InfoBrief

NCSES National Center for Science and Engineering Statistics

August 2015 ■ NSF 15-329

Business R&D Performance in the United States Increases Over 6% to $323 Billion in 2013

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Companies spent $323 billion on research and development performed in the United States during 2013, 6.7% more than the $302 billion spent during 2012 (table 1). Funding from the companies' own sources was $247 billion during 2012 and $265 billion during 2013, a 7.1% increase. Funding from other sources was $55 billion during 2012 and $58 billion during 2013 (table 1). Data for this InfoBrief are from the Business R&D and Innovation Survey (BRDIS), which was developed and is cosponsored by the National Science Foundation and the U.S. Census Bureau.

R&D Performance, by Industrial Sector and Source of Funding

During 2013, companies in manufacturing industries performed $221 billion (69%) of *domestic R&D*, defined as R&D performed in the 50 states and Washington, D.C. (table 2). Most of the funding was from companies' own funds (82%). Companies in nonmanufacturing industries performed $101 billion of domestic R&D (31% of total domestic R&D performance), 83% of

TABLE 1. Funds spent for business R&D performed in the United States, by source of funds and size of company: 2012–13
(Millions of U.S. dollars)

Selected characteristic	2012	2013
Domestic R&D performance	302,250	322,528
Source of funds		
Paid for by the company	247,280	264,913
Paid for by others	54,970	57,615
Federal	30,621 i	29,362 i
Other[a]	24,349	28,253
Size of company (number of domestic employees)		
5–24	9,841	10,297
25–49	7,195	7,941
50–99	9,182	8,910
100–249	12,480	13,666
250–499	11,264	12,189
500–999	11,484	12,002
1,000–4,999	50,691	55,517
5,000–9,999	30,483	31,514
10,000–24,999	49,493	51,218
25,000 or more	110,138	119,275

i = more than 50% of value imputed.

[a] Includes companies located inside and outside the United States, U.S. state government agencies and laboratories, foreign government agencies and laboratories, and all other organizations located inside and outside the United States.

NOTES: Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D. Excludes data for federally funded research and development centers. The Business R&D and Innovation Survey does not include companies with fewer than five employees.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Business R&D and Innovation Survey.

TABLE 2. Funds spent for business R&D performed in the United States, by source of funds and selected industry: 2012 and 2013
(Millions of U.S. dollars)

