

# DATA BRIEF

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## 1995 U.S. Industrial R&D Rises, NSF Survey Statistics Expanded to Emphasize Role of Nonmanufacturing Industries

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*U.S. industry spent \$132 billion on R&D in 1995, up 10 percent from 1994; nonmanufacturing firms performed one-quarter of total R&D.*

The National Science Foundation's (NSF) Survey of Industrial Development for 1995 shows that firms spent \$132.1 billion on research and development (R&D) in the United States, more than 10 percent above the amount spent during 1994. Company funding continued to increase as it has each year since 1953, from \$97.1 billion to \$108.7 billion. Federal funding of industry-performed R&D increased from \$22.5 billion to

\$23.5 billion, reversing a downward trend that began in 1988. After adjustment for inflation, the direction of these changes is the same: total R&D rose 8 percent, company-funded R&D rose 9 percent, and federally funded R&D rose 2 percent. Summary statistics from the 1995 survey are presented and compared with statistics from the 1994 survey in Table 1. The remainder of this data brief highlights the expanded amount of information

**Table 1. Funds for industrial R&D, by selected characteristics, in current and constant dollars: 1994-95**

Source of funds, industry, and size of company	1994	1995	Percentage Change 1994-95	1994	1995	Percentage Change 1994-95
	Millions of current dollars			Millions of constant 1992 dollars		
Total industrial R&D.....	119,595	132,103	10.5	113,946	122,812	7.8
By source and performing sector:						
Company and other nonfederal, total.....	97,131	108,652	11.9	92,543	101,011	9.2
Manufacturing industries.....	73,375	81,236	10.7	69,909	75,523	8.0
Nonmanufacturing industries.....	23,756	27,415	15.4	22,634	25,487	12.6
Federal, total.....	22,463	23,451	4.4	21,402	21,802	1.9
Manufacturing industries.....	17,373	18,831	8.4	16,552	17,507	5.8
Nonmanufacturing industries.....	5,090	4,620	-9.2	4,850	4,295	-11.4
By character of work:						
Basic research.....	7,017	6,099	-13.1	6,686	5,670	-15.2
Applied research.....	23,490	27,454	16.9	22,380	25,523	14.0
Development.....	89,088	98,552	10.6	84,880	91,621	7.9
By size of company						
Fewer than 500 employees.....	13,966	16,662	19.3	13,306	15,490	16.4
500 to 999.....	3,608	4,693	30.1	3,438	4,363	26.9
1,000 to 4,999.....	14,617	16,960	16.0	13,927	15,767	13.2
5,000 to 9,999.....	8,912	9,532	7.0	8,491	8,862	4.4
10,000 to 24,999.....	15,972	17,071	6.9	15,218	15,870	4.3
25,000 or more.....	62,519	67,185	7.5	59,566	62,460	4.9
Company-financed R&D contracted to outside organizations.....	3,618	5,177	43.1	3,447	4,813	39.6
Manufacturing industries.....	2,450	3,812	55.6	2,334	3,544	51.8
Nonmanufacturing industries.....	1,168	1,365	16.9	1,113	1,269	14.0
Company-financed R&D performed outside the United States.....	9,395	13,052	38.9	8,951	12,134	35.6
Manufacturing industries.....	7,895	10,846	37.4	7,522	10,083	34.0
Nonmanufacturing industries.....	1,500	2,206	47.1	1,429	2,051	43.5

**NOTE:** Detail may not add to totals because of rounding.

**SOURCE:** National Science Foundation/SRS, Survey of Industrial Research and Development: 1995

### Electronic Dissemination

SRS data are available through the World Wide Web (<http://www.nsf.gov/sbe/srs/stats.htm>) For NSF's Telephonic Device for the Deaf, dial 703-306-0090. If you are a user of electronic mail and have access to the internet, you may order publications electronically. Send requests to [pubs@nsf.gov](mailto:pubs@nsf.gov). In your request, include the NSF publication number and title, your name, and a complete mailing address.

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about nonmanufacturing industries now available from the NSF survey and focuses on R&D performed by companies in these industries.

