0	0.0	0.0	0.0	0.0	3.6	0.0
Other professional, scientific, and technical services	other 54	0.0	0.0	100.0	0.0	0.0	23.5	100.0
Health care services	621–23	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	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: 2004

(Percent)

Industry and company size	NAICS codes	Company-funded R&D performed outside of the 50 United States and DC						
		By organizations more than 50% owned by the company						
		Israel	Italy	Japan	Singapore	Sweden	United Kingdom	Other locations
Company size (employees)								
All companies	-	0.0	2.7	14.0	2.0	0.0	24.4	16.3
5-24	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	-	0.0	0.0	0.0	0.0	0.0	32.1	0.0
50-99	-	0.0	0.0	0.0	0.0	0.0	21.6	0.1
100-249	-	0.0	0.0	0.0	0.0	0.0	5.7	24.9
250-499	-	0.0	0.0	0.9	0.0	0.0	11.3	28.3
500-999	-	0.0	0.0	14.8	0.0	0.0	4.7	16.3
1,000-4,999	-	0.0	0.0	8.7	0.0	0.0	19.3	27.1
5,000-9,999	-	0.0	0.0	21.0	0.0	0.0	46.4	52.2
10,000-24,999	-	0.0	17.8	11.6	2.8	0.0	2.3	13.9
25,000 or more	-	0.0	0.0	15.6	0.0	0.0	35.0	13.0

TABLE A-5. Imputation rates for survey items, by industry and company size: 2004  
(Percent)

Industry and company size	NAICS codes	Energy R&D							
		Total				Federally funded			
		Fossil fuels	Geothermal and solar	Nuclear	All other energy sources	Fossil fuels	Geothermal and solar	Nuclear	All other energy sources
All industries	21-23, 31-33, 42, 44-81	11.9	16.7	0.0	1.0	0.0	0.0	0.0	2.0
Manufacturing industries	31-33	13.7	24.6	0.0	1.3	0.0	0.0	0.0	4.2
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	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	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	89.8	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	98.5	0.0	0.0	0.0	100.0
Machinery	333	6.2	0.0	0.0	65.2	0.0	0.0	0.0	0.0
Computer and electronic products	334	0.0	73.7	0.0	0.0	0.0	0.0	0.0	0.0
Computers and peripheral equipment	3341	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications equipment	3342	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Semiconductor and other electronic components	3344	0.0	73.7	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	0.0
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	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: 2004

(Percent)

Industry and company size	NAICS codes	Energy R&D							
		Total				Federally funded			
		Fossil fuels	Geothermal and solar	Nuclear	All other energy sources	Fossil fuels	Geothermal and solar	Nuclear	All other energy sources
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
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	0.0
Publishing	511	0.0	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	0.0	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	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
Health care services	621–23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other nonmanufacturing <sup>a</sup>	55, 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: 2004

(Percent)

Industry and company size	NAICS codes	Energy R&D							
		Total				Federally funded			
		Fossil fuels	Geothermal and solar	Nuclear	All other energy sources	Fossil fuels	Geothermal and solar	Nuclear	All other energy sources
Company size (employees)									
All companies	-	11.9	16.7	0.0	1.0	0.0	0.0	0.0	2.0
5-24	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-49	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-99	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-249	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250-499	-	0.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0
500-999	-	35.7	0.0	0.0	9.4	0.0	0.0	0.0	98.3
1,000-4,999	-	56.5	73.7	0.0	0.0	0.0	0.0	0.0	0.0
5,000-9,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,000-24,999	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- = not applicable.

<sup>a</sup> Estimates for management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. 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% of the value is imputed are noted with i. Cells in this table that contain 0.0 indicate that no imputation was performed or, if performed, imputation accounted for less than 0.1% 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: 2004.

TABLE A-6. R&D-performing companies that reported nonzero data for major survey items: 2004  
(Percent)

Survey item	Form RD-1	Form RD-1A
All R&D	100.0	100.0
Basic research	15.5	9.5
Company funded	14.2	9.0
Federally funded	3.4	0.8
Applied research	39.6	37.4
Company funded	38.2	35.9
Federally funded	6.3	2.9
Development	76.8	82.3
Company funded	75.5	80.8
Federally funded	6.7	2.7
Type of R&D expense		
Wages and salaries for R&D personnel	74.2	–
Fringe benefits for R&D personnel	64.7	–
Materials and supplies	68.0	–
R&D depreciation	55.8	–
Other costs	67.3	–
Company-funded R&D	97.0	96.5
Company-funded R&D performed by other organizations	27.4	17.3
For-profit companies	23.8	–
Federal agencies or laboratories	0.5	–
State government agencies or laboratories	0.4	–
Universities or colleges	7.3	–
Other nonprofit organizations	1.8	–
Company-funded collaborative R&D	10.6	–
For-profit companies	8.7	–
Federal agencies or laboratories	0.8	–
State government agencies or laboratories	0.2	–
Universities or colleges	3.4	–
Other nonprofit organizations	0.7	–
Company-funded R&D performed outside of the 50 states and D.C.	32.6	7.3
By organizations more than 50% owned by the company		
Puerto Rico	1.0	–
Canada	10.1	–
China	3.9	–
France	7.6	–
Germany	9.6	–
India	4.9	–
Ireland	2.5	–
Israel	1.9	–
Italy	3.5	–
Japan	5.5	–
Singapore	2.6	–
Sweden	2.6	–
United Kingdom	12.7	–
Other locations	14.6	–
Federal R&D	14.3	5.5
Energy R&D		
Fossil fuels	1.6	–
Geothermal and solar	0.6	–
Nuclear	0.2	–
All other energy sources	2.4	–
Federally funded		
Fossil fuels	0.4	–
Geothermal and solar	0.3	–
Nuclear	–	–
All other energy sources	0.8	–

TABLE A-6. R&D-performing companies that reported nonzero data for major survey items: 2004  
(Percent)

Survey item	Form RD-1	Form RD-1A
Sales	98.0	98.3
Domestic employment	99.3	99.0
R&D area		
Biotechnology	11.3	6.2
Software development	27.4	23.6
Materials synthesis and processing	16.7	23.1
Other technology areas	41.6	55.3
Percentage of nanotechnology	13.5	8.0
Scientists and engineers by source of funds	77.4	84.2
Company funded	73.9	–
Federally funded	7.8	–

– = not applicable, data not collected on Form RD-1A.

NOTES: Percentages are based on reported data for companies reporting 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 2004 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: 2004

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004

(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	41,029	208,301	20,266	188,035	4,487	6,596	687	5,909
Manufacturing industries	31–33	18,818	147,288	15,401	131,887	2,292	4,832	219	4,612
Food	311	973	2,254	5	2,249	81	D	D	D
Beverage and tobacco products	312	59	555 i	0	555 i	17	1	0	1
Textiles, apparel, and leather	313–16	498	570	3	568	63	17	D	D
Wood products	321	167	D	D	152	12	D	0	D
Paper, printing, and support activities	322, 323	442	D	D	2,308	8	D	D	D
Petroleum and coal products	324	98	1,603	9	1,595	9	20	0	20
Chemicals	325	2,026	D	D	39,070	437	D	D	D
Basic chemicals	3251	211	2,393	80	2,312	55	208	D	D
Resin, synthetic rubber, fibers, and filament	3252	100	2,096	16	2,080	25	D	0	D
Pharmaceuticals and medicines	3254	394	31,477	33	31,444	54	2,219	10	2,209
Other chemicals	other 325	1,320	D	D	3,234	302	D	D	D
Plastics and rubber products	326	1,184	D	D	1,879	123	D	0	D
Nonmetallic mineral products	327	386	787	5	783	50	63	0	63
Primary metals	331	534	727	21	705	216	17	0	17
Fabricated metal products	332	2,116	1,512	47	1,465	299	25	D	D
Machinery	333	3,235	6,579	105	6,473	279	50	*	50
Computer and electronic products	334	3,226	48,296	7,605	40,691	283	921	50	871
Computers and peripheral equipment	3341	430	5,734	27	5,707	37	D	0	D
Communications equipment	3342	548	D	D	8,433	43	D	D	D
Semiconductor and other electronic components	3344	876	D	D	17,524	66	D	D	271
Navigational, measuring, electromedical, and control instruments	3345	1,246	15,214	7,332	7,882	123	177	43	134
Other computer and electronic products	other 334	125	1,148	3	1,144	13	D	D	D
Electrical equipment, appliances, and components	335	826	2,664	42	2,622	57	30	D	D
Transportation equipment	336	927	D	D	26,019	72	D	D	D
Motor vehicles, trailers, and parts	3361–63	564	15,677	67	15,610	42	150	D	D
Aerospace products and parts	3364	160	13,086	3,862	9,224	17	440	D	D
Other transportation equipment	other 336	203	D	D	1,185	13	D	D	D
Furniture and related products	337	514	408	2	406	58	D	D	D
Miscellaneous manufacturing	339	1,610	4,388	39	4,348	228	104	5 i	99
Medical equipment and supplies	3391	661	3,343	30	3,313	84	88	D	D
Other miscellaneous manufacturing	other 339	949	1,045	10	1,035	144	16	D	D



TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004

(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	22,210	61,013	4,865	56,148	2,195	1,765	468	1,296
Mining, extraction, and support activities	21	91	D	D	714	26	D	0	D
Utilities	22	67	202	26	176	7	3	0	3
Construction	23	1,057	1,481	15	1,466	3	D	D	D
Wholesale Trade	42	3,459	D	D	1,540	507	D	0	D
Retail trade	44, 45	1,579	1,596	0	1,596	260	28	0	28
Transportation and warehousing	48, 49	270	D	D	347	2	D	0	D
Information	51	2,206	22,593	307	22,285	143	139	D	D
Publishing	511	1,301	D	D	17,273	121	D	D	53
Newspaper, periodical, book, and database	5111	61	763	0	763	7	1	0	1
Software	5112	1,240	D	D	16,510	114	D	D	52
Broadcasting and telecommunications	513	224	2,215	0	2,215	4	16 i	0	16 i
Telecommunications	5133	214	2,052	0	2,052	2	D	0	D
Other broadcasting and telecommunications	other 513	10	163	0	163	2	D	0	D
Other information	other 51	681	D	D	2,797	18	D	0	D
Finance, insurance, and real estate	52, 53	824	1,708	0	1,708	8	19	0	19
Professional, scientific, and technical services	54	9,845	28,709	4,464	24,245	966	1,280	442	838
Architectural, engineering, and related services	5413	2,107	4,265	1,970	2,295	146	122	D	D
Computer systems design and related services	5415	3,460	11,575	378	11,197	282	226	90	136
Scientific R&D services	5417	1,685	11,355	1,972	9,383	280	921	302	618
Other professional, scientific, and technical services	other 54	2,592	1,514	144	1,370	259	11	D	D
Health care services	621–23	1,581	500	5	495	254	6	D	D
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	1,232	1,595	19	1,576	18	D	D	D

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004  
(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	-	41,029	208,301	20,266	188,035	4,487	6,596	687	5,909
5-24	-	21,303	6,295	685	5,610	2,832	158	38	120
25-49	-	6,716	5,906	612	5,293	567	306	79	227
50-99	-	4,897	6,456	608	5,849	309	233	44	189
100-249	-	4,158	11,045	1,058	9,987	280	501	146	355
250-499	-	1,590	8,380	547	7,832	133	223	15	208
500-999	-	882	10,821	762	10,060	98	460	138	322
1,000-4,999	-	1,045	31,475	493	30,982	170	853	19	833
5,000-9,999	-	192	18,191	2,018	16,173	34	465	11	454
10,000-24,999	-	143	31,208	1,561	29,647	34	1,324	18	1,307
25,000 or more	-	102	78,523	11,923	66,600	30	2,073	179	1,893

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004  
(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	15,548	36,503	3,543	32,960	32,704	118,746	5,193	113,553
Manufacturing industries	31–33	7,310	24,574	1,999	22,575	15,424	85,377	3,414	81,963
Food	311	318	D	D	D	767	1,572	D	D
Beverage and tobacco products	312	13	D	0	D	52	D	0	D
Textiles, apparel, and leather	313–16	157	40	D	D	465	445	D	D
Wood products	321	41	45	0	45	127	D	D	D
Paper, printing, and support activities	322, 323	158	D	0	D	332	369	0	369
Petroleum and coal products	324	55	469	D	D	93	313	D	D
Chemicals	325	1,155	9,747	130	9,617	1,718	D	D	D
Basic chemicals	3251	123	606	D	D	177	1,252	D	D
Resin, synthetic rubber, fibers, and filament	3252	54	1,200	D	D	87	D	D	D
Pharmaceuticals and medicines	3254	189	6,849	18	6,830	323	20,147	4 i	20,143
Other chemicals	other 325	790	1,092	D	D	1,131	D	D	D
Plastics and rubber products	326	408	D	D	D	953	1,120	D	D
Nonmetallic mineral products	327	116	216	D	D	341	296	D	D
Primary metals	331	272	183	2	181	500	307	15	292
Fabricated metal products	332	820	176	D	D	1,731	852	D	D
Machinery	333	1,199	1,097	32	1,065	2,537	4,558	66	4,491
Computer and electronic products	334	1,252	6,992	147	6,845	2,614	27,824	1,119 i	26,705
Computers and peripheral equipment	3341	197	D	D	D	387	3,757	D	D
Communications equipment	3342	183	1,214	D	D	433	6,741	D	D
Semiconductor and other electronic components	3344	321	D	D	4,153	633	10,526	48	10,478
Navigational, measuring, electromedical, and control instruments	3345	488	1,182	87	1,095	1,055	5,913	950 i	4,963
Other computer and electronic products	other 334	63	D	D	D	106	888	0	888
Electrical equipment, appliances, and components	335	305	327	D	D	729	1,978	D	D
Transportation equipment	336	287	D	D	2,271	802	D	D	D
Motor vehicles, trailers, and parts	3361–63	155	1,511	D	D	501	8,375	D	D
Aerospace products and parts	3364	92	2,356	D	D	137	9,610	1,682	7,929
Other transportation equipment	other 336	41	D	1	D	164	D	D	D
Furniture and related products	337	155	D	0	D	453	340	D	D
Miscellaneous manufacturing	339	599	462	13	449	1,209	2,616	16	2,600
Medical equipment and supplies	3391	187	372	D	D	547	1,773 i	12	1,761
Other miscellaneous manufacturing	other 339	412	90	D	D	662	843	4	839

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004  
(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	8,238	11,928	1,544	10,385	17,280	33,369	1,779	31,590
Mining, extraction, and support activities	21	45	D	D	D	59	305	0	305
Utilities	22	31	49	D	D	43	131	D	D
Construction	23	269	866	D	D	1,049	D	D	D
Wholesale Trade	42	1,180	D	D	D	3,099	1,040	D	D
Retail trade	44, 45	1,034	943	0	943	1,317	593	0	593
Transportation and warehousing	48, 49	5	D	D	D	18	D	D	D
Information	51	598	2,872	17	2,855	1,906	10,284	D	D
Publishing	511	359	1,545	17	1,529	1,195	7,279	6	7,273
Newspaper, periodical, book, and database	5111	11	20	0	20	57	707	0	707
Software	5112	348	1,525	17	1,508	1,138	6,572	6	6,567
Broadcasting and telecommunications	513	112	899	0	899	167	488	0	488
Telecommunications	5133	108	842	0	842	159	D	0	D
Other broadcasting and telecommunications	other 513	4	58	0	58	8	D	0	D
Other information	other 51	127	427	0	427	544	2,517	D	D
Finance, insurance, and real estate	52, 53	520	132	0	132	810	1,495	0	1,495
Professional, scientific, and technical services	54	4,215	6,459	1,497	4,962	7,244	17,857	1,466	16,391
Architectural, engineering, and related services	5413	974	1,095	581	514	1,549	2,190	D	D
Computer systems design and related services	5415	943	1,035	73	962	2,654	9,742	150	9,592
Scientific R&D services	5417	1,027	3,766	718	3,048	1,213	5,029	688	4,340
Other professional, scientific, and technical services	other 54	1,272	563	125	438	1,828	897	D	D
Health care services	621–23	48	88	D	D	1,027	351	3	349
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	293	D	D	D	706	882	D	D