Industry and NAICS code	All R&D	Paid for by the company	Paid for by others				
			Total	Federal	Companies		All other organizations[b]
					Domestic	Foreign[a]	
			2013				
All industries, 21–33, 42–81	322,528	264,913	57,615	29,362	13,450	13,791	1,012
Manufacturing industries, 31–33	221,476	181,170	40,306	22,958	5,174	11,427	747
Chemicals, 325	61,664	54,285	7,379	356	1,389	5,594	40
Pharmaceuticals and medicines, 3254	52,426	45,891	6,534	167	1,343	4,987	37
Other 325	9,238	8,394	845	189	46	607	3
Machinery, 333	12,650	12,092	558	128	110	309	11
Computer and electronic products, 334	67,205	57,364	9,841	4,866	1,748	D	D
Electrical equipment, appliance, and components, 335	4,136	3,660	475 i	129 i	83	D	D
Transportation equipment, 336	45,972	25,165	20,807 i	17,312	1,328	D	D
Automobiles, trailers, and parts, 3361–63	16,729	14,081	2,647	304 i	565 i	1,772	6
Aerospace products and parts, 3364	27,114	10,042	17,072 i	15,927	758	D	D
Other 336	2,129	1,042	1,088	1,081	5	D	D
Manufacturing nec, other 31–33	29,849	28,604	1,246	167	516	540	23
Nonmanufacturing industries, 21–23, 42–81	101,052	83,742	17,310	6,404	8,276	2,364	266
Information, 51	57,207	56,039	1,168	203	447	512	6
Software publishers, 5112	35,333	34,296	1,037	173	386	474	4
Other 51	21,874	21,743	131	30	61	38	2
Finance and insurance, 52	4,308	4,298	10	0	10	0	0
Professional, scientific, and technical services, 54	31,017	15,617 i	15,400	6,033	7,610	1,525	232
Computer systems design and related services, 5415	9,268	8,107 i	1,161 i	809 i	175 i	157	20
Scientific R&D services, 5417	14,201	2,838	11,363	3,288	6,841	1,127	107
Other 54	7,548	4,672	2,876	1,936	594	241	105
Nonmanufacturing nec, other 21–23, 42–81	8,520	7,788	732	168	209	327	28
			2012				
All industries, 21–33, 42–81	302,250	247,280	54,970	30,621 i	11,624	12,093	632
Manufacturing industries, 31–33	208,415	170,197	38,218	24,059 i	4,553	9,320	286
Chemicals, 325	57,225	50,867	6,359	369 i	1,374	4,605	11
Pharmaceuticals and medicines, 3254	48,146	42,594	5,552	57	1,337	4,153	5
Other 325	9,079	8,273	807	312	37	452	6
Machinery, 333	14,254	13,294	960	385	278	192	105
Computer and electronic products, 334	65,068	56,677	8,391	4,852	1,248	2,167	124
Electrical equipment, appliance, and components, 335	3,087	2,900	187	44 i	10 i	132	1
Transportation equipment, 336	42,305	21,344	20,961 i	18,268 i	1,312	1,359	22
Automobiles, trailers, and parts, 3361–63	D	13,191	D	D	558 i	D	D
Aerospace products and parts, 3364	24,817	7,140	17,677 i	16,895 i	749	D	D
Other 336	D	1,013	D	D	5	D	D
Manufacturing nec, other 31–33	26,476	25,115	1,360	141	331	865	23
Nonmanufacturing industries, 21–23, 42–81	93,835	77,083	16,752	6,562	7,071	2,773	346
Information, 51	46,805	45,851	954	142	351	419	42
Software publishers, 5112	28,745	28,012	733	103	256	367	7
Other 51	18,060	17,839	221	39	95	52	35
Finance and insurance, 52	3,519	3,507	12	0	11	2	0
Professional, scientific, and technical services, 54	34,309	20,166	14,143	5,606	6,333	1,947	257
Computer systems design and related services, 5415	11,251 i	9,163 i	2,088	1,449	435 i	180	24
Scientific R&D services, 5417	16,544	6,788	9,756	2,596	5,512	1,540	108
Other 54	6,514	4,215	2,299	1,561	386	227	125
Nonmanufacturing nec, other 21–23, 42–81	9,202	7,559	1,643	814	376	405	48

D = suppressed to avoid disclosure of confidential information; i = more than 50% of value imputed.

NAICS = North American Industry Classification System; nec = not elsewhere classified.

[a] Includes foreign parent companies of U.S. subsidiaries.

[b] Includes U.S. state government agencies and laboratories, foreign agencies and laboratories, and all other organizations located inside and outside the United States.

NOTES: Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D. Industry classification was based on dominant business code for domestic R&D performance, where available. For companies that did not report business codes, the classification used for sampling was assigned. Excludes data for federally funded research and development centers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Business R&D and Innovation Survey.

which was paid for from companies' own funds. The U.S. federal government was the chief source of *external funding* (also referred to as *R&D paid for by others*) for R&D across all industries. Of the $58 billion paid for by others, the federal government accounted for $29 billion, most of which came from the Department of Defense ($23 billion) (data not shown). Ninety-one percent of federal government R&D funding went toward aerospace products and parts (North American Industry Classification System [NAICS] code 3364), professional, scientific, and technical services (NAICS 54), and computer and electronic products (NAICS 334). Next among external funders were foreign companies ($14 billion)—including foreign parent companies of U.S. subsidiaries—and other U.S. companies ($13 billion) (table 2) (see "Survey Information and Data Availability" for information on industry classification).