### Expanded Coverage of Nonmanufacturing Firms

NSF's Survey of Industrial Research and Development has been conducted annually since 1954 and for the first two decades of the survey, R&D performance was heavily concentrated in the manufacturing industries. Gradually, more companies in the nonmanufacturing industries began to perform R&D. In the 1970s, NSF recognized the need for more detailed information on the R&D performed by these firms and began to report more detailed statistics on them. Beginning with the 1995 cycle of the survey, much more detailed information is available about the nonmanufacturing sector with the addition of new industries and industry groups to the tabulations produced from the survey. This finer detail will allow more focused research, especially on the nonagricultural service industries, as their role in the U.S. economy continues to expand.

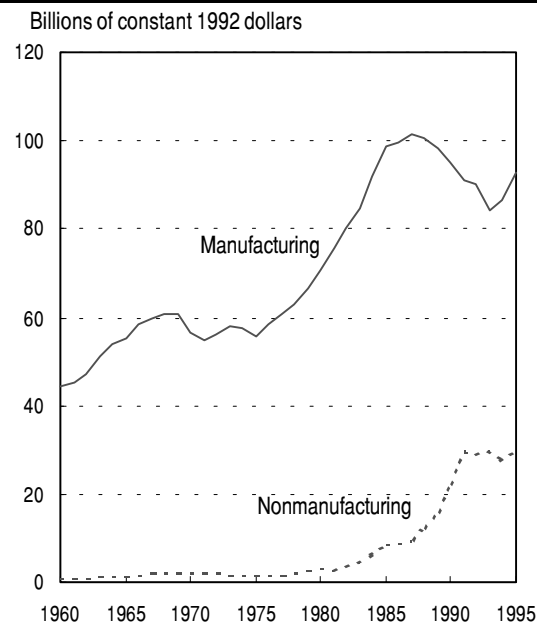
### Nonmanufacturing R&D Trends

Companies in the nonmanufacturing sector spent \$32.0 billion and conducted about a quarter of the industrial R&D performed in the U.S. during 1995, a share that has been maintained since the early 1990s. This is in contrast to the 3-percent share performed by this group of companies during 1965 and 1975 and the 8-percent share performed during 1985 (although a portion of the increase may be because of improved sampling over the years). The role of the nonmanufacturing industries in the performance of industrial R&D is illustrated in chart 1.

### Sources of Support for Nonmanufacturing R&D

Nonmanufacturing firms as a group performed 11 percent more R&D during 1995 than during 1994. While the Federal Government's support to companies in the nonmanufacturing industries declined 9 percent, from \$5.1 billion during 1994 to \$4.6 bil-

**Chart 1. Funds spent for industrial R&D by manufacturing and nonmanufacturing companies, in constant dollars, 1960-95**



**SOURCE:** National Science Foundation/SRS, Survey of Industrial Research and Development: 1995

lion during 1995, the amount firms contributed to their own R&D efforts grew 15 percent, from \$23.8 billion to \$27.4 billion. For comparison, Federal support to manufacturers grew 8 percent, from \$17.4 billion to \$18.8 billion, and company-funded R&D performed by manufacturers grew 11 percent, from \$73.3 billion to \$81.2 billion.

Among the largest nonmanufacturing performers of *company-funded R&D* were computer-related service firms, which spent \$8.5 billion; trade industries, which spent \$7.5 billion; telephone communications firms, which spent \$4.7 billion; and research, development, and testing labs; which spent \$2.8 billion. *Company-funded R&D* performed by these and the other industries and industry groups recently added to the survey tabulations are highlighted in Table 2.

Chief among the nonmanufacturing industries supported by Federal R&D dollars, largely through purchases of software services, were engineering and management service industries. This group included engineering, archi-

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**Table 2. Company and other funds for industrial R&D, by nonmanufacturing industry, in current and constant dollars: 1995**

Industry	Current dollars	Constant (1992) dollars
	(Millions of dollars)	
Total company-funded industrial R&D.....	108,652	101,011
Manufacturing industries, total.....	81,236	75,523
Nonmanufacturing industries, total.....	27,415	25,487
Transportation and Utilities.....	5,183	4,818
Communications.....	4,756	4,422
Telephone communications.....	4,697	4,367
Other communications.....	59	55
Electric, gas, and sanitary services.....	347	323
Other transportation and utilities.....	80	74
Trade.....	7,514	6,986
Finance, insurance, and real estate.....	710	660
Services.....	13,606	12,649
Business services.....	8,681	8,070
Computer and data processing services.....	8,545	7,944
Other business services.....	136	126
Health services.....	753	700
Offices and clinics of medical doctors, hospitals, medical labs.....	737	685
Other health services.....	16	15
Engineering and management services.....	4,011	3,729
Engineering, architectural, and surveying.....	1,050	976
Research, development, and testing.....	2,829	2,630
Other engineering and management services.....	132	123
Other services.....	160	149
Other nonmanufacturing industries.....	402	374