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004  
(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	-	15,548	36,503	3,543	32,960	32,704	118,746	5,193	113,553
5-24	-	8,362	2,232	372	1,860	16,373	3,474	196	3,279
25-49	-	2,504	1,902	243	1,659	5,222	3,556	273	3,282
50-99	-	1,477	1,573	223	1,351	4,143	4,091	209	3,882
100-249	-	1,799	2,738	334	2,403	3,694	6,943	442	6,501
250-499	-	493	1,703	212	1,491	1,350	5,498	249	5,249
500-999	-	326	2,596	260	2,337	720	7,042	337	6,705
1,000-4,999	-	412	5,184	98	5,086	879	22,251	368	21,883
5,000-9,999	-	66	4,479	182	4,297	147	9,799	383	9,416
10,000-24,999	-	67	7,216	145	7,071	104	15,752	477	15,275
25,000 or more	-	43	6,880	1,474	5,405	72	40,340	2,257	38,082

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Companies	Expenditures not distributed <sup>b</sup>		
			All funds	Federal	Company and other
All industries	21–23, 31–33, 42, 44–81	3,060	46,457	10,844	35,613
Manufacturing industries	31–33	1,330	32,506	9,769	22,736
Food	311	44	217	0	217
Beverage and tobacco products	312	5	415	0	415
Textiles, apparel, and leather	313–16	22	69	0	69
Wood products	321	29	6	0	6
Paper, printing, and support activities	322, 323	53	1,836	D	D
Petroleum and coal products	324	3	801	2	799
Chemicals	325	92	2,988	3	2,985
Basic chemicals	3251	17	326	2	324
Resin, synthetic rubber, fibers, and filament	3252	4	1	0	1
Pharmaceuticals and medicines	3254	22	2,262	1	2,261
Other chemicals	other 325	48	399	0	399
Plastics and rubber products	326	65	354	0	354
Nonmetallic mineral products	327	16	212	D	D
Primary metals	331	13	220	4	216
Fabricated metal products	332	194	460	*	460
Machinery	333	200	875	7	868
Computer and electronic products	334	282	12,560	6,289	6,271
Computers and peripheral equipment	3341	15	1,664	0	1,664
Communications equipment	3342	80	233	0	233
Semiconductor and other electronic components	3344	115	D	D	2,623
Navigational, measuring, electromedical, and control instruments	3345	68	7,942	6,252	1,690
Other computer and electronic products	other 334	4	D	D	61
Electrical equipment, appliances, and components	335	47	329	*	329
Transportation equipment	336	70	9,915	3,435	6,480
Motor vehicles, trailers, and parts	3361–63	34	5,641	8	5,634
Aerospace products and parts	3364	8	679	436	243
Other transportation equipment	other 336	29	3,595	2,991	603
Furniture and related products	337	19	44	0	44
Miscellaneous manufacturing	339	175	1,206	5	1,201
Medical equipment and supplies	3391	39	1,110	4	1,107
Other miscellaneous manufacturing	other 339	136	96	1	94

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Expenditures not distributed <sup>b</sup>			
		Companies	All funds	Federal	Company and other
Nonmanufacturing industries	21–23, 42, 44–81	1,730	13,951	1,075	12,877
Mining, extraction, and support activities	21	3	313	0	313
Utilities	22	7	20	0	20
Construction	23	2	34	0	34
Wholesale Trade	42	85	169	*	169
Retail trade	44, 45	2	32	0	32
Transportation and warehousing	48, 49	251	259	0	259
Information	51	87	9,298	15	9,283
Publishing	511	47	8,433	15	8,419
Newspaper, periodical, book, and database	5111	2	36	0	36
Software	5112	45	8,398	15	8,383
Broadcasting and telecommunications	513	5	812	0	812
Telecommunications	5133	5	812	0	812
Other broadcasting and telecommunications	other 513	0	0	0	0
Other information	other 51	35	52	0	52
Finance, insurance, and real estate	52, 53	5	62	0	62
Professional, scientific, and technical services	54	516	3,113	1,059	2,053
Architectural, engineering, and related services	5413	88	858	731	127
Computer systems design and related services	5415	303	572	65	507
Scientific R&D services	5417	120	1,640	263	1,377
Other professional, scientific, and technical services	other 54	5	43	0	43
Health care services	621–23	511	54	0	54
Other nonmanufacturing <sup>a</sup>	55, 56, 61, 624, 71, 72, 81	261	598	*	598

TABLE A-7. Funds for and number of companies performing industrial basic research, applied research, and development, in the United States and funds not distributed, by industry and company size, by source of funds: 2004

(Millions of dollars)

Industry and company size	NAICS codes	Expenditures not distributed <sup>b</sup>			
		Companies	All funds	Federal	Company and other
Company size (employees)					
All companies	-	3,060	46,457	10,844	35,613
5-24	-	1,776	431	80	351
25-49	-	476	142	17	126
50-99	-	269	559	132	427
100-249	-	183	864	135	728
250-499	-	91	955	71	884
500-999	-	69	723	27	696
1,000-4,999	-	100	3,187	7	3,180
5,000-9,999	-	33	3,449	1,442	2,007
10,000-24,999	-	35	6,916	921	5,995
25,000 or more	-	29	29,231	8,012	21,219

\* = amount < \$500,000; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; - = not applicable.

<sup>a</sup> Estimates for wholesale trade (NAICS 42) and management of companies and enterprises (NAICS 55), formerly shown separately, now are included in other nonmanufacturing.

<sup>b</sup> The amounts of undistributed R&D are distributed among basic research, applied research, and development in table 28.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Excludes 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: 2004.



TABLE A-8. Funds for industrial R&amp;D, sales, and employment for companies performing industrial R&amp;D in the United States, by industry and company size: 2003–04

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		2003	2004	2003	2004	2003	2004
		\$millions					
All industries	21–23, 31–33, 42, 44–81	200,724 r	208,301	17,798 r	20,266	182,926 r	188,035
Manufacturing industries	31–33	120,858 r	147,288	13,133 r	15,401	107,725 r	131,887
Food	311	D	2,254	D	5	1,987	2,249
Beverage and tobacco products	312	173	555 i	0	0	173	555 i
Textiles, apparel, and leather	313–16	D	570	D	3	309	568
Wood products	321	D	D	D	D	138	152
Paper, printing, and support activities	322, 323	D	D	D	D	2,909	2,308
Petroleum and coal products	324	D	1,603	D	9	1,308	1,595
Chemicals	325	23,001	D	307	D	22,693	39,070
Basic chemicals	3251	2,061	2,393	70	80	1,991	2,312
Resin, synthetic rubber, fibers, and filament	3252	2,406	2,096	16	16	2,390	2,080
Pharmaceuticals and medicines	3254	D	31,477	D	33	15,949	31,444
Other chemicals	other 325	D	D	D	D	2,364	3,234
Plastics and rubber products	326	1,764	D	35	D	1,729	1,879
Nonmetallic mineral products	327	474	787	4	5	470	783
Primary metals	331	530	727	12	21	518	705
Fabricated metal products	332	1,374	1,512	45	47	1,329	1,465
Machinery	333	6,304	6,579	80	105	6,224	6,473
Computer and electronic products	334	39,001	48,296	6,506	7,605	32,495	40,691
Computers and peripheral equipment	3341	2,587	5,734	27 i	27	2,561	5,707
Communications equipment	3342	9,198	D	266	D	8,932	8,433
Semiconductor and other electronic components	3344	12,635	D	28	D	12,607	17,524
Navigational, measuring, electromedical, and control instruments	3345	14,014	15,214	6,180	7,332	7,834	7,882
Other computer and electronic products	other 334	566	1,148	6	3	560	1,144
Electrical equipment, appliances, and components	335	2,073	2,664	71	42	2,002	2,622
Transportation equipment	336	31,747 r	D	5,990 r	D	25,757 r	26,019
Motor vehicles, trailers, and parts	3361–63	D	15,677	D	67	16,874	15,610
Aerospace products and parts	3364	13,205 r	13,086	5,356 r	3,862	7,849 r	9,224
Other transportation equipment	other 336	D	D	D	D	1,034	1,185
Furniture and related products	337	D	408	D	2	275	406
Miscellaneous manufacturing	339	7,455	4,388	47	39	7,408	4,348
Medical equipment and supplies	3391	6,386	3,343	17	30	6,370	3,313
Other miscellaneous manufacturing	other 339	1,069	1,045	31	10	1,038	1,035

TABLE A-8. Funds for industrial R&amp;D, sales, and employment for companies performing industrial R&amp;D in the United States, by industry and company size: 2003–04

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		2003	2004	2003	2004	2003	2004
\$millions							
Nonmanufacturing industries	21–23, 42, 44–81	79,866 r	61,013	4,665 r	4,865	75,201 r	56,148
Mining, extraction, and support activities	21	D	D	D	D	750	714
Utilities	22	D	202	D	26	128	176
Construction	23	333	1,481	79	15	254	1,466
Wholesale trade	42	25,092	D	122	D	24,970	1,540
Professional and commercial equipment and supplies, including computers	4214	D	NA	D	NA	9,679	NA
Electrical goods	4216	D	NA	D	NA	3,701	NA
Drugs and druggists' sundries	4222	D	NA	D	NA	9,494	NA
Other wholesale trade	other 42	2,099	NA	2	NA	2,097	NA
Retail trade	44, 45	1,488	1,596	26	0	1,462	1,596
Transportation and warehousing	48, 49	272	D	*	D	272	347
Information	51	D	22,593	D	307	19,811	22,285
Publishing	511	D	D	D	D	15,760	17,273
Newspaper, periodical, book, and database	5111	665	763	*	0	665	763
Software	5112	D	D	D	D	15,095	16,510
Broadcasting and telecommunications	513	1,663	2,215	0	0	1,663	2,215
Telecommunications	5133	1,625	2,052	0	0	1,625	2,052
Other broadcasting and telecommunications	other 513	38	163	0	0	38	163
Other information	other 51	D	D	D	D	2,388	2,797
Finance, insurance, and real estate	52, 53	1,455	1,708	0	0	1,455	1,708
Professional, scientific, and technical services	54	27,967 r	28,709	4,237 r	4,464	23,730 r	24,245
Architectural, engineering, and related services	5413	5,159	4,265	1,898	1,970	3,261	2,295
Computer systems design and related services	5415	9,032 r	11,575	419 r	378	8,613 r	11,197
Scientific R&D services	5417	12,460	11,355	1,886	1,972	10,574	9,383
Other professional, scientific, and technical services	other 54	1,316	1,514	34	144	1,283	1,370
Management of companies and enterprises	55	67 i	NA	0	NA	67 i	NA
Health care services	621–23	717	500	36	5	681	495
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1,679	1,595	60 i	19	1,619	1,576

TABLE A-8. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2003–04

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		2003	2004	2003	2004	2003	2004
\$millions							
Company size (employees)							
All companies	-	200,724 r	208,301	17,798 r	20,266	182,926 r	188,035
5–24	-	5,578	6,295	754	685	4,824	5,610
25–49	-	6,449	5,906	910	612	5,540	5,293
50–99	-	4,829	6,456	559	608	4,271	5,849
100–249	-	9,559	11,045	636	1,058	8,924	9,987
250–499	-	9,536	8,380	668	547	8,869	7,832
500–999	-	10,383	10,821	759	762	9,624	10,060
1,000–4,999	-	30,484	31,475	1,088	493	29,396	30,982
5,000–9,999	-	15,434	18,191	1,101	2,018	14,333	16,173
10,000–24,999	-	26,817 r	31,208	1,266 r	1,561	25,551 r	29,647
25,000 or more	-	81,654 r	78,523	10,059 r	11,923	71,595 r	66,600

TABLE A-8. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2003–04

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		2003	2004	2004	2005	2003	2004
		\$millions		Thousands			
All industries	21–23, 31–33, 42, 44–81	5,745,754 r	5,601,729	1,153.4 r	1,111.3	15,329 r	14,820
Manufacturing industries	31–33	3,494,275	3,871,294	649.5	717.0	8,971	9,399
Food	311	316,218	347,396	D	11.7	945	876
Beverage and tobacco products	312	37,564	43,292	0.8	4.7 i	61	100
Textiles, apparel, and leather	313–16	30,875	48,859	D	5.8	187	256
Wood products	321	19,291	35,066	1.1	D	97	151
Paper, printing, and support activities	322, 323	264,258	155,801	D	D	595	475
Petroleum and coal products	324	403,789	408,956	3.9 i	D	197	169
Chemicals	325	406,230	595,292	91.3	118.6	864	1,073
Basic chemicals	3251	74,584	109,200	D	10.6	164	179
Resin, synthetic rubber, fibers, and filament	3252	65,821	67,610	D	9.4	122	100
Pharmaceuticals and medicines	3254	191,886	315,180	56.3	79.9	341	469
Other chemicals	other 325	73,939	103,302	13.9	18.6	237	325
Plastics and rubber products	326	83,148	120,670	11.9	14.1	448	429
Nonmetallic mineral products	327	48,935	43,155	6.1 i	6.5 i	198	179
Primary metals	331	74,237	101,868	4.1 i	4.9	267	274
Fabricated metal products	332	88,212	102,935	13.5	15.7	463	482
Machinery	333	149,563	178,618	55.3	62.6	686	665
Computer and electronic products	334	338,319	506,103	228.4 i	273.3	1,111	1,373
Computers and peripheral equipment	3341	44,483	122,494	13.8	45.1	73	247
Communications equipment	3342	61,208	88,381	56.0 i	49.9	169	210
Semiconductor and other electronic components	3344	114,062	162,398	76.0	97.4	367	411
Navigational, measuring, electromedical, and control instruments	3345	108,824	110,416	78.2 i	74.6 i	470	450
Other computer and electronic products	other 334	9,742	22,415	4.4	6.2	32	55
Electrical equipment, appliances, and components	335	92,258	95,715	16.4	19.4	311	345
Transportation equipment	336	974,163	946,474	144.5	134.1	1,939	1,956
Motor vehicles, trailers, and parts	3361–63	703,834	643,079	D	D	1,041	1,039
Aerospace products and parts	3364	232,326	228,018	40.6	37.9	751	622
Other transportation equipment	other 336	38,003	75,377	D	D	147	295
Furniture and related products	337	33,780	51,578	2.6	2.9	203	241
Miscellaneous manufacturing	339	133,435	89,515	24.6	21.8	399	355
Medical equipment and supplies	3391	101,199	56,713	16.1	13.9	242	211
Other miscellaneous manufacturing	other 339	32,236	32,802	8.5	7.9	157	143

TABLE A-8. Funds for industrial R&amp;D, sales, and employment for companies performing industrial R&amp;D in the United States, by industry and company size: 2003–04