R&D Performance, by Company Size

Small companies (from 5 to 499 domestic employees) performed 16% of the nation's total business R&D in 2013 (table 1). In these companies, the R&D/sales ratio, or *R&D intensity*, was 4.3%, compared with 3.2% for all other companies (tables 1 and 3). Small companies accounted for 13% of sales and employed 19% of 20.0 million who worked for R&D-performing or R&D-funding companies. Of the 1.5 million R&D employees engaged in business R&D in the United States, 30% worked for small companies. By contrast, mid-size companies (from 500 to 24,999 domestic employees) performed 47% of the nation's total business R&D in 2013, and their R&D intensity was 3.5%. They accounted for 45% of sales and employed 39% of those who worked for R&D-performing or R&D-funding companies, including 43% of R&D employees in the United States. The largest companies (25,000 or more domestic employees) performed 37% of the nation's total business R&D in 2013, and their R&D intensity was 2.9%. The largest companies employed 42% of those who worked for R&D-performing or R&D-funding companies, including 27% of R&D employees in the United States.

R&D Performance, by State

Business R&D is concentrated in a relatively small number of states. During 2013, companies reported $265 billion of domestic R&D paid for by the company. Businesses in California alone accounted for 29.0% of this amount in 2013 (table 4). Other states with large amounts of company-funded business R&D, as reflected by the percentages of the national total they accounted for in 2013, were Michigan (5.4%), Massachusetts (5.3%), Washington (5.3%), Texas (5.1%), Illinois (4.5%), New Jersey (4.5%), New York (3.6%), and Pennsylvania (3.8%).

Sales, R&D Intensity, and Employment of Companies that Performed or Funded R&D

U.S. companies that performed or funded R&D reported domestic net sales of $10 trillion in 2013 (table 3).[2] For all industries, the R&D intensity was 3.3%; for manufacturers, 3.8%; and for nonmanufacturers, 2.7%. Manufacturing industries with high levels of R&D intensity in 2013 were computer and electronic products (NAICS 334) (10.6%), pharmaceuticals and medicines (NAICS 3254) (10.3%), and aerospace products and parts (NAICS 3364) (7.6%). Among the nonmanufacturing industries, industries with high levels of R&D intensity were scientific R&D services (NAICS 5417) (20.1%), software publishers (NAICS 5112) (9.0%), and computer systems design and related services (NAICS 5415) (8.4%).

Businesses that performed or funded R&D employed 20.0 million people in the United States during 2013. A total of 1.5 million (7.5%) were R&D employees.[3] Not surprisingly, industries with high levels of R&D intensity also had high numbers of R&D employees in 2013: computer and electronic products (NAICS 334) (255,000 R&D employees), pharmaceuticals and medicines (NAICS 3254) (117,000), and aerospace products and parts (NAICS 3364) (64,000). Nonmanufacturing industries with high numbers of R&D employees were software publishers (NAICS 5112) (181,000), computer systems design and related services (NAICS 5415) (75,000), and scientific R&D services (NAICS 5417) (72,000) (table 3).

Survey Information and Data Availability

The sample for BRDIS was selected to represent all for-profit, nonfarm companies that are publicly or privately held and have five or more employees in the United States. Estimates produced from the survey and presented in this InfoBrief are restricted to companies that perform or fund R&D, either domestically or abroad. Because the statistics from the survey are based on a sample, they are subject to both sampling and nonsampling errors (see technical notes in the detailed statistical tables at http://www.nsf.gov/statistics/industry/).

In this InfoBrief, money amounts are expressed in current U.S. dollars and are not adjusted for inflation. *Company* is defined as a business organization located in the United States, either U.S. owned or a U.S. affiliate of a foreign parent, of one or more establishments under common ownership or control that performs or funds R&D.