**NOTE:** In the text, company-funded R&D includes funds for industrial R&D performed within company facilities from all sources except the Federal Government. The funds may be the company's own or from outside organizations such as research institutions, universities and colleges, nonprofit organizations, other companies, and state governments.

**SOURCE:** National Science Foundation/SRS, Survey of Industrial Research and Development: 1995

*Companies in service industries spent \$17.9 billion and performed over half of total nonmanufacturing R&D in 1995.*

tectural, and surveying firms, and research, development, and testing labs. As a group, firms in the engineering and management service industries spent \$3.7 billion of the total \$4.6 billion provided by the Federal Government to companies in the nonmanufacturing industries for R&D.

### Service industries

The nonmanufacturing sector includes companies in the following industrial classifications: agricultural services, forestry, mining, construction, transportation, utilities, trade, finance, and services. Industries classified as "services" include companies that provide business, health, and engineering and management services. As a group they performed 14 percent of *total industrial R&D* (not shown in Table 2) during

1995. Companies in these industries spent \$17.9 billion on R&D, which was over half of the amount spent by all R&D-performing companies in the nonmanufacturing industries. Of the \$17.9 billion, business service industries, which included firms that provided computer and data processing services, accounted for 52 percent, or \$9.3 billion; engineering and management services, which included research, development, and testing labs, accounted for 43 percent, or \$7.7 billion; and health care and other services accounted for the remaining 5 percent, or \$0.9 billion.

As the statistics in Table 2 indicate, companies in the service classifications funded 76 percent of their own R&D. Company-funded R&D totaled \$13.6 billion, while Fed-

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eral funding accounted for the remaining 24 percent, or \$4.3 billion, of R&D performed during 1995. Among the newly tabulated service industries, companies that provided computer and data processing services funded 94 percent of the R&D they performed, and firms that provided engineering, architectural, and surveying services funded 36 percent.

### Notes on Future Surveys

Research continues on ways to improve the validity, strengthen the coverage, and increase the overall relevance of the Survey of Industrial Research and Development, while minimizing the reporting burden on the companies selected for the survey. Recent research has focused on strengthening the statistics for the industries that perform the greatest amount of R&D and minimizing the focus on industries that perform little or no R&D. The result of this research is a new sampling approach, which was implemented for the 1996 cycle of the survey and will be evident in the tabulations produced later this year. Those firms that are in industries that do not conduct significant amounts of R&D have been sampled at much lower rates than they were

traditionally. This shifted more emphasis (i.e., more of the sample) toward those industries that will be crucial in developing strong, representative estimates of R&D spending. The new sampling approach will be discussed in detail in the annual report, *Research and Development in Industry: 1996*. R&D expenditure levels from Federal sources, presented here based on performer-reported surveys, differ from the Federal R&D funding totals reported by the Federal agencies that provide those funds. During the past several years, these differences have widened. The difference in the Federal R&D totals appears to be concentrated in the funding of industry by the Department of Defense. See *National Patterns of R&D Resources: 1996* (NSF 96-333) and the forthcoming *National Patterns of R&D Resources: 1998* for detailed discussion and documentation of these differences.

### Statistical Reports

This Data Brief is the first publication of statistics and information from the 1995 Survey of Industrial Research and Development. The annual report, *Research and Development in Industry: 1995*, will contain the full set

of approximately 70 tables available from the survey. To provide users with the most timely statistics possible while the annual report is being prepared, a set of advanced release tables is available from the Internet and mailing addresses below. Both the advanced release tables and the annual report present R&D statistics by industry, size of company, sources of funds, and character of R&D. They also provide historical trends in R&D; R&D as a percent of sales; R&D contracted out and performed outside the United States; sales and total employment of R&D-performing companies; employment and cost of R&D scientists and engineers, and state statistics. The annual report presents technical information on the survey sample and processing and additional analysis of the statistics.

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