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		2003	2004	2004	2005	2003	2004
		\$millions		Thousands			
Nonmanufacturing industries	21–23, 42, 44–81	2,251,478 r	1,730,435	503.8 r	394.3	6,358 r	5,421
Mining, extraction, and support activities	21	22,724	29,753	D	D	88	97
Utilities	22	191,130	170,637	D	0.8	253	255
Construction	23	20,705	56,118	2.7 i	D	94	160
Wholesale trade	42	692,402	68,879	127.0	15.5	1,165	155
Professional and commercial equipment and supplies, including computers	4214	121,459	NA	D	NA	494	NA
Electrical goods	4216	56,246	NA	D	NA	139	NA
Drugs and druggists' sundries	4222	81,931	NA	22.6	NA	157	NA
Other wholesale trade	other 42	432,765	NA	19.5	NA	375	NA
Retail trade	44, 45	187,146	191,632	11.7	15.3	649	603
Transportation and warehousing	48, 49	69,421	74,235	D	D	591	597
Information	51	347,081	445,652	D	131.5	1,227	1,233
Publishing	511	88,105	90,234	112.2	98.5	374	343
Newspaper, periodical, book, and database	5111	23,592	19,230	5.9	4.8	139	105
Software	5112	64,514	71,004	106.4	93.7	235	238
Broadcasting and telecommunications	513	211,132	291,646	11.6 i	10.9	693	697 i
Telecommunications	5133	210,257	D	11.3 i	10.4	689	D
Other broadcasting and telecommunications	other 513	874	D	**	**	4	D
Other information	other 51	47,844	63,772	D	22.0	160	192
Finance, insurance, and real estate	52, 53	424,438	440,122	19.2	22.3	747	857
Professional, scientific, and technical services	54	230,523 r	185,812	165.0 r	174.1	908 r	957
Architectural, engineering, and related services	5413	41,893	34,885	38.3	41.4	208	157
Computer systems design and related services	5415	85,325 r	95,541	62.2 r	74.5	293 r	485
Scientific R&D services	5417	64,592 i	31,729	46.9	44.7	175	163
Other professional, scientific, and technical services	other 54	38,713	23,658	17.6	13.5	233	152
Management of companies and enterprises	55	1,611	NA	0.5 i	NA	7	NA
Health care services	621–23	31,054	27,638	14.1	6.0 i	133	160
Other nonmanufacturing	56, 61, 624, 71, 72, 81	33,243	39,957	13.1	10.9	495	348

TABLE A-8. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by industry and company size: 2003–04

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		2003	2004	2004	2005	2003	2004
		\$millions		Thousands			
Company size (employees)							
All companies	-	5,745,754 r	5,601,729	1,153.4 r	1,111.3	15,329 r	14,820
5–24	-	215,378	111,868 i	51.4	66.2	193	240
25–49	-	189,295	46,138	57.2	43.4	295	236
50–99	-	108,435	101,559	38.0	44.1	296	356
100–249	-	511,737	180,436	80.2	73.1	603	635
250–499	-	134,553	152,243	74.1	52.3	541	545
500–999	-	164,830	217,014	64.1	59.3	649	610
1,000–4,999	-	708,787	828,300	167.5	173.8	2,255	2,325
5,000–9,999	-	542,406	571,170	102.2	96.6	1,472	1,373
10,000–24,999	-	898,213 r	993,497	168.5 r	178.9	2,591 r	2,243
25,000 or more	-	2,272,119	2,399,505	350.2	323.6	6,434	6,258

\* = amount < \$500,000; \*\* = amount < 50; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; NA = not available; r = data significantly revised, replaces previously published data; - = not applicable.

<sup>a</sup> Data recorded each year in January represent employment for the previous year.

NOTES: The method used to assign industry classifications has changed; industry-specific estimates for 2004 are not directly comparable with those for previous years. Estimates for wholesale trade (NAICS 42) and management of companies and enterprises (NAICS 55) are shown separately for 2003; for 2004 the data are included in other nonmanufacturing. Excludes 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: 2004.

TABLE A-9. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by original (2003) industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
\$millions							
All industries	21–23, 31–33, 42, 44–81	208,301	208,301	20,266	20,266	188,035	188,035
Manufacturing industries	31–33	109,455	147,288	15,345	15,401	94,110	131,887
Food	311	2,122	2,254	4	5	2,119	2,249
Beverage and tobacco products	312	546 i	555 i	0	0	546 i	555 i
Textiles, apparel, and leather	313–16	344	570	3	3	341	568
Wood products	321	D	D	D	D	148	152
Paper, printing, and support activities	322, 323	D	D	D	D	2,307	2,308
Petroleum and coal products	324	D	1,603	D	9	1,349	1,595
Chemicals	325	D	D	D	D	22,682	39,070
Basic chemicals	3251	2,228	2,393	80	80	2,148	2,312
Resin, synthetic rubber, fibers, and filament	3252	2,059	2,096	16	16	2,043	2,080
Pharmaceuticals and medicines	3254	15,935	31,477	29	33	15,906	31,444
Other chemicals	other 325	D	D	D	D	2,586	3,234
Plastics and rubber products	326	D	D	D	D	1,875	1,879
Nonmetallic mineral products	327	787	787	5	5	782	783
Primary metals	331	713	727	21	21	691	705
Fabricated metal products	332	1,506	1,512	47	47	1,459	1,465
Machinery	333	6,422	6,579	104	105	6,318	6,473
Computer and electronic products	334	29,963	48,296	7,556	7,605	22,407	40,691
Computers and peripheral equipment	3341	2,543	5,734	26	27	2,517	5,707
Communications equipment	3342	D	D	D	D	3,356	8,433
Semiconductor and other electronic components	3344	D	D	D	D	8,821	17,524
Navigational, measuring, electromedical, and control instruments	3345	14,079	15,214	7,332	7,332	6,747	7,882
Other computer and electronic products	other 334	968	1,148	3	3	965	1,144
Electrical equipment, appliances, and components	335	2,276	2,664	41	42	2,235	2,622
Transportation equipment	336	D	D	D	D	25,276	26,019
Motor vehicles, trailers, and parts	3361–63	14,969	15,677	67	67	14,903	15,610
Aerospace products and parts	3364	13,086	13,086	3,862	3,862	9,224	9,224
Other transportation equipment	other 336	D	D	D	D	1,149	1,185
Furniture and related products	337	408	408	2	2	406	406
Miscellaneous manufacturing	339	3,208	4,388	39	39	3,169	4,348
Medical equipment and supplies	3391	2,383	3,343	30	30	2,354	3,313
Other miscellaneous manufacturing	other 339	825	1,045	10	10	815	1,035

TABLE A-9. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by original (2003) industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
\$millions							
Nonmanufacturing industries	21–23, 42, 44–81	98,846	61,013	4,921	4,865	93,925	56,148
Mining, extraction, and support activities	21	D	D	D	D	714	714
Utilities	22	202	202	26	26	176	176
Construction	23	1,417	1,481	15	15	1,402	1,466
Wholesale trade	42	D	D	D	D	38,576	1,540
Professional and commercial equipment and supplies, including computers	4214	D	D	D	D	10,544	809
Electrical goods	4216	13,618	185	49	13	13,570	172
Drugs and druggists' sundries	4222	12,931	116	18	15	12,913	101
Other wholesale trade	other 42	1,550	459	2	*	1,549	459
Retail trade	44, 45	1,486	1,596	0	0	1,486	1,596
Transportation and warehousing	48, 49	D	D	D	D	342	347
Information	51	20,956	22,593	307	307	20,649	22,285
Publishing	511	D	D	D	D	15,837	17,273
Newspaper, periodical, book, and database	5111	763	763	0	0	763	763
Software	5112	D	D	D	D	15,074	16,510
Broadcasting and telecommunications	513	2,097	2,215	0	0	2,097	2,215
Telecommunications	5133	2,016	2,052	0	0	2,016	2,052
Other broadcasting and telecommunications	other 513	82	163	0	0	82	163
Other information	other 51	D	D	D	D	2,715	2,797
Finance, insurance, and real estate	52, 53	1,535	1,708	0	0	1,535	1,708
Professional, scientific, and technical services	54	27,299	28,709	4,355	4,464	22,944	24,245
Architectural, engineering, and related services	5413	4,229	4,265	1,970	1,970	2,259	2,295
Computer systems design and related services	5415	6,309	11,575	234	378	6,074	11,197
Scientific R&D services	5417	15,264	11,355	2,007	1,972	13,258	9,383
Other professional, scientific, and technical services	other 54	1,496	1,514	144	144	1,353	1,370
Management of companies and enterprises	55	4,126	41	50	* i	4,076	41
Health care services	621–23	500	500	5	5	495	495
Other nonmanufacturing	56, 61, 624, 71, 72, 81	1,548	1,554	19	19	1,529	1,535



TABLE A-9. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by original (2003) industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
\$millions							
Company size (employees)							
All companies	-	208,301	208,301	20,266	20,266	188,035	188,035
5-24	-	6,295	6,295	685	685	5,610	5,610
25-49	-	5,906	5,906	612	612	5,293	5,293
50-99	-	6,456	6,456	608	608	5,849	5,849
100-249	-	11,045	11,045	1,058	1,058	9,987	9,987
250-499	-	8,380	8,380	547	547	7,832	7,832
500-999	-	10,821	10,821	762	762	10,060	10,060
1,000-4,999	-	31,475	31,475	493	493	30,982	30,982
5,000-9,999	-	18,191	18,191	2,018	2,018	16,173	16,173
10,000-24,999	-	31,208	31,208	1,561	1,561	29,647	29,647
25,000 or more	-	78,523	78,523	11,923	11,923	66,600	66,600

TABLE A-9. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by original (2003) industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
		\$millions		Thousands			
All industries	21–23, 31–33, 42, 44–81	5,601,729	5,601,729	1,111.3	1,111.3	14,820	14,820
Manufacturing industries	31–33	3,372,725	3,871,294	544.7	717.0	8,507	9,399
Food	311	330,450	347,396	11.1	11.7	844	876
Beverage and tobacco products	312	40,351	43,292	4.6 i	4.7 i	96	100
Textiles, apparel, and leather	313–16	39,013	48,859	4.2 i	5.8	234	256
Wood products	321	22,841	35,066	D	D	101	151
Paper, printing, and support activities	322, 323	155,753	155,801	D	D	475	475
Petroleum and coal products	324	408,826	408,956	D	D	168	169
Chemicals	325	418,210	595,292	71.5	118.6	811	1,073
Basic chemicals	3251	105,834	109,200	10.2	10.6	173	179
Resin, synthetic rubber, fibers, and filament	3252	63,950	67,610	9.3	9.4	96	100
Pharmaceuticals and medicines	3254	160,630	315,180	37.2	79.9	276	469
Other chemicals	other 325	87,796	103,302	14.8	18.6	266	325
Plastics and rubber products	326	116,771	120,670	14.0	14.1	426	429
Nonmetallic mineral products	327	43,044	43,155	6.5 i	6.5 i	178	179
Primary metals	331	98,434	101,868	4.9	4.9	268	274
Fabricated metal products	332	102,206	102,935	15.6	15.7	479	482
Machinery	333	170,369	178,618	60.9	62.6	648	665
Computer and electronic products	334	295,406	506,103	160.1	273.3	990	1,373
Computers and peripheral equipment	3341	51,670	122,494	14.9	45.1	88	247
Communications equipment	3342	39,384	88,381	23.8	49.9	144	210
Semiconductor and other electronic components	3344	93,131	162,398	46.5 i	97.4	305	411
Navigational, measuring, electromedical, and control instruments	3345	99,908	110,416	69.3 i	74.6 i	419	450
Other computer and electronic products	other 334	11,314	22,415	5.6	6.2	34	55
Electrical equipment, appliances, and components	335	88,917	95,715	17.3	19.4	322	345
Transportation equipment	336	918,515	946,474	131.8	134.1	1,937	1,956
Motor vehicles, trailers, and parts	3361–63	618,332	643,079	D	D	1,027	1,039
Aerospace products and parts	3364	228,018	228,018	37.9	37.9	622	622
Other transportation equipment	other 336	72,165	75,377	D	D	288	295
Furniture and related products	337	51,578	51,578	2.9	2.9	241	241
Miscellaneous manufacturing	339	72,040	89,515	18.9	21.8	289	355
Medical equipment and supplies	3391	45,513	56,713	11.8	13.9	168	211
Other miscellaneous manufacturing	other 339	26,527	32,802	7.0	7.9	120	143

TABLE A-9. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by original (2003) industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
		\$millions		Thousands			
Nonmanufacturing industries	21–23, 42, 44–81	2,229,003	1,730,435	566.6	394.3	6,314	5,421
Mining, extraction, and support activities	21	29,543	29,753	D	D	96	97
Utilities	22	170,637	170,637	0.8	0.8	255	255
Construction	23	51,859	56,118	D	D	156	160
Wholesale trade	42	566,333	68,879	189.1	15.5	1,202	155
Professional and commercial equipment and supplies, including computers	4214	143,567	14,443	64.8	5.8	488	42
Electrical goods	4216	125,630	12,126	73.8	2.0	217	16
Drugs and druggists' sundries	4222	157,798	2,712	36.3	0.6	205	9
Other wholesale trade	other 42	139,338	39,598	14.2	7.1	292	88
Retail trade	44, 45	182,334	191,632	15.0	15.3	585	603
Transportation and warehousing	48, 49	74,198	74,235	D	D	597	597
Information	51	409,995	445,652	123.9	131.5	1,104	1,233
Publishing	511	83,174	90,234	91.9	98.5	313	343
Newspaper, periodical, book, and database	5111	19,230	19,230	4.8	4.8	105	105
Software	5112	63,944	71,004	87.1	93.7	208	238
Broadcasting and telecommunications	513	264,250 i	291,646	10.5	10.9	607 i	697 i
Telecommunications	5133	D	D	10.2	10.4	D	D
Other broadcasting and telecommunications	other 513	D	D	**	**	D	D
Other information	other 51	62,571	63,772	21.5	22.0	184	192
Finance, insurance, and real estate	52, 53	438,244	440,122	20.5	22.3	849	857
Professional, scientific, and technical services	54	154,090	185,812	161.3	174.1	763	957
Architectural, engineering, and related services	5413	34,378	34,885	41.1	41.4	154	157
Computer systems design and related services	5415	56,205	95,541	51.8	74.5	277	485
Scientific R&D services	5417	39,975	31,729	55.1	44.7	180	163
Other professional, scientific, and technical services	other 54	23,531	23,658	13.4	13.5	152	152
Management of companies and enterprises	55	85,799	1,134	22.1	**	207	6
Health care services	621–23	27,638	27,638	6.0 i	6.0 i	160	160
Other nonmanufacturing	56, 61, 624, 71, 72, 81	38,333	38,823	10.3	10.4	340	342

TABLE A-9. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by original (2003) industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
		\$millions		Thousands			
Company size (employees)							
All companies	-	5,601,729	5,601,729	1,111.3	1,111.3	14,820	14,820
5-24	-	111,868 i	111,868 i	66.2	66.2	240	240
25-49	-	46,138	46,138	43.4	43.4	236	236
50-99	-	101,559	101,559	44.1	44.1	356	356
100-249	-	180,436	180,436	73.1	73.1	635	635
250-499	-	152,243	152,243	52.3	52.3	545	545
500-999	-	217,014	217,014	59.3	59.3	610	610
1,000-4,999	-	828,300	828,300	173.8	173.8	2,325	2,325
5,000-9,999	-	571,170	571,170	96.6	96.6	1,373	1,373
10,000-24,999	-	993,497	993,497	178.9	178.9	2,243	2,243
25,000 or more	-	2,399,505	2,399,505	323.6	323.6	6,258	6,258

\* = amount < \$500,000; \*\* = amount < 50; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; NA = not available; - = not applicable.

<sup>a</sup> Data recorded each year in January represent employment for the previous year.

NOTES: Estimates for wholesale trade (NAICS 42) and management of companies and enterprises (NAICS 55) are shown separately. 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: 2004.