For 2012, a total of 43,655 companies were sampled, representing 1,971,731 companies; for 2013, a total of 45,089 companies were sampled, representing 1,971,959 companies. The actual numbers of reporting units in

TABLE 3. Sales, R&D intensity, and employment for companies that performed or funded business R&D, by selected industry and company size: 2013

Industry and NAICS code	Domestic net sales (US$millions)[a]	R&D intensity (%)[b]	Domestic employment (thousands)[c]	
			Total	R&D[d]
All industries, 21–33, 42–81	9,654,952	3.3	20,046	1,495
Manufacturing industries, 31–33	5,902,677	3.8	10,457	898
Chemicals, 325	1,361,379	4.5	1,607	166
Pharmaceuticals and medicines, 3254	511,393	10.3	622	117
Other 325	849,986	1.1	985	49
Machinery, 333	370,969	3.4	918	83
Computer and electronic products, 334	634,383	10.6	1,277	255
Electrical equipment, appliance, and components, 335	142,537	2.9	327	30
Transportation equipment, 336	1,113,141	4.1	1,854	157
Automobiles, trailers, and parts, 3361–63	694,029	2.4	930	83
Aerospace products and parts, 3364	355,687	7.6	751	64
Other 336	63,425	3.4	173	10
Manufacturing nec, other 31–33	2,280,268	1.3	4,474	207
Nonmanufacturing industries, 21–23, 42–81	3,752,275	2.7	9,589	597
Information, 51	1,048,039	5.5	2,182	277
Software publishers, 5112	394,356	9.0	714	181
Other 51	653,683	3.3	1,468	96
Finance and insurance, 52	646,362	0.7	1,325	25
Professional, scientific, and technical services, 54	371,322	8.4	1,430	223
Computer systems design and related services, 5415	110,779	8.4	512	75
Scientific R&D services, 5417	70,480	20.1	232	72
Other 54	190,063	4.0	686	76
Nonmanufacturing nec, other 21–23, 42–81	1,686,552	0.5	4,652	72
Size of company (number of domestic employees)				
5–24	159,578	6.5	578	98
25–49	136,026	5.8	567	72
50–99	249,876	3.6	790	81
100–249	351,550	3.9	986	112
250–499	335,762	3.6	842	79
500–999	357,480	3.4	762	68
1,000–4,999	1,164,681	4.8	2,537	240
5,000–9,999	888,101	3.5	1,599	141
10,000–24,999	1,893,277	2.7	2,903	201
25,000 or more	4,118,621	2.9	8,482	403

NAICS = North American Industry Classification System; nec = not elsewhere classified.

[a] Includes domestic net sales of companies that performed or funded R&D, transfers to foreign subsidiaries, and export sales to foreign companies; excludes intracompany transfers and sales by foreign subsidiaries.

[b] R&D intensity is domestic R&D paid for by the company and others and performed by the company divided by domestic net sales of companies that performed or funded R&D.

[c] Data recorded on 12 March represent employment figures for the year.

[d] Includes researchers, R&D managers, technicians, clerical staff, and others assigned to R&D groups.

NOTES: Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D. Industry classification was based on dominant business code for domestic R&D performance, where available. For companies that did not report business codes, the classification used for sampling was assigned. Excludes data for federally funded research and development centers. The Business R&D and Innovation Survey does not include companies with fewer than five employees.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Business R&D and Innovation Survey, 2013.