TABLE A-10. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by revised industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
\$millions							
All industries	21–23, 31–33, 42, 44–81	208,301	208,301	20,266	20,266	188,035	188,035
Manufacturing industries	31–33	109,455	147,288	15,345	15,401	94,110	131,887
Food	311	2,122	2,254	4	5	2,119	2,249
Beverage and tobacco products	312	546 i	555 i	0	0	546 i	555 i
Textiles, apparel, and leather	313–16	344	570	3	3	341	568
Wood products	321	D	D	D	D	148	152
Paper, printing, and support activities	322, 323	D	D	D	D	2,307	2,308
Petroleum and coal products	324	D	1,603	D	9	1,349	1,595
Chemicals	325	D	D	D	D	22,682	39,070
Basic chemicals	3251	2,228	2,393	80	80	2,148	2,312
Resin, synthetic rubber, fibers, and filament	3252	2,059	2,096	16	16	2,043	2,080
Pharmaceuticals and medicines	3254	15,935	31,477	29	33	15,906	31,444
Other chemicals	other 325	D	D	D	D	2,586	3,234
Plastics and rubber products	326	D	D	D	D	1,875	1,879
Nonmetallic mineral products	327	787	787	5	5	782	783
Primary metals	331	713	727	21	21	691	705
Fabricated metal products	332	1,506	1,512	47	47	1,459	1,465
Machinery	333	6,422	6,579	104	105	6,318	6,473
Computer and electronic products	334	29,963	48,296	7,556	7,605	22,407	40,691
Computers and peripheral equipment	3341	2,543	5,734	26	27	2,517	5,707
Communications equipment	3342	D	D	D	D	3,356	8,433
Semiconductor and other electronic components	3344	D	D	D	D	8,821	17,524
Navigational, measuring, electromedical, and control instruments	3345	14,079	15,214	7,332	7,332	6,747	7,882
Other computer and electronic products	other 334	968	1,148	3	3	965	1,144
Electrical equipment, appliances, and components	335	2,276	2,664	41	42	2,235	2,622
Transportation equipment	336	D	D	D	D	25,276	26,019
Motor vehicles, trailers, and parts	3361–63	14,969	15,677	67	67	14,903	15,610
Aerospace products and parts	3364	13,086	13,086	3,862	3,862	9,224	9,224
Other transportation equipment	other 336	D	D	D	D	1,149	1,185
Furniture and related products	337	408	408	2	2	406	406
Miscellaneous manufacturing	339	3,208	4,388	39	39	3,169	4,348
Medical equipment and supplies	3391	2,383	3,343	30	30	2,354	3,313
Other miscellaneous manufacturing	other 339	825	1,045	10	10	815	1,035

TABLE A-10. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by revised industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
\$millions							
Nonmanufacturing industries	21–23, 42, 44–81	98,846	61,013	4,921	4,865	93,925	56,148
Mining, extraction, and support activities	21	D	D	D	D	714	714
Utilities	22	202	202	26	26	176	176
Construction	23	1,417	1,481	15	15	1,402	1,466
Wholesale trade	42	D	D	D	D	38,576	1,540
Retail trade	44, 45	1,486	1,596	0	0	1,486	1,596
Transportation and warehousing	48, 49	D	D	D	D	342	347
Information	51	20,956	22,593	307	307	20,649	22,285
Publishing	511	D	D	D	D	15,837	17,273
Newspaper, periodical, book, and database	5111	763	763	0	0	763	763
Software	5112	D	D	D	D	15,074	16,510
Broadcasting and telecommunications	513	2,097	2,215	0	0	2,097	2,215
Telecommunications	5133	2,016	2,052	0	0	2,016	2,052
Other broadcasting and telecommunications	other 513	82	163	0	0	82	163
Other information	other 51	D	D	D	D	2,715	2,797
Finance, insurance, and real estate	52, 53	1,535	1,708	0	0	1,535	1,708
Professional, scientific, and technical services	54	27,299	28,709	4,355	4,464	22,944	24,245
Architectural, engineering, and related services	5413	4,229	4,265	1,970	1,970	2,259	2,295
Computer systems design and related services	5415	6,309	11,575	234	378	6,074	11,197
Scientific R&D services	5417	15,264	11,355	2,007	1,972	13,258	9,383
Other professional, scientific, and technical services	other 54	1,496	1,514	144	144	1,353	1,370
Health care services	621–23	500	500	5	5	495	495
Other nonmanufacturing	55, 56, 61, 624, 71, 72, 81	5,674	1,595	68	19	5,605	1,576

TABLE A-10. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by revised industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	All R&D		Federal		Company and other	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
\$millions							
Company size (employees)							
All companies	-	208,301	208,301	20,266	20,266	188,035	188,035
5-24	-	6,295	6,295	685	685	5,610	5,610
25-49	-	5,906	5,906	612	612	5,293	5,293
50-99	-	6,456	6,456	608	608	5,849	5,849
100-249	-	11,045	11,045	1,058	1,058	9,987	9,987
250-499	-	8,380	8,380	547	547	7,832	7,832
500-999	-	10,821	10,821	762	762	10,060	10,060
1,000-4,999	-	31,475	31,475	493	493	30,982	30,982
5,000-9,999	-	18,191	18,191	2,018	2,018	16,173	16,173
10,000-24,999	-	31,208	31,208	1,561	1,561	29,647	29,647
25,000 or more	-	78,523	78,523	11,923	11,923	66,600	66,600

TABLE A-10. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by revised industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
		\$millions		Thousands			
All industries	21–23, 31–33, 42, 44–81	5,601,729	5,601,729	1,111.3	1,111.3	14,820	14,820
Manufacturing industries	31–33	3,372,725	3,871,294	544.7	717.0	8,507	9,399
Food	311	330,450	347,396	11.1	11.7	844	876
Beverage and tobacco products	312	40,351	43,292	4.6 i	4.7 i	96	100
Textiles, apparel, and leather	313–16	39,013	48,859	4.2 i	5.8	234	256
Wood products	321	22,841	35,066	D	D	101	151
Paper, printing, and support activities	322, 323	155,753	155,801	D	D	475	475
Petroleum and coal products	324	408,826	408,956	D	D	168	169
Chemicals	325	418,210	595,292	71.5	118.6	811	1,073
Basic chemicals	3251	105,834	109,200	10.2	10.6	173	179
Resin, synthetic rubber, fibers, and filament	3252	63,950	67,610	9.3	9.4	96	100
Pharmaceuticals and medicines	3254	160,630	315,180	37.2	79.9	276	469
Other chemicals	other 325	87,796	103,302	14.8	18.6	266	325
Plastics and rubber products	326	116,771	120,670	14.0	14.1	426	429
Nonmetallic mineral products	327	43,044	43,155	6.5 i	6.5 i	178	179
Primary metals	331	98,434	101,868	4.9	4.9	268	274
Fabricated metal products	332	102,206	102,935	15.6	15.7	479	482
Machinery	333	170,369	178,618	60.9	62.6	648	665
Computer and electronic products	334	295,406	506,103	160.1	273.3	990	1,373
Computers and peripheral equipment	3341	51,670	122,494	14.9	45.1	88	247
Communications equipment	3342	39,384	88,381	23.8	49.9	144	210
Semiconductor and other electronic components	3344	93,131	162,398	46.5 i	97.4	305	411
Navigational, measuring, electromedical, and control instruments	3345	99,908	110,416	69.3 i	74.6 i	419	450
Other computer and electronic products	other 334	11,314	22,415	5.6	6.2	34	55
Electrical equipment, appliances, and components	335	88,917	95,715	17.3	19.4	322	345
Transportation equipment	336	918,515	946,474	131.8	134.1	1,937	1,956
Motor vehicles, trailers, and parts	3361–63	618,332	643,079	D	D	1,027	1,039
Aerospace products and parts	3364	228,018	228,018	37.9	37.9	622	622
Other transportation equipment	other 336	72,165	75,377	D	D	288	295
Furniture and related products	337	51,578	51,578	2.9	2.9	241	241
Miscellaneous manufacturing	339	72,040	89,515	18.9	21.8	289	355
Medical equipment and supplies	3391	45,513	56,713	11.8	13.9	168	211
Other miscellaneous manufacturing	other 339	26,527	32,802	7.0	7.9	120	143



TABLE A-10. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by revised industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
		\$millions		Thousands			
Nonmanufacturing industries	21–23, 42, 44–81	2,229,003	1,730,435	566.6	394.3	6,314	5,421
Mining, extraction, and support activities	21	29,543	29,753	D	D	96	97
Utilities	22	170,637	170,637	0.8	0.8	255	255
Construction	23	51,859	56,118	D	D	156	160
Wholesale trade	42	566,333	68,879	189.1	15.5	1,202	155
Retail trade	44, 45	182,334	191,632	15.0	15.3	585	603
Transportation and warehousing	48, 49	74,198	74,235	D	D	597	597
Information	51	409,995	445,652	123.9	131.5	1,104	1,233
Publishing	511	83,174	90,234	91.9	98.5	313	343
Newspaper, periodical, book, and database	5111	19,230	19,230	4.8	4.8	105	105
Software	5112	63,944	71,004	87.1	93.7	208	238
Broadcasting and telecommunications	513	264,250 i	291,646	10.5	10.9	607 i	697 i
Telecommunications	5133	D	D	10.2	10.4	D	D
Other broadcasting and telecommunications	other 513	D	D	*	*	D	D
Other information	other 51	62,571	63,772	21.5	22.0	184	192
Finance, insurance, and real estate	52, 53	438,244	440,122	20.5	22.3	849	857
Professional, scientific, and technical services	54	154,090	185,812	161.3	174.1	763	957
Architectural, engineering, and related services	5413	34,378	34,885	41.1	41.4	154	157
Computer systems design and related services	5415	56,205	95,541	51.8	74.5	277	485
Scientific R&D services	5417	39,975	31,729	55.1	44.7	180	163
Other professional, scientific, and technical services	other 54	23,531	23,658	13.4	13.5	152	152
Health care services	621–23	27,638	27,638	6.0 i	6.0 i	160	160
Other nonmanufacturing	55, 56, 61, 624, 71, 72, 81	124,133	39,957	32.5	10.9	547	348

TABLE A-10. Funds for industrial R&D, sales, and employment for companies performing industrial R&D in the United States, by revised industry and company size, by original and revised industry classification methodologies: 2004

Industry and company size	NAICS codes	Domestic net sales		R&D scientists and engineers <sup>a</sup>		Domestic employment (March)	
		Original methodology	Revised methodology	Original methodology	Revised methodology	Original methodology	Revised methodology
		\$millions		Thousands			
Company size (employees)							
All companies	-	5,601,729	5,601,729	1,111.3	1,111.3	14,820	14,820
5-24	-	111,868 i	111,868 i	66.2	66.2	240	240
25-49	-	46,138	46,138	43.4	43.4	236	236
50-99	-	101,559	101,559	44.1	44.1	356	356
100-249	-	180,436	180,436	73.1	73.1	635	635
250-499	-	152,243	152,243	52.3	52.3	545	545
500-999	-	217,014	217,014	59.3	59.3	610	610
1,000-4,999	-	828,300	828,300	173.8	173.8	2,325	2,325
5,000-9,999	-	571,170	571,170	96.6	96.6	1,373	1,373
10,000-24,999	-	993,497	993,497	178.9	178.9	2,243	2,243
25,000 or more	-	2,399,505	2,399,505	323.6	323.6	6,258	6,258

\* = amount < 50; D = suppressed to avoid disclosure of confidential information; i = more than 50% of the value is imputed; NA = not available; - = not applicable.

<sup>a</sup> Data recorded each year in January represent employment for the previous year.

NOTES: Estimates for management of companies and enterprises (NAICS 55) are not shown separately, but included in other manufacturing. Excludes 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: 2004.

## Appendix B. Survey Documents

National Science Foundation Cover Letter  
Bureau of the Census Cover Letter  
Survey Form RD-1, available in PDF  
Form RD-1 Instructions, available in PDF  
Survey Form RD-1A, available in PDF  
Form RD-1A Instructions, available in PDF

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### 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 2004 Survey of Industrial Research and Development that we conduct jointly with the U.S. Census Bureau. 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,



Arden L. Bement, Jr.  
Acting 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 2004 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 2004. **For this survey year, federal law ( Title 13, Sections 182 and 225 ) requires your response to items 2, 3, 5, line D, columns 1 and 3; and 15.**

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 1-800-851-2014, option (0).

Sincerely,

A handwritten signature in black ink, appearing to read "C. Kincannon".

Charles Louis Kincannon  
Director

Enclosures



# 2004 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT

OMB No. 0607-0912: Approval Expires 12/31/2007

**Mail** your completed form to:  
**U.S. CENSUS BUREAU**  
1201 East 10th Street  
Jeffersonville, IN 47132-0001

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](http://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.

This survey is conducted jointly with the National Science Foundation.



(Please correct any errors in this mailing address.)

**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. You will satisfy the mandatory requirements for this survey if you answer 2, 3, 5, line D, columns 1 and 3; and 15. Except as noted, this report should cover your entire consolidated domestic enterprise, **including all U.S. subsidiaries.** Reasonable estimates are acceptable.

**1** Was this company owned or controlled by another company on December 31, 2004?

001  Yes - See instructions to determine if you should complete this questionnaire.

No - Go to **2**.

Dollar figures should be rounded to thousands of dollars.

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

2004		
\$ Billions	Millions	Thousands
	1 0 2 6	

**2** What was the amount of your company's **sales, shipments, operating receipts, or revenues**, net of returns and allowances attributable to domestic operations in the 50 United States or D.C. during 2004? (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.) . . . . . Mark "X" if None 0130

Amount reported for 2003

2004		
\$ Billions	Millions	Thousands
102		

**3** How many **employees** worked in the 50 United States or D.C. for your company on March 12, 2004? (INCLUDE number of full- and part-time employees whose payroll was reported on Internal Revenue Service Form 941, Employer's Quarterly Federal Tax Return.) . . . . . Mark "X" if None 0131

Amount reported for 2003

Number
112

11000015

**4** What was the number of full-time equivalent (FTE) **scientists and engineers** employed by your company as of January 1, 2005 who worked on the following types of R&D during 2004?

(See Instructions for the definition of FTE scientists and engineers.)

January 1, 2005		
Number of FTEs		
204		
205		
206		

**A.** Federally funded R&D . . . . . Mark "X" if None 0132

Number of FTEs reported as of January 1, 2004

**B.** Company and other nonfederally funded R&D . . . . . Mark "X" if None 0133

Number of FTEs reported as of January 1, 2004

**C. TOTAL** (Add lines A and B.) . . . . . Mark "X" if None 0134

Number of FTEs reported as of January 1, 2004

**5** What was the cost of R&D performed within your company **in the 50 United States and D.C.** from each of the sources of funding below during 2004?

**A. Basic research** (Activity toward the advancement of scientific knowledge without specific immediate commercial objectives.)

Mark "X" if no basic research 0135

Amount reported for 2003

2004								
(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
304			305			306		

**B. Applied research** (Activity directed primarily towards a specific commercial or practical objective.)

Mark "X" if no applied research. . . . 0136

Amount reported for 2003

(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
314			315			316		

**C. Development** (Activity translating research into new or improved products, services, or processes.)

Mark "X" if no development 0137

Amount reported for 2003

(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
324			325			326		

**D. TOTAL** (Add lines A through C.)

Mark "X" if no R&D . . . . . 0138

Amount reported for 2003

(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
344			345			346		

11000023

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

**6** If your company plans to perform R&D during 2005, what is the estimated projected cost?  
  
(Comparable to the 2004 figure reported in **5**, line D.)  
  
Mark "X" if no R&D is planned for next year . . . 0139

2005								
(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
403			402			401		

**7** If others outside your company performed R&D funded by you, what were the costs of the R&D performed in the 50 United States and D.C. during 2004?  
  
Mark "X" if no R&D was performed by others . . . . . 0140   
  
Amount reported for 2003

2004								
(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
354			355			356		

**8** What was the cost of the R&D reported in **7**, column 2, performed by the following **types of organizations**?

**A.** For-profit companies . . . . . Mark "X" if None 0141   
Amount reported for 2003

**B.** Federal agencies or laboratories . . . . . Mark "X" if None 0142   
Not asked in 2003

**C.** State government agencies or laboratories . . . . . Mark "X" if None 0143   
Not asked in 2003

**D.** Universities or colleges . . . . . Mark "X" if None 0144   
Amount reported for 2003

**E.** Other nonprofit organizations . . . . . Mark "X" if None 0145   
Amount reported for 2003

**F. TOTAL** (Add lines A through E. The sum should equal the total reported in **7**, column 2.) . . . . . Mark "X" if None 0146   
Amount reported for 2003

2004		
Company and other nonfederal funds		
\$ Billions	Millions	Thousands
811		
812		
813		
821		
831		
841		



11000031

**9** If your company funded R&D performed **outside the 50 United States and D.C.** during 2004, what were the costs? (Please report costs of R&D performed by subsidiaries, affiliates, or others based on your company's percentage of ownership, if any, of the entity that conducted the R&D. Ownership can be based on voting stock or equivalent interest.)

Mark "X" if None 0147

**A.** More than 50% ownership (This category INCLUDES wholly owned subsidiaries and locations.) . . . . .

Amount reported for 2003

**B.** 10% to 50% ownership . . . . .

Amount reported for 2003

**C.** More than 0% but less than 10% ownership . . . . .

Amount reported for 2003

**D.** 0% - No company ownership . . . . .

Amount reported for 2003

**E. TOTAL** (Add lines A through D.) . . . . .

Amount reported for 2003

2004		
Company and other nonfederal funds		
\$ Billions	Millions	Thousands
366		
365		
364		
363		
369		

**10** What was the cost of the R&D reported in **9**, line A, in Puerto Rico and the following countries? (The total for this item should equal the amount reported in **9**, line A.)

**A.** Puerto Rico . . . . . Mark "X" if None 0148

Amount reported for 2003

**B.** Canada . . . . . Mark "X" if None 0149

Amount reported for 2003

**C.** China. . . . . Mark "X" if None 0150

Not asked in 2003

**D.** France . . . . . Mark "X" if None 0151

Amount reported for 2003

**E.** Germany . . . . . Mark "X" if None 0152

Amount reported for 2003

2004		
Company and other nonfederal funds		
\$ Billions	Millions	Thousands
1206		
1201		
1213		
1203		
1202		



11000049



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

10 Continued

2004

Company and other nonfederal funds

\$ Billions	Millions	Thousands
-------------	----------	-----------

1214		
------	--	--

F. India . . . . . Mark "X" if None 0153

Not asked in 2003

1215		
------	--	--

G. Ireland . . . . . Mark "X" if None 0154

Not asked in 2003

1216		
------	--	--

H. Israel . . . . . Mark "X" if None 0155

Not asked in 2003

1217		
------	--	--

I. Italy . . . . . Mark "X" if None 0156

Not asked in 2003

1204		
------	--	--

J. Japan . . . . . Mark "X" if None 0157

Amount reported for 2003

1218		
------	--	--

K. Singapore . . . . . Mark "X" if None 0158

Not asked in 2003

1219		
------	--	--

L. Sweden . . . . . Mark "X" if None 0159

Not asked in 2003

1205		
------	--	--

M. United Kingdom . . . . . Mark "X" if None 0160

Amount reported for 2003

N. Other - Specify 7

1207		
------	--	--

1209

1211		
------	--	--

1220

1212		
------	--	--

1221

O. TOTAL (Add lines A through N. The sum should equal the amount reported in 9, line A.) . . . . . Mark "X" if None 0192

1210		
------	--	--

Amount reported for 2003



11000056

**11** If you reported Federally funded R&D in **5**, line D, column 1, what were the costs funded by the following Federal agencies?

**A.** Department of Defense (DoD). . . . . *Mark "X" if None* 0161

Amount reported for 2003

**B.** National Aeronautics and Space Administration (NASA). . . . . *Mark "X" if None* 0162

Amount reported for 2003

**C.** Department of Energy (DOE) *Mark "X" if None* 0163

Amount reported for 2003

**D.** Other Federal agencies . . . *Mark "X" if None* 0164

Amount reported for 2003

**E. TOTAL** (Add lines A through D. The sum should equal the total reported in **5**, line D, column 1.) . . . . . *Mark "X" if None* 0165

Amount reported for 2003

2004		
Federal funds		
\$ Billions	Millions	Thousands
511		
521		
531		
541		
551		



11000064

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

**12** For the total R&D you reported in 5, line D, column 3, what were the costs for the following types of expenses?

2004		
Total funds		
\$ Billions	Millions	Thousands
611		
Amount reported for 2003		
621		
Amount reported for 2003		
631		
Amount reported for 2003		
641		
Amount reported for 2003		
651		
Amount reported for 2003		
661		
Amount reported for 2003		

**A. Wages and salaries of R&D personnel**

(INCLUDE scientists and engineers, technicians, secretaries, and other personnel.) . . . . . Mark "X" if None 0166

Amount reported for 2003

**B. Fringe benefits of R&D personnel**

(INCLUDE taxable and nontaxable benefits, 401K plans, employers' contribution to health plans.) Mark "X" if None 0167

Amount reported for 2003

**C. Materials and supplies consumed**

(INCLUDE the cost of all purchased materials consumed.) . . . . . Mark "X" if None 0168

Amount reported for 2003

**D. Depreciation on R&D property and equipment**

(INCLUDE depreciation and amortization costs for property and equipment used for R&D during the year.) . . . . . Mark "X" if None 0169

Amount reported for 2003

**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.) . . . . . Mark "X" if None 0170

Amount reported for 2003

**F. TOTAL (Add lines A through E. The sum should equal the total reported in 5, line D, column 3.) . . . . . Mark "X" if None 0171**

Amount reported for 2003



11000072

**13** For the total R&D you reported in **5**, line D, column 3, what were the costs for the following areas?

2004		
Total funds		
\$ Billions	Millions	Thousands
7111		
Amount reported for 2003		
7211		
Amount reported for 2003		
7311		
Amount reported for 2003		
7411		
Amount reported for 2003		
7511		
Amount reported for 2003		

**A.** Biotechnology (The use of scientific and engineering data and techniques for the study and solution of problems concerning living organisms.) . . . . . *Mark "X" if None* 0172

Amount reported for 2003

**B.** Software development (The formulation of programs, applications, routines, etc., for computers, excluding those used exclusively for internal company operations.) . . . . . *Mark "X" if None* 0173

Amount reported for 2003

**C.** Materials synthesis and processing (The use of scientific and engineering data and techniques for the formulation and manipulation of new materials.) . . . . . *Mark "X" if None* 0174

Amount reported for 2003

**D.** All other R&D areas . . . . . *Mark "X" if None* 0175

Amount reported for 2003

**E. TOTAL** (Add lines A through D. The sum should equal the total reported in **5**, line D, column 3.) . . . . . *Mark "X" if None* 0176

Amount reported for 2003

**14** If your company used **nanotechnology** for R&D during 2004, what percentage of the R&D costs reported in **13** are attributable to nanotechnology for the following areas? (Nanotechnology is the creation and utilization of materials, devices, and systems sized at the level of atoms and molecules in the range of 1 to 100 nanometers.)

2004	
Whole percents	
7112	%
	%
7212	%
	%
7312	%
	%
7412	%
	%

**A.** Biotechnology . . . . . *Mark "X" if None* 0177

Amount reported for 2003

**B.** Software development . . . . . *Mark "X" if None* 0178

Amount reported for 2003

**C.** Materials synthesis and processing . . . . . *Mark "X" if None* 0179

Amount reported for 2003

**D.** All other R&D areas . . . . . *Mark "X" if None* 0180

Amount reported for 2003



11000080

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

**15** For the Federal and total R&D you reported in **5**, line D, columns 1 and 3, what were the costs for the R&D performed in **each of the 50 United States and D.C.?** (The totals for this item should equal the totals reported in **5**, line D, columns 1 and 3.)

State	2004					
	(1) Federal funds			(2) Total funds		
	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
Alabama . . . . .	9011			9012		
Amount reported for 2003						
Alaska . . . . .	9021			9022		
Amount reported for 2003						
Arizona . . . . .	9031			9032		
Amount reported for 2003						
Arkansas . . . . .	9041			9042		
Amount reported for 2003						
California . . . . .	9051			9052		
Amount reported for 2003						
Colorado . . . . .	9061			9062		
Amount reported for 2003						
Connecticut . . . . .	9071			9072		
Amount reported for 2003						
Delaware . . . . .	9081			9082		
Amount reported for 2003						
District of Columbia . . . . .	9091			9092		
Amount reported for 2003						
Florida . . . . .	9101			9102		
Amount reported for 2003						



11000098

15 Continued

		2004						
State		(1) Federal funds			(2) Total funds			
		\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	
		Georgia . . . . .	9111				9112	
Amount reported for 2003								
Hawaii . . . . .	9121				9122			
Amount reported for 2003								
Idaho . . . . .	9131				9132			
Amount reported for 2003								
Illinois . . . . .	9141				9142			
Amount reported for 2003								
Indiana . . . . .	9151				9152			
Amount reported for 2003								
Iowa . . . . .	9161				9162			
Amount reported for 2003								
Kansas . . . . .	9171				9172			
Amount reported for 2003								
Kentucky . . . . .	9181				9182			
Amount reported for 2003								
Louisiana . . . . .	9191				9192			
Amount reported for 2003								
Maine . . . . .	9201				9202			
Amount reported for 2003								
Maryland . . . . .	9211				9212			
Amount reported for 2003								



11000106

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

15 Continued

State	2004					
	(1) Federal funds			(2) Total funds		
	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
	9221			9222		
Massachusetts . . . . .						
Amount reported for 2003						
	9231			9232		
Michigan . . . . .						
Amount reported for 2003						
	9241			9242		
Minnesota . . . . .						
Amount reported for 2003						
	9251			9252		
Mississippi . . . . .						
Amount reported for 2003						
	9261			9262		
Missouri . . . . .						
Amount reported for 2003						
	9271			9272		
Montana . . . . .						
Amount reported for 2003						
	9281			9282		
Nebraska . . . . .						
Amount reported for 2003						
	9291			9292		
Nevada . . . . .						
Amount reported for 2003						
	9301			9302		
New Hampshire . . . . .						
Amount reported for 2003						
	9311			9312		
New Jersey . . . . .						
Amount reported for 2003						
	9321			9322		
New Mexico . . . . .						
Amount reported for 2003						



11000114

15 Continued

		2004					
State		(1) Federal funds			(2) Total funds		
		\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
		9331				9332	
New York . . . . .							
Amount reported for 2003							
		9341			9342		
North Carolina . . . . .							
Amount reported for 2003							
		9351			9352		
North Dakota . . . . .							
Amount reported for 2003							
		9361			9362		
Ohio . . . . .							
Amount reported for 2003							
		9371			9372		
Oklahoma . . . . .							
Amount reported for 2003							
		9381			9382		
Oregon . . . . .							
Amount reported for 2003							
		9391			9392		
Pennsylvania . . . . .							
Amount reported for 2003							
		9401			9402		
Rhode Island . . . . .							
Amount reported for 2003							
		9411			9412		
South Carolina . . . . .							
Amount reported for 2003							
		9421			9422		
South Dakota . . . . .							
Amount reported for 2003							
		9431			9432		
Tennessee . . . . .							
Amount reported for 2003							



11000122



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

15 Continued

State	2004					
	(1) Federal funds			(2) Total funds		
	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
Texas . . . . .	9441			9442		
Amount reported for 2003						
Utah . . . . .	9451			9452		
Amount reported for 2003						
Vermont . . . . .	9461			9462		
Amount reported for 2003						
Virginia . . . . .	9471			9472		
Amount reported for 2003						
Washington . . . . .	9481			9482		
Amount reported for 2003						
West Virginia . . . . .	9491			9492		
Amount reported for 2003						
Wisconsin . . . . .	9501			9502		
Amount reported for 2003						
Wyoming . . . . .	9511			9512		
Amount reported for 2003						
<b>TOTAL</b> (The sums should equal the amounts reported in 5, line D, columns 1 and 3.)	9541			9542		
Amount reported for 2003						

11000130

**16** If your company performed **energy-related R&D** during 2004, what were the costs of the R&D performed in the 50 United States and D.C. for the following sources of energy?  
 (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 5, line D, columns 1 and 3.)

2004					
(1) Federal funds			(2) Total funds		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
10211			10212		
Amount reported for 2003					
10311			10312		
Amount reported for 2003					
10111			10112		
Amount reported for 2003					
10411			10412		
Amount reported for 2003					
10511			10512		
Amount reported for 2003					

**A.** Fossil fuels . . . . . Mark "X" if None 0181

Amount reported for 2003

**B.** Geothermal and solar . . . Mark "X" if None 0182

Amount reported for 2003

**C.** Nuclear . . . . . Mark "X" if None 0183

Amount reported for 2003

**D.** All other energy sources . . Mark "X" if None 0184

Amount reported for 2003

**E. TOTAL** (Add lines A through D). . . . . Mark "X" if None 0185

Amount reported for 2003



11000148

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

**17** If your company **collaborated with others** to perform R&D during 2004, what were your company's cost for the R&D performed in the 50 United States and D.C. with the following types of partners?  
(These expenditures should also be included as part of the information reported in **5**, line D, column 2.)

2004		
Company and other nonfederal funds		
\$ Billions	Millions	Thousands
1101		
Amount reported for 2003		
1102		
Amount reported for 2003		
1105		
Not asked for 2003		
1103		
Amount reported for 2003		
1104		
Amount reported for 2003		
1110		
Amount reported for 2003		

**A.** For-profit companies . . . . . Mark "X" if None 0186

Amount reported for 2003

**B.** Federal agencies or laboratories . . . . . Mark "X" if None 0187

Amount reported for 2003

**C.** State government agencies or laboratories . . . . . Mark "X" if None 0190

Not asked for 2003

**D.** Universities or colleges. . . . . Mark "X" if None 0188

Amount reported for 2003

**E.** Other nonprofit organizations Mark "X" if None 0189

Amount reported for 2003

**F. TOTAL** (Add lines A through E.) . . . . . Mark "X" if None 0191

Amount reported for 2003

**18 A.** Does this report cover your entire consolidated domestic enterprise, including all U.S. subsidiaries? (Mark "X" only ONE box.)

1301  Yes

1330  No - Please explain in **20**.

**B.** Was your company publicly or privately owned? (Mark "X" only ONE box.)

1302  Publicly owned

1334  Privately owned

1319  Other - Please describe **7**

1320



11000155

**18 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

1321  Other - Please describe ↴

1322

**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

1323  Other - Please describe ↴

1324

**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% - No ownership

1312  More than 0% but less than 10% ownership

1313  10%-50% ownership

1314  More than 50% ownership

1325  Other - Please describe ↴

1327

**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% - No ownership

1316  More than 0% but less than 10% ownership

1317  10%-50% ownership

1318  More than 50% ownership

1326  Other - Please describe ↴

1328



11000163

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

**19** Reporting period, location of records, and contact information

**A.** Is the time period covered by this report a calendar year?

0078  Yes

0079  No - Enter time period covered →

FROM

Month	Year
0070	

TO

Month	Year
0071	

**B.** Are all of your company's R&D records and data in a central location?

0080  Yes

0086

0081  No - How many locations? →

--

0085  Other - Please describe →

0087

--

**C.** Did more than one person compile the information for this form?

0082  Yes - How many? →

0084

--

0083  No

**D.** How many hours did it take to complete this form?  
 (INCLUDE time spent for reviewing instructions, searching existing data sources, gathering and maintaining data needed, and completing and reviewing the collection of information.)