TABLE 4. Funds spent for business R&D performed in the United States, by source of funds and state: 2013
(Millions of U.S. dollars)

State	All R&D	Paid for by the company	Paid for by others
United States	322,528	264,913	57,615
Alabama	1,563	802	761
Alaska	46	33	12 e
Arizona	5,208	4,036	1,172
Arkansas	288	252	36
California	89,373	76,851	12,522
Colorado	4,522	3,869	652
Connecticut	8,010	5,789	2,221
Delaware	2,310 i	1,705 i	605
District of Columbia	488	297	191
Florida	5,795	3,900	1,894 i
Georgia	4,023	3,350	673 i
Hawaii	214 i	158 i	57
Idaho	1,238	908	331
Illinois	13,096	11,961	1,136
Indiana	6,479	5,482	997
Iowa	2,052	1,498	554
Kansas	1,942	1,321	621
Kentucky	1,279	917	362
Louisiana	354	275	79 i
Maine	365	314	51
Maryland	4,770	2,665	2,105
Massachusetts	17,395	14,000	3,395
Michigan	15,925	14,409	1,517
Minnesota	6,614	6,057	557
Mississippi	211	183 i	28
Missouri	7,174 i	3,570	3,605 i
Montana	92	73	20
Nebraska	627	577	50
Nevada	525	460	66
New Hampshire	2,045	811	1,234
New Jersey	14,022	11,955	2,067
New Mexico	519	291	227
New York	12,032	9,456	2,577
North Carolina	8,083	5,690	2,393 i
North Dakota	229	215	14 e
Ohio	8,118	5,582	2,536
Oklahoma	505	450	55
Oregon	5,635	5,405	230
Pennsylvania	10,761	10,001	760
Rhode Island	571	501	70
South Carolina	1,016	861	155
South Dakota	164	149	14 e
Tennessee	1,423	1,188	236
Texas	15,550	13,406	2,144 i
Utah	2,945	2,384	561
Vermont	406 i	363 i	44
Virginia	4,445	2,465	1,980 i
Washington	14,860	13,996	863 i
West Virginia	306	273	32 i
Wisconsin	4,227	3,618	609
Wyoming	28 e	21 e	6 e
Undistributed funds[a]	12,664	10,120	2,544

e = more than 50% of the cell value is imputed due to raking of state data; i = more than 50% of value is imputed due to reasons other than raking of state data.

[a] Includes data reported on Form BRDI-1 not allocated to a specific state. Data reported on Form BRDI-1(S), the questionnaire sent to small companies or companies new to the survey, were allocated to the state in the address on the company's survey form, which is usually the company's headquarters.

NOTES: Detail may not add to totals because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D. Excludes data for federally funded research and development centers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Business R&D and Innovation Survey, 2013.

the sample that remained within the scope of the survey between sample selection and tabulation were 39,744 for 2012 and 41,588 for 2013. These lower counts represent the number of reporting units that were determined to be within the scope of the survey after all data collected were processed. Reasons for the reduced counts include mergers, acquisitions, and instances where companies had fewer than five paid employees in the United States or had gone out of business in the interim. Of these in-scope reporting units, 77.1% were considered to have met the survey response criteria for the 2012 survey; 73.6% met the 2013 survey response criteria (a positive response for R&D expense or funded R&D, or a response for any of the following: worldwide sales, domestic sales, worldwide employment, or domestic employment). Industry classification was based on the dominant business activity for domestic R&D performance where available. For reporting units that did not report business activity codes for R&D, the classification used for sampling was assigned.

The full set of detailed tables from this survey will be available in the report *Business R&D and Innovation: 2013* (http://www.nsf.gov/statistics/industry/). Individual detailed tables and tables with relative standard errors and imputation rates from the 2013 survey will be available in advance of the full report. For further information, contact Raymond M. Wolfe.

Notes

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2. Determining the amount of *domestic net sales and operating revenues* was left to the reporting company; however, guidance was given to exclude intracompany transfers and sales by foreign subsidiaries but to include transfers to foreign subsidiaries and export sales to foreign companies.

3. Employment statistics in this InfoBrief are head counts. Full-time equivalent statistics are available in the detailed statistical tables. R&D employees include scientists and engineers, their managers, and the technicians, technologists, and support staff members who work on R&D or who provide direct support to R&D activities.

NSF 15-329