Number of hours

0090

--

0072 Name of person to contact regarding this report

0073 Title

Area code	Number	Extension

Telephone 0074

Area code	Number

Fax 0075

0076 Internet e-mail address

Date completed

Month	Day	Year

0069

**20** REMARKS (Please use this space for any explanations that may help us in understanding your reported data.)

**Thank you for completing your 2004 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT form.**

**PLEASE PHOTOCOPY THIS FORM FOR YOUR RECORDS AND RETURN THE ORIGINAL.**

# 2004 Survey of Industrial Research and Development

## Form RD-1

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# 2004 Survey of Industrial Research and Development Form RD-1 General Instructions

## Changes from 2003 to 2004 R&D survey year

- 1) The wording of most items has been changed for clarification.
- 2) Some item headings and numbers have changed. The five mandatory items are now as follows:
  - Question 2
  - Question 3
  - Question 5D, column 1
  - Question 5D, column 3
  - Question 15
- 3) Some item response categories have been added; wording for some has been changed for clarification.
  - Question 6, column headings (1) Federal funds and (3) Total funds Columns 1+2, have been added.
  - Question 8, response categories (B) Federal agencies or laboratories and (C) State government agencies or laboratories have been added.
  - Question 9, response categories have been reversed and explanatory wording added.
  - Question 10, response categories (C) China, (F) India, (G) Ireland, (H) Israel, (I) Italy, (K) Singapore, and (L) Sweden have been added.
  - Question 16, response categories have been reordered to (A) Fossil fuels, (B) Geothermal and solar, (C) Nuclear, (D) All other energy sources, and (E) Total.
  - Question 17, response category (C) State government agencies or laboratories, has been added.

## 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 17 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.

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 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 2004 information, if possible. If not, please use your fiscal year ending between September 2004 and March 2005

## **Comparing your 2003 and 2004 responses**

If your company reported for 2003, entries from that form are preprinted on this form. (If you would like to correct these figures, please do so.) If your answers for 2004 are substantially higher or lower than your 2003 answers, you may comment on the reasons in the Remarks section on page 17 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 2003 or 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.

The system requirements for the electronic questionnaire are:

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 the 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 Business Help Site at: [www.census.gov/econhelp/rd/](http://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.

**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.

## 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 this burden estimate or any other aspects of this collection of information, including suggestions for reducing this burden to:

Paperwork Project 0607-0912  
U.S. Census Bureau  
4700 Silver Hill Road, Stop 1500,  
Washington, DC 20233-1500

You may e-mail comments to [Paperwork@census.gov](mailto:Paperwork@census.gov); use "Paperwork Project 0607-0912" as the subject.

## 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 United States and D.C. (This also includes R&D they may perform **outside** of the 50 United 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.

**Types of R&D activities to consider for this survey**

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none"> <li>• Activities that incorporate:               <ul style="list-style-type: none"> <li>– Basic and applied research in the sciences and engineering</li> <li>– Design and development of new products and processes</li> <li>– Enhancement of existing products and processes</li> </ul> </li> <li>• Activities carried on by persons trained, either formally or by experience, in:               <ul style="list-style-type: none"> <li>– Biological sciences (e.g., medicine)</li> <li>– Computer science</li> <li>– Engineering</li> <li>– Mathematical and statistical sciences</li> <li>– Physical sciences (e.g., chemistry and physics)</li> </ul> </li> <li>• Activities that take place in:               <ul style="list-style-type: none"> <li>– Separate R&amp;D organizational units of the company</li> <li>– Company laboratories</li> <li>– Technical groups not part of an R&amp;D organization</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D from acquired companies prior to acquisition (in-process R&amp;D)</li> <li>• Amortization above the actual cost of property and equipment related to your R&amp;D activities</li> <li>• Testing and evaluation once a prototype becomes a production model</li> <li>• Routine product testing</li> <li>• Geological and geophysical exploration activities</li> <li>• Technical services such as:               <ul style="list-style-type: none"> <li>– Quality and quantity control</li> <li>– Technical plant sanitation control</li> <li>– Troubleshooting in connection with breakdowns in full-scale production</li> </ul> </li> <li>• Advertising programs to promote or demonstrate new products or processes</li> <li>• Assistance in preparation of speeches and publications for persons not engaged in R&amp;D</li> <li>• Social science R&amp;D including:               <ul style="list-style-type: none"> <li>– Personnel R&amp;D</li> <li>– Economic R&amp;D</li> <li>– Artificial intelligence and expert systems R&amp;D</li> <li>– Consumer, market, and opinion R&amp;D</li> <li>– Engineering psychology R&amp;D</li> <li>– Management and organization R&amp;D</li> <li>– Actuarial and demographic R&amp;D</li> <li>– Educational processes and applications R&amp;D</li> <li>– R&amp;D in law</li> </ul> </li> </ul>

## Question-by-Question Instructions

### Question 1 Was this company owned or controlled by another company on December 31, 2004?

Question 1 asks about your company's ownership as of December 31, 2004.

If "yes," your company was owned or controlled by another company on December 31, 2004, follow the appropriate instructions below:

Your situation	Action to take
Your company was purchased by another company on or prior to March 31, 2004, located in the 50 United States or D.C.	Note the new owner and purchase date under the Remarks section on page 17 of the form and return the form without completing the rest of it
Your company was purchased by another company after March 31, 2004, located in the 50 United States or D.C.	Note the new owner and purchase date under the Remarks section on page 17 of the form. Complete the rest of the form for the months <b>prior</b> to the purchase of your company.
Your company was owned or controlled by one or more companies located outside the 50 United States or D.C.	Note the new owner under the Remarks section on page 17 of the form and complete the rest of 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 2 What was the amount of your company's sales, shipments, operating receipts, or revenues, net of returns and allowances attributable to domestic operations in the 50 United States or D.C. during 2004?

Question 2 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"> <li>Sales, operating receipts, and revenues from all domestic operations of the company, <b>net of returns and allowances</b></li> <li>Receipts from sales of products and services provided to other companies, individuals, U.S. Government agencies, and foreign countries</li> <li>Net selling value of shipments, f.o.b. (freight on board) plant, after discounts and allowances minus freight charges and excise taxes</li> <li>Revenue from investments, rents, and royalties only if it is the principal business of the company</li> <li>Interest, dividends, commissions, and rental income as part of revenues <b>only</b> if you are a finance, insurance, or real estate company</li> <li>Value of assets sold under a capital lease agreement</li> <li>Export transfers to your foreign subsidiaries and affiliates</li> </ul>	<ul style="list-style-type: none"> <li>Sales and other taxes collected and paid directly to government taxing agencies</li> <li>Domestic intracompany transfers</li> <li>Receipts from sale of products and services provided by your foreign subsidiaries and affiliates</li> <li>Receipts from sale of products and services provided by your subsidiaries and affiliates in Puerto Rico and other U.S. territories <b>outside</b> the 50 United States and D.C.</li> <li>Income from interest, dividends, and commissions (Exception: Companies in the finance, insurance, and real estate industries)</li> <li>Other nonoperating income (e.g., royalties)</li> </ul>

**Question 3** How many employees worked in the 50 United States or D.C. for your company on March 12, 2004?

Question 3 covers domestic company employment. Report only the parts of your company located **within** the 50 United 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, 2004
- Persons on paid sick leave, paid holidays, and paid vacations during the pay period that includes March 12, 2004

**Question 4** What was the number of full-time equivalent (FTE) scientists and engineers employed by your company as of January 1, 2005 who worked on the following types of R&D during 2004?

Question 4 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 employees performing only research and development, count the number of scientists and engineers employed in January 2005.
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 2005 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 5** What was the cost of R&D performed within your company in the 50 United States and D.C. from each of the sources of funding below during 2004?

Question 5 covers the R&D that is performed both (1) **within** your company and (2) **within** the 50 United States and D.C.

**How to decide which expenditures to include as R&D costs**

<b>INCLUDE:</b>	<b>EXCLUDE:</b>
<ul style="list-style-type: none"> <li>• Wages, salaries, and related costs</li> <li>• Materials and supplies consumed</li> <li>• R&amp;D depreciation</li> <li>• Cost of computer software used in R&amp;D activities</li> <li>• Utilities, such as telephone, telex, electricity, water, and gas</li> <li>• Travel costs and professional dues</li> <li>• Property taxes and other taxes (except income taxes) incurred on account of the R&amp;D organization or the facilities they use</li> <li>• Insurance expenses</li> <li>• Maintenance and repair, including maintenance of buildings and grounds</li> <li>• Company overhead including: personnel, accounting, procurement and inventory, and salaries of research executives not on the payroll of the R&amp;D organization</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D from acquired companies prior to acquisition (in-process R&amp;D)</li> <li>• Capital expenditures</li> <li>• Testing and evaluation once a prototype becomes a production model</li> <li>• Patent expenses</li> <li>• Income taxes and interest</li> </ul>

**Question 5 (continued)**

**How to decide which category of R&D**

<p><b>1. Basic research</b></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><b>2. Applied research</b></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><b>3. Development</b></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> <table border="1"> <thead> <tr> <th> <p><b>INCLUDE:</b></p> </th> <th> <p><b>EXCLUDE:</b></p> </th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>• Expenditures for designing and conducting clinical trials of drugs, pharmaceuticals, or other products that have not been marketed</li> <li>• Software development                             <ul style="list-style-type: none"> <li>– Designing and/or adapting software if the application has commercial value (exclude software development for internal use)</li> <li>– Beta version of software being developed that has potential commercial application</li> <li>– Design and operation of pilot plants and semiwork plants</li> </ul> </li> <li>• Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements</li> <li>• Design, construction, and testing of prototypes and models including test models for defense contracts</li> <li>• Designs for special manufacturing equipment and tools</li> <li>• Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• Software development intended for <b>within</b> company use only</li> <li>• Routine technical services to customers</li> <li>• Tool making and tool tryout</li> <li>• Production of detailed construction drawings and manufacturing blueprints</li> </ul> </td> </tr> </tbody> </table>		<p><b>INCLUDE:</b></p>	<p><b>EXCLUDE:</b></p>	<ul style="list-style-type: none"> <li>• Expenditures for designing and conducting clinical trials of drugs, pharmaceuticals, or other products that have not been marketed</li> <li>• Software development                             <ul style="list-style-type: none"> <li>– Designing and/or adapting software if the application has commercial value (exclude software development for internal use)</li> <li>– Beta version of software being developed that has potential commercial application</li> <li>– Design and operation of pilot plants and semiwork plants</li> </ul> </li> <li>• Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements</li> <li>• Design, construction, and testing of prototypes and models including test models for defense contracts</li> <li>• Designs for special manufacturing equipment and tools</li> <li>• Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals</li> </ul>	<ul style="list-style-type: none"> <li>• Software development intended for <b>within</b> company use only</li> <li>• Routine technical services to customers</li> <li>• Tool making and tool tryout</li> <li>• Production of detailed construction drawings and manufacturing blueprints</li> </ul>
<p><b>INCLUDE:</b></p>	<p><b>EXCLUDE:</b></p>					
<ul style="list-style-type: none"> <li>• Expenditures for designing and conducting clinical trials of drugs, pharmaceuticals, or other products that have not been marketed</li> <li>• Software development                             <ul style="list-style-type: none"> <li>– Designing and/or adapting software if the application has commercial value (exclude software development for internal use)</li> <li>– Beta version of software being developed that has potential commercial application</li> <li>– Design and operation of pilot plants and semiwork plants</li> </ul> </li> <li>• Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements</li> <li>• Design, construction, and testing of prototypes and models including test models for defense contracts</li> <li>• Designs for special manufacturing equipment and tools</li> <li>• Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals</li> </ul>	<ul style="list-style-type: none"> <li>• Software development intended for <b>within</b> company use only</li> <li>• Routine technical services to customers</li> <li>• Tool making and tool tryout</li> <li>• Production of detailed construction drawings and manufacturing blueprints</li> </ul>					

**Question 5 (continued)**

**How to decide which category to use for sources of R&D funding**

<b>Source of R&amp;D</b>	<b>INCLUDE:</b>	<b>EXCLUDE:</b>
Federal funds	<ul style="list-style-type: none"> <li>Federally funded R&amp;D performed <b>within</b> the company. Include only the amount of work done on Federal R&amp;D contracts or subcontracts in the current year.</li> <li>R&amp;D portion of procurement contracts or subcontracts</li> </ul>	<ul style="list-style-type: none"> <li>Federally funded R&amp;D contracted or subcontracted to or otherwise performed by others <b>outside</b> of your company. (Report such funds in Question 7.)</li> <li>Expenditures for independent research and development (IR&amp;D). (Report in column 2, Company and other nonfederal funds.)</li> </ul>
Company and other nonfederal funds	<ul style="list-style-type: none"> <li>R&amp;D from company and other nonfederal sources that is performed <b>within</b> the company</li> </ul> <p>NOTE that "<b>company and other nonfederal funds</b>" and "<b>company funded</b>" are used interchangeably in the Form RD-1.</p> <ul style="list-style-type: none"> <li>R&amp;D your company performs under contracts you have with non-Federal sources</li> <li>Costs for independent research and development (IR&amp;D). We define IR&amp;D funds as R&amp;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&amp;D funds are excluded from federal funds received for federally sponsored research and development contracts.</li> </ul>	<ul style="list-style-type: none"> <li>R&amp;D from nonfederal sources that is contracted to or otherwise performed by others <b>outside</b> of your company (Report such funds in Question 7.)</li> </ul>

**Question 6 If your company plans to perform R&D during 2005, what is the estimated projected cost?**

Question 6 asks for an estimate or projection of the cost of R&D your company expects to perform in 2005 in the 50 United States and D.C.



**Question 7** If others outside your company performed R&D funded by you, what were the costs of the R&D performed in the 50 United States and D.C. during 2004?

Question 7 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 and D.C.

Include payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, grantees, educational institutions, or other organizations.

**Question 8** What was the cost of the R&D reported in (7), column 2, performed by the following types of organizations?

Question 8 asks for the type of organizations that performed the portion of your answer to question 7 for company and other nonfederal sources of R&D funding.

Definitions for types of organizations	
<b>For-profit companies</b>	A company that is organized to pursue profit
<b>Federal agencies or laboratories</b>	Labs or other facilities owned by the United States government
<b>State government agencies or laboratories</b>	Labs or other facilities owned by any of the governments of the 50 United States or D.C.
<b>Universities and colleges</b>	A degree-granting institution of higher learning, having facilities for teaching and research
<b>Other nonprofit organizations</b>	An organization that is not organized to pursue profit. However, universities and colleges are reported in another category.

**Question 9** If your company funded R&D performed outside the 50 United States and D.C. during 2004, what were the costs? (Please report costs of R&D performed by subsidiaries, or others based on your company's percentage of ownership, if any, of the entity that conducted the R&D. Ownership can be based on voting stock or equivalent interest.)

Question 9 covers R&D performed **outside** the 50 United States and D.C. including R&D performed in Puerto Rico.

For Question 9, line A, report payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, educational institutions, or other organizations.

**Question 10** What was the cost of the R&D reported in (9), line A, in Puerto Rico and the following countries? (The total for this item should equal the amount reported in (9), line A.)

Question 10 provides more detail for your answer to Question 9, line A. If a country is not listed, please include the R&D in the "Other" category.

**Question 11** If you reported Federally funded R&D in (5), line D, column 1, what were the costs funded by the following Federal agencies?

Question 11 covers federally funded R&D performed in the 50 United States and D.C. by agency.

**Question 12** For the total R&D you reported in (5), line D, column 3, what were the costs for the following types of expenses?

Question 12 covers R&D by type of expense.

**A. Wages and salaries of R&D personnel**

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none"> <li>• Gross earnings paid in calendar year 2004 to employees engaged in R&amp;D (follow the definition of salaries and wages that is used for calculating withholding tax)</li> <li>• Salaries of officers in the research establishment(s) of a corporation</li> </ul>	<ul style="list-style-type: none"> <li>• Payments to proprietor or partners if your company is an unincorporated concern</li> <li>• Employee fringe benefits (Report under "B. Fringe benefits.")</li> </ul>

**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"> <li>• Disability benefits</li> <li>• Life and medical insurance</li> <li>• Paid holidays</li> <li>• Retirement benefits, pension, and social security contributions</li> <li>• Stock options</li> <li>• Time-off benefits</li> <li>• Vacation, annual, sick, and maternity leave</li> </ul>

**Question 12 (continued)**

**C. Materials and supplies consumed**

Report the delivered cost for all purchased materials consumed.

INCLUDE:	EXCLUDE:
<ul style="list-style-type: none"><li>• Materials and supplies that were:<ul style="list-style-type: none"><li>– Received from other companies</li><li>– Withdrawn from inventory</li><li>– Received from other establishments of this company</li></ul></li><li>• All work done for your laboratories and other technical units by noncompany organizations; for example: Model construction by a non-company model shop</li></ul>	<ul style="list-style-type: none"><li>• Purchases from other R&amp;D organizations</li></ul>

**D. Depreciation on R&D property and equipment**

INCLUDE:
<ul style="list-style-type: none"><li>• Depreciation and amortization charged during the year against property and equipment related to your R&amp;D activities</li><li>• Depreciation and amortization against property and equipment acquired since the beginning of the year that was <b><i>sold or retired</i></b> during the year and not in service at the end of the year</li><li>• Depreciated amounts no higher than the actual cost of property and equipment</li></ul>

**E. All other R&D expenses**

INCLUDE:
<ul style="list-style-type: none"><li>• Books and periodicals</li><li>• Company overhead</li><li>• Property and other taxes</li><li>• Utilities</li></ul>

**Question 13** For the total R&D you reported in (5), line D, column 3, what were the costs for the following areas?

Question 13 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.

<b>INCLUDE:</b>	
<ul style="list-style-type: none"> <li>• DNA technologies such as:                             <ul style="list-style-type: none"> <li>– Genomics</li> <li>– Pharmacogenetics</li> <li>– Gene probes</li> <li>– DNA sequencing/synthesis/amplification</li> <li>– Genetic engineering</li> </ul> </li> <li>• Protein and molecular technologies such as:                             <ul style="list-style-type: none"> <li>– Protein/peptide sequencing/synthesis</li> <li>– Lipid/protein glycoengineering</li> <li>– Proteomics</li> <li>– Hormones</li> <li>– Growth factors</li> <li>– Cell receptors/signaling/pheromones</li> </ul> </li> <li>• Cell and tissue culture and engineering including:                             <ul style="list-style-type: none"> <li>– Cell/tissue culture</li> <li>– Tissue engineering</li> <li>– Hybridization</li> <li>– Cellular fusion</li> <li>– Vaccine/immune stimulants</li> <li>– Embryo manipulation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Process biotechnologies such as:                             <ul style="list-style-type: none"> <li>– Bioreactors</li> <li>– Fermentation</li> <li>– Bioprocessing</li> <li>– Bioleaching</li> <li>– Biopulping</li> <li>– Biobleaching</li> <li>– Bidesulphurization</li> <li>– Bioremediation</li> <li>– Biofiltration</li> </ul> </li> <li>• Subcellular organism research including:                             <ul style="list-style-type: none"> <li>– Gene therapy</li> <li>– Viral vectors</li> </ul> </li> <li>• Other biotechnology areas such as:                             <ul style="list-style-type: none"> <li>– Bioinformatics</li> <li>– Nanobiotechnologies</li> </ul> </li> </ul>

**B. Software development**

<b>INCLUDE:</b>	<b>EXCLUDE:</b>
<ul style="list-style-type: none"> <li>• Application development tools and environments</li> <li>• Applications software</li> <li>• Computer-aided design tools and methods</li> <li>• Computer systems software</li> </ul>	<ul style="list-style-type: none"> <li>• Software programming or engineering used exclusively for internal company operations such as financial management or human resources</li> </ul>

**Question 13 (continued)**

**C. Materials synthesis and processing**

Covers formulation and manipulation of new or improved materials using the data and techniques of science and engineering.

**INCLUDE:**

- 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. All other R&D areas**

Report the remainder of R&D costs so that the total for this question matches Question 5, line D, column 3.

**Question 14** If your company used nanotechnology for R&D during 2004, what percentage of the R&D costs reported in (13) are attributable to nanotechnology for the following areas?

Question 14 asks for the nanotechnology proportion of the R&D expenditures provided in Question 13.

**For example, if about a fourth of your biotechnology R&D expenditures was devoted to nanotechnology projects, report 25% in Question 14.**

**Nanotechnology** is the creation and utilization of materials, devices, and systems sized 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 15** For the Federal and total R&D you reported in (5), line D, columns 1 and 3, what were the costs for the R&D performed in each of the 50 United States and D.C.? (The totals for this item should equal the totals reported in (5), line D, columns 1 and 3.)

Question 15 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 16** If your company performed energy-related R&D during 2004, what were the costs of the R&D performed in the 50 United States and D.C. for the following sources of energy?

Question 16 covers R&D by type of energy source.

**The types of R&D projects that are included:**

<b>INCLUDE:</b>
<ul style="list-style-type: none"><li>• R&amp;D to increase energy resources or capabilities</li><li>• Development of energy equipment</li><li>• Products and processes for exploration, extraction, transportation, processing, storage, generation (including conversion), distribution, conservation</li><li>• Present, new, or improved forms of energy</li></ul>

**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 16 (continued)**

**What is included for each type of energy:**

<b>Type of energy</b>	<b>INCLUDE:</b>
<b>Fossil fuels</b>	<ul style="list-style-type: none"> <li>• Oil</li> <li>• Gas</li> <li>• Shale</li> <li>• Coal               <ul style="list-style-type: none"> <li>– Including synthetic fuels designed to convert coal to gaseous and liquid products</li> <li>– Including equipment and techniques to improve the productivity and recovery rates of coal mining</li> </ul> </li> </ul>
<b>Geothermal and solar</b>	<ul style="list-style-type: none"> <li>• Geothermal heat pumps</li> <li>• Geothermal power plant generators</li> <li>• Photovoltaic technology</li> <li>• Solar water-heating systems</li> </ul>
<b>Nuclear</b>	<ul style="list-style-type: none"> <li>• Fission and fusion</li> </ul>
<b>All other energy sources</b>	<ul style="list-style-type: none"> <li>• Conservation and utilization R&amp;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"> <li>– Reduce fuel consumption in manufacturing</li> <li>– Improve the efficiency of transportation of energy products</li> <li>– Produce an end product that is more efficient in energy consumption</li> </ul> </li> <li>• Wind, waste, hydroelectric</li> <li>• Other energy R&amp;D that cannot be classified above</li> </ul>

**Question 17** If your company collaborated with others to perform R&D during 2004, what were your company's costs for the R&D performed in the 50 United States and D.C. with the following types of partners?

Question 17 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"> <li>• Activities performed jointly with other organizations including legally distinct business units, universities, government agencies, or nonprofit organizations</li> <li>• Alliances</li> <li>• Partnerships</li> <li>• Joint ventures</li> </ul>	<ul style="list-style-type: none"> <li>• Purchasing, funding, or financing relationships that do not involve joint or collaborative R&amp;D</li> </ul>

**Definitions of types of R&D partners**

<b>For-profit companies</b>	A company that is organized to pursue profit
<b>Federal agencies or laboratories</b>	Labs or other facilities owned by the United States government
<b>State government agencies or laboratories</b>	Labs or other facilities owned by the governments of the 50 United States or D.C.
<b>Universities and colleges</b>	A degree-granting institution of higher learning, having facilities for teaching and research
<b>Other nonprofit organizations</b>	An organization that is not organized to pursue profit. However, universities and colleges are reported in another category.

**Question 18 Company organization and ownership**

Question 18 asks for information on your company's ownership and your company's ownership of other entities.

**Question 19 Reporting period, location of records, contact information, and burden hours estimate.**

Question 19 covers the reporting period, some reporting characteristics, and provides space for your contact information. Please give the name and telephone number of the person in your company to contact regarding this report.

**Question 20 Remarks**

The Remarks section provides space for your comments and explanations.





# 2004 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT

OMB No. 0607-0912: Approval Expires 12/31/2007

**Mail** your completed form to:  
**U.S. CENSUS BUREAU**  
1201 East 10th Street  
Jeffersonville, IN 47132-0001

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](http://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.

This survey is conducted jointly with the National Science Foundation.



(Please correct any errors in this mailing address.)

**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. You will satisfy the mandatory requirements for this survey if you answer **2**, **3**, and **5**, line D, columns 1 and 3. Except as noted, this report should cover your entire consolidated domestic enterprise, **including all U.S. subsidiaries.** Reasonable estimates are acceptable.

## 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 2004? (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".

Dollar figures should be rounded to thousands of dollars.

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

2004		
\$ Billions	Millions	Thousands
	1 0 2 6	

**2** What was the amount of your company's **sales, shipments, operating receipts, or revenues**, net of returns and allowances attributable to domestic operations in the 50 United States or D.C. during 2004? (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.) . . . . .

Mark "X" if None 0130

2004		
\$ Billions	Millions	Thousands
102		

**3** How many **employees** worked in the 50 United States or D.C. for your company on March 12, 2004? (INCLUDE number of full- and part-time employees whose payroll was reported on Internal Revenue Service Form 941, Employer's Quarterly Federal Tax Return.) . . . . .

Mark "X" if None 0131

Number
112

**4** What was the number of full-time equivalent (FTE) **scientists and engineers** employed by your company as of January 1, 2005?

(See Instructions for the definition of FTE scientists and engineers.) . . . . .

Mark "X" if None 0134

January 1, 2005	
Number of FTEs	
206	

**5** What was the cost of R&D performed within your company **in the 50 United States and D.C.** from each of the sources of funding below during 2004?

**A. Basic research** (Activity toward the advancement of scientific knowledge without specific immediate commercial objectives.)

Mark "X" if no basic research 0135

**B. Applied research** (Activity directed primarily towards a specific commercial or practical objective.)

Mark "X" if no applied research. . . . 0136

**C. Development** (Activity translating research into new or improved products, services, or processes.)

Mark "X" if no development 0137

**D. TOTAL** (Add lines A through C.)

Mark "X" if no R&D . . . . . 0138

2004								
(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
304			305			306		
314			315			316		
324			325			326		
344			345			346		

11001021

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

**6** If your company plans to perform R&D during 2005, what is the estimated projected cost?  
  
*(Comparable to the 2004 figure reported in 5, line D.)*  
  
Mark "X" if no R&D is planned for next year . . . 0139

2005								
(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
403			402			401		

**7** If others outside your R&D funded by you, what were the costs of the R&D performed in the 50 United States and D.C. during 2004?  
  
Mark "X" if no R&D was performed by others . . . . . 0140

2004								
(1) Federal funds			(2) Company and other nonfederal funds			(3) Total funds Columns 1 + 2		
\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands	\$ Billions	Millions	Thousands
354			355			356		

**8** Not Applicable.

**9** If your company funded R&D performed **outside the 50 United States and D.C.** during 2004, what were the costs? *(Please report costs of R&D performed by subsidiaries, affiliates, or others based on your company's percentage of ownership, if any, of the entity that conducted the R&D. Ownership can be based on voting stock or equivalent interest.)*  
  
Mark "X" if None 0147

**A.** More than 50% ownership (This category INCLUDES wholly owned subsidiaries and locations.) . . . . .

**B.** 10% to 50% ownership . . . . .

**C.** More than 0% but less than 10% ownership . . . . .

**D.** 0% - No company ownership . . . . .

**E. TOTAL** (Add lines A through D.) . . . . .

2004		
Company and other nonfederal funds		
\$ Billions	Millions	Thousands
366		
365		
364		
363		
369		

**10-12** Not Applicable.



11001039

**13** For the total R&D you reported in **5**, line D, column 3, what were the costs for the following areas?

**A.** Biotechnology (The use of scientific and engineering data and techniques for the study and solution of problems concerning living organisms.) . . . . . *Mark "X" if None* 0172

**B.** Software development (The formulation of programs, applications, routines, etc., for computers, excluding those used exclusively for internal company operations.) . . . . . *Mark "X" if None* 0173

**C.** Materials synthesis and processing (The use of scientific and engineering data and techniques for the formulation and manipulation of new materials.) . . . . . *Mark "X" if None* 0174

**D.** All other R&D areas . . . . . *Mark "X" if None* 0175

**E. TOTAL** (Add lines A through D. The sum should equal the total reported in **5**, line D, column 3.) . . . . . *Mark "X" if None* 0176

2004		
Total funds		
\$ Billions	Millions	Thousands
7111		
7211		
7311		
7411		
7511		

**14** If your company used **nanotechnology** for R&D during 2004, what percentage of the R&D costs reported in **13** are attributable to nanotechnology for the following areas? (Nanotechnology is the creation and utilization of materials, devices, and systems sized at the level of atoms and molecules in the range of 1 to 100 nanometers.)

**A.** Biotechnology . . . . . *Mark "X" if None* 0177

**B.** Software development . . . . . *Mark "X" if None* 0178

**C.** Materials synthesis and processing . . . . . *Mark "X" if None* 0179

**D.** All other R&D areas . . . . . *Mark "X" if None* 0180

2004	
Whole percents	
7112	%
7212	%
7312	%
7412	%

**15-17** Not Applicable.



11001047

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

**18 A.** Does this report cover your entire consolidated domestic enterprise, including all U.S. subsidiaries? (Mark "X" only ONE box.)

1301  Yes

1330  No - Please explain in 20.

**B.** Was this company owned or controlled by another company on December 31, 2004?

001  Yes - Give date acquired at right AND enter new owner name and mailing address below ↴

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

No

**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 2:** Are sales reported in **thousands** of dollars?

Yes

No

**In 3:** Does your answer describe the number of **employees**, NOT company payroll?

Yes

No

**In 5:** Does the **Federal funds** (column 1) plus **Company funds** (column 2) equal **Total funds** (column 3) for each of the following rows?

Basic research (5A), applied research (5B), development (5C), total research and development (5D).

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 20.



11001054

**19** Reporting period, location of records, and contact information

**A.** Is the time period covered by this report a calendar year?

0078  Yes

0079  No - Enter time period covered → FROM

Month	Year
0070	

TO

Month	Year
0071	

**B.** Are all of your company's R&D records and data in a central location?

0080  Yes

0081  No - How many locations? →

0086

--

0085  Other - Please describe →

0087

--

**C.** Did more than one person compile the information for this form?

0082  Yes - How many? →

0084

--

0083  No

**D.** How many hours did it take to complete this form?  
 (INCLUDE time spent for reviewing instructions, searching existing data sources, gathering and maintaining data needed, and completing and reviewing the collection of information.)

Number of hours
0090

0072 Name of person to contact regarding this report

0073 Title

Area code	Number	Extension

Telephone 0074

Area code	Number

Fax 0075

0076 Internet e-mail address

Date completed 0069

Month	Day	Year

**20** REMARKS (Please use this space for any explanations that may help us in understanding your reported data.)

**Thank you for completing your 2004 SURVEY OF INDUSTRIAL RESEARCH AND DEVELOPMENT form.**

**PLEASE PHOTOCOPY THIS FORM FOR YOUR RECORDS AND RETURN THE ORIGINAL.**

# 2004 Survey of Industrial Research and Development

## Form RD-1A

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# 2004 Survey of Industrial Research and Development Form RD-1A General Instructions

## Changes from 2003 to 2004 R&D survey year

- 1) The wording of most items has been changed for clarification.
- 2) Some item headings and numbers have changed. The four mandatory items are now as follows:
  - Question 2
  - Question 3
  - Question 5D, column 1
  - Question 5D, column 3
- 3) Some item response categories have been added; wording for some has been changed for clarification.
  - Question 6, column headings (1) Federal funds and (3) Total funds Columns 1+2, have been added.
  - Question 9, response categories have been reversed and explanatory wording added.

## 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 6 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.

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 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 2004 information, if possible. If not, please use your fiscal year ending between September 2004 and March 2005

## **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.

The system requirements for the electronic questionnaire are:

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 Business Help Site at: [www.census.gov/econhelp/rd](http://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.

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.

## 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 this burden estimate or any other aspects of this collection of information, including suggestions for reducing this burden to:

Paperwork Project 0607-0912  
U.S. Census Bureau  
4700 Silver Hill Road, Stop 1500,  
Washington, DC 20233-1500

You may e-mail comments to [Paperwork@census.gov](mailto:Paperwork@census.gov); use "Paperwork Project 0607-0912" as the subject.

## 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 United States and D.C. (This also includes R&D they may perform **outside** of the 50 United 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"> <li>• Activities that incorporate:               <ul style="list-style-type: none"> <li>– Basic and applied research in the sciences and engineering</li> <li>– Design and development of new products and processes</li> <li>– Enhancement of existing products and processes</li> </ul> </li> <li>• Activities carried on by persons trained, either formally or by experience, in:               <ul style="list-style-type: none"> <li>– Biological sciences (e.g., medicine)</li> <li>– Computer science</li> <li>– Engineering</li> <li>– Mathematical and statistical sciences</li> <li>– Physical sciences (e.g., chemistry and physics)</li> </ul> </li> <li>• Activities that take place in:               <ul style="list-style-type: none"> <li>– Separate R&amp;D organizational units of the company</li> <li>– Company laboratories</li> <li>– Technical groups not part of an R&amp;D organization</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D from acquired companies prior to acquisition (in-process R&amp;D)</li> <li>• Amortization above the actual cost of property and equipment related to your R&amp;D activities</li> <li>• Testing and evaluation once a prototype becomes a production model</li> <li>• Routine product testing</li> <li>• Geological and geophysical exploration activities</li> <li>• Technical services such as:               <ul style="list-style-type: none"> <li>– Quality and quantity control</li> <li>– Technical plant sanitation control</li> <li>– Troubleshooting in connection with breakdowns in full-scale production</li> </ul> </li> <li>• Advertising programs to promote or demonstrate new products or processes</li> <li>• Assistance in preparation of speeches and publications for persons not engaged in R&amp;D</li> <li>• Social science R&amp;D including:               <ul style="list-style-type: none"> <li>– Personnel R&amp;D</li> <li>– Economic R&amp;D</li> <li>– Artificial intelligence and expert systems R&amp;D</li> <li>– Consumer, market, and opinion R&amp;D</li> <li>– Engineering psychology R&amp;D</li> <li>– Management and organization R&amp;D</li> <li>– Actuarial and demographic R&amp;D</li> <li>– Educational processes and applications R&amp;D</li> <li>– R&amp;D in law</li> </ul> </li> </ul>

## Question-by-Question Instructions

### Question 1 Did your company conduct R&D in 2004?

Question 1 asks if your company performed R&D in 2004.

*If "Yes," your company conducted R&D in 2004, continue to fill out the rest of the form.*

*If "No," your company did not conduct R&D in 2004, 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 2 What was the amount of your company's sales, shipments, operating receipts, or revenues, net of returns and allowances attributable to domestic operations in the 50 United States or D.C. during 2004?

Question 2 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"> <li>• Sales, operating receipts, and revenues from all domestic operations of the company, <b>net of returns and allowances</b></li> <li>• Receipts from sales of products and services provided to other companies, individuals, U.S. Government agencies, and foreign countries</li> <li>• Net selling value of shipments, f.o.b. (freight on board) plant, after discounts and allowances minus freight charges and excise taxes</li> <li>• Revenue from investments, rents, and royalties only if it is the principal business of the company</li> <li>• Interest, dividends, commissions, and rental income as part of revenues <b>only</b> if you are a finance, insurance, or real estate company</li> <li>• Value of assets sold under a capital lease agreement</li> <li>• Export transfers to your foreign subsidiaries and affiliates</li> </ul>	<ul style="list-style-type: none"> <li>• Sales and other taxes collected and paid directly to government taxing agencies</li> <li>• Domestic intracompany transfers</li> <li>• Receipts from sale of products and services provided by your foreign subsidiaries and affiliates</li> <li>• Receipts from sale of products and services provided by your subsidiaries and affiliates in Puerto Rico and other U.S. territories <b>outside</b> the 50 United States and D.C.</li> <li>• Income from interest, dividends, and commissions (Exception: Companies in the finance, insurance, and real estate industries)</li> <li>• Other nonoperating income (e.g., royalties)</li> </ul>

**Question 3** How many employees worked in the 50 United States or D.C. for your company on March 12, 2004?

Question 3 covers domestic company employment. Report only the parts of your company located **within** the 50 United 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, 2004
- Persons on paid sick leave, paid holidays, and paid vacations during the pay period that includes March 12, 2004

**Question 4** What was the number of full-time equivalent (FTE) scientists and engineers employed by your company as of January 1, 2005 who worked on the following types of R&D during 2004?

Question 4 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 employees performing only research and development, count the number of scientists and engineers employed in January 2005.
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 2005 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 5** What was the cost of R&D performed within your company in the 50 United States and D.C. from each of the sources of funding below during 2004?

Question 5 covers the R&D that is performed both (1) *within* your company and (2) *within* the 50 United States and D.C.

**How to decide which expenditures to include as R&D costs**

<b>INCLUDE:</b>	<b>EXCLUDE:</b>
<ul style="list-style-type: none"> <li>• Wages, salaries, and related costs</li> <li>• Materials and supplies consumed</li> <li>• R&amp;D depreciation</li> <li>• Cost of computer software used in R&amp;D activities</li> <li>• Utilities, such as telephone, telex, electricity, water, and gas</li> <li>• Travel costs and professional dues</li> <li>• Property taxes and other taxes (except income taxes) incurred on account of the R&amp;D organization or the facilities they use</li> <li>• Insurance expenses</li> <li>• Maintenance and repair, including maintenance of buildings and grounds</li> <li>• Company overhead including: personnel, accounting, procurement and inventory, and salaries of research executives not on the payroll of the R&amp;D organization</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D from acquired companies prior to acquisition (in-process R&amp;D)</li> <li>• Capital expenditures</li> <li>• Testing and evaluation once a prototype becomes a production model</li> <li>• Patent expenses</li> <li>• Income taxes and interest</li> </ul>

**Question 5 (continued)**

**How to decide which category of R&D**

<p><b>1. Basic research</b></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><b>2. Applied research</b></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><b>3. Development</b></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><b>INCLUDE:</b></p>	<p><b>EXCLUDE:</b></p>
	<ul style="list-style-type: none"> <li>• Expenditures for designing and conducting clinical trials of drugs, pharmaceuticals, or other products that have not been marketed</li> <li>• Software development               <ul style="list-style-type: none"> <li>– Designing and/or adapting software if the application has commercial value (exclude software development for internal use)</li> <li>– Beta version of software being developed that has potential commercial application</li> <li>– Design and operation of pilot plants and semiwork plants</li> </ul> </li> <li>• Engineering activity required to advance the design of a product or process so it meets specific functional and economic requirements</li> <li>• Design, construction, and testing of prototypes and models including test models for defense contracts</li> <li>• Designs for special manufacturing equipment and tools</li> <li>• Preparation of reports, drawings, formulas, specifications, standard practice instructions, or operating manuals</li> </ul>	<ul style="list-style-type: none"> <li>• Software development intended for <i>within</i> company use only</li> <li>• Routine technical services to customers</li> <li>• Tool making and tool tryout</li> <li>• Production of detailed construction drawings and manufacturing blueprints</li> </ul>



**Question 5 (continued)**

**How to decide which category to use for sources of R&D funding**

<b>Source of R&amp;D</b>	<b>INCLUDE:</b>	<b>EXCLUDE:</b>
Federal funds	<ul style="list-style-type: none"> <li>• Federally funded R&amp;D performed <b>within</b> the company. Include only the amount of work done on Federal R&amp;D contracts or subcontracts in the current year.</li> <li>• R&amp;D portion of procurement contracts or subcontracts</li> </ul>	<ul style="list-style-type: none"> <li>• Federally funded R&amp;D contracted or subcontracted to or otherwise performed by others <b>outside</b> of your company. (Report such funds in Question 7.)</li> <li>• Expenditures for independent research and development (IR&amp;D). (Report in column 2, Company and other nonfederal funds.)</li> </ul>
Company and other nonfederal funds	<ul style="list-style-type: none"> <li>• R&amp;D from company and other nonfederal sources that is performed <b>within</b> the company</li> </ul> <p>NOTE that “<b>company and other nonfederal funds</b>” and “<b>company funded</b>” are used interchangeably in the Form RD-1A.</p> <ul style="list-style-type: none"> <li>• R&amp;D your company performs under contracts you have with non-Federal sources</li> <li>• Costs for independent research and development (IR&amp;D). We define IR&amp;D funds as R&amp;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&amp;D funds are excluded from federal funds received for federally sponsored research and development contracts.</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D from nonfederal sources that is contracted to or otherwise performed by others <b>outside</b> of your company (Report such funds in Question 7.)</li> </ul>

**Question 6** If your company plans to perform R&D during 2005, what is the estimated projected cost?

Question 6 asks for an estimate or projection of the cost of R&D your company expects to perform in 2005 in the 50 United States and D.C.

**Question 7** If others outside your company performed R&D funded by you, what were the costs of the R&D performed in the 50 United States and D.C. during 2004?

Question 7 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 and D.C.

Include payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, grantees, educational institutions, or other organizations.

**Question 8** What was the cost R&D reported in (7), column 2, performed by the following types of organizations?

Question 8 is not applicable to this form.

**Question 9** If your company funded R&D performed outside the 50 United States and D.C. during 2004, what were the costs? *(Please report costs of R&D performed by subsidiaries, affiliates, or others based on your company's percentage of ownership, if any, of the entity that conducted the R&D. Ownership can be based on voting stock or equivalent interest.)*

Question 9 covers R&D performed **outside** the 50 United States and D.C. including R&D performed in Puerto Rico.

For Question 9, line A, report payments for R&D projects, contracts, or services performed for your company by contractors, suppliers, educational institutions, or other organizations.

**Question 10** What was the cost of the R&D reported in (9), line A, in Puerto Rico and the following countries?

Question 10 is not applicable to this form.

**Question 11** If you reported Federally funded R&D in (5), line D, column 1, what were the costs funded by the following Federal agencies?

Question 11 is not applicable to this form.

**Question 12** For the total R&D you reported in (5), line D, column 3, what were the costs for the following types of expenses?

Question 12 is not applicable to this form.

**Question 13** For the total R&D you reported in (5), line D, column 3, what were the costs for the following areas?

Question 13 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.

<b>INCLUDE:</b>	
<ul style="list-style-type: none"> <li>• DNA technologies such as:             <ul style="list-style-type: none"> <li>– Genomics</li> <li>– Pharmacogenetics</li> <li>– Gene probes</li> <li>– DNA sequencing/synthesis/amplification</li> <li>– Genetic engineering</li> </ul> </li> <li>• Protein and molecular technologies such as:             <ul style="list-style-type: none"> <li>– Protein/peptide sequencing/synthesis</li> <li>– Lipid/protein glycoengineering</li> <li>– Proteomics</li> <li>– Hormones</li> <li>– Growth factors</li> <li>– Cell receptors/signaling/pheromones</li> </ul> </li> <li>• Cell and tissue culture and engineering including:             <ul style="list-style-type: none"> <li>– Cell/tissue culture</li> <li>– Tissue engineering</li> <li>– Hybridization</li> <li>– Cellular fusion</li> <li>– Vaccine/immune stimulants</li> <li>– Embryo manipulation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Process biotechnologies such as:             <ul style="list-style-type: none"> <li>– Bioreactors</li> <li>– Fermentation</li> <li>– Bioprocessing</li> <li>– Bioleaching</li> <li>– Biopulping</li> <li>– Biobleaching</li> <li>– Biodesulphurization</li> <li>– Bioremediation</li> <li>– Biofiltration</li> </ul> </li> <li>• Subcellular organism research including:             <ul style="list-style-type: none"> <li>– Gene therapy</li> <li>– Viral vectors</li> </ul> </li> <li>• Other biotechnology areas such as:             <ul style="list-style-type: none"> <li>– Bioinformatics</li> <li>– Nanobiotechnologies</li> </ul> </li> </ul>

**B. Software development**

<b>INCLUDE:</b>	<b>EXCLUDE:</b>
<ul style="list-style-type: none"> <li>• Application development tools and environments</li> <li>• Applications software</li> <li>• Computer-aided design tools and methods</li> <li>• Computer systems software</li> </ul>	<ul style="list-style-type: none"> <li>• Software programming or engineering used exclusively for internal company operations such as financial management or human resources</li> </ul>

**Question 13 (continued)**

**C. Materials synthesis and processing**

Formulation and manipulation of new or improved materials using the data and techniques of science and engineering.

<b>INCLUDE:</b>
<ul style="list-style-type: none"><li>• Advanced structural materials in the industrial machinery, medical, building, and construction industries</li><li>• Higher performance semiconductors and photonic devices in the semiconductor industry</li><li>• Ceramics and alloys designed to withstand extreme temperatures and stresses for use in engine and structural parts in the aerospace and automotive industries</li><li>• Composite materials for use in sporting goods</li><li>• New and significantly improved synthesis and production techniques for existing materials</li></ul>

**D. All other R&D areas**

Report the remainder of R&D costs so that the total for this question matches Question 5, line D, column 3.

**Question 14** If your company used nanotechnology for R&D during 2004, what percentage of the R&D costs reported in (13) are attributable to nanotechnology for the following areas?

Question 14 asks for the nanotechnology proportion of the R&D expenditures provided in Question 13.

**For example, if about a fourth of your biotechnology R&D expenditures was devoted to nanotechnology projects, report 25% in Question 14.**

**Nanotechnology** is the creation and utilization of materials, devices, and systems sized at the level of atoms and molecules in the range of 1 to 100 nanometers.

<b>INCLUDE:</b>
<ul style="list-style-type: none"><li>• Materials and systems that exhibit novel and significantly improved physical, chemical, and biological properties; phenomena; and processes because of their size</li></ul>

**Question 15** For the Federal and total R&D you reported in (5), line D, columns 1 and 3, what were the costs for the R&D performed in each of the 50 United States and D.C.?

Question 15 is not applicable to this form.

**Question 16** If your company performed energy-related R&D during 2004, what were the costs of the R&D performed in the 50 United States and D.C. for the following sources of energy?

Question 16 is not applicable to this form.

**Question 17** If your company collaborated with others to perform R&D during 2004, what were your company's costs for the R&D performed in the United States and D.C. with the following types of partners?

Question 17 is not applicable to this form.

**Question 18 Company organization and ownership**

Question 18 asks for information on your company's ownership and your company's ownership of other entities.

**Question 19 Reporting period, location of records, contact information, and burden hours estimate**

Question 19 covers the reporting period, some reporting characteristics, and provides space for your contact information. Please give the name and telephone number of the person in your company to contact regarding this report.

**Question 20 Remarks**

The Remarks section provides space for your comments and explanations.

## Suggested Citation, Acknowledgments

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