



Rates of Innovation among U.S. Businesses Stay Steady: Data from the 2014 Business R&D and Innovation Survey

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Fifteen percent of an estimated 1.3 million for-profit companies introduced one or more product or process innovations in 2012–14 (table 1). Nine percent of these companies introduced one or more product innovations, and 12% introduced one or more process innovations. Innovation rates are similar to those from 2009–11, when 14% of companies introduced one or more product or process innovations (9% product innovations, and 10% process innovations). Figures for product and process innovations cited in this report are not additive. Companies indicating product innovations may also have process innovations, and vice versa.

Data are from the 2014 Business R&D and Innovation Survey (BRDIS), from the National Center for Science and Engineering Statistics within the National Science Foundation and the U.S. Census Bureau. These survey data provide an updated view of the incidence of innovation by businesses located in the United States and represent an estimated 1.3 million for-profit companies, publicly or privately held, with five or more employees, active in the United States in 2014 (see “Survey Information and Data Availability”). Approximately 104,000 of

these companies (8%) were in manufacturing; most, 1.2 million companies (92%) were in nonmanufacturing (table 1). The innovation incidence data refer to product innovations (one or more new or significantly improved goods or services) or process innovations (one or more new or significantly improved methods for manufacturing or production; logistics, delivery, or distribution; or support activities).

Distinctions must be made when discussing innovation incidence by industry because substantial differences exist between manufacturing and nonmanufacturing industries as well as between R&D-active companies and non-R&D-active companies. Although rates of innovation generally are higher for manufacturing and R&D-active companies than for nonmanufacturing and non-R&D-active companies, the absolute number of companies reporting innovation is larger in nonmanufacturing industries and in companies that are not R&D funders or performers.

Incidence of Innovation across the U.S. Economy

Manufacturing Industries

Thirty-two percent of the 104,000 companies classified as manufacturing

(North American Industry Classification System [NAICS] 31–33) reported one or more product or process innovations in 2012–14 (23% product innovations, and 24% process innovations) (table 1). These innovation rates are more than double those for the full 1.3 million population of companies. A further examination of manufacturing companies’ product innovations show that the innovation rate of goods (21%) is twice that of services (10%). For comparison, in nonmanufacturing industries, the innovation rate of goods (4%) to services (7%) is much lower.

Higher rates of innovation were also evident in several more narrowly defined manufacturing subsectors. Product or process innovations were found in over one-half of computer and electronic products (NAICS 334) companies (55%) and in electrical equipment, appliances, and component (NAICS 335) companies (52%) (table 1). Forty-one percent of companies in the chemicals (NAICS 325), machinery (NAICS 333), and transportation equipment (NAICS 336) subsectors indicated product or process innovations. Four out of these five industries had innovation rates that were higher for product innovations than for process innovations.

TABLE 1. Companies that introduced new or significantly improved products or processes, by industry: 2012–14
(Percent)

Industry and NAICS code	Companies (number) ^a	Products or processes		Products						Any processes ^b	
		Yes	No	Goods or services		Goods		Services		Yes	No
				Yes	No	Yes	No	Yes	No		
All industries, 21–33, 42–81	1,273,330	15.4	84.6	9.4	90.6	5.6	94.4	7.0	93.0	11.7	88.3
Manufacturing industries, 31–33	104,217	32.0	68.0	23.0	77.0	20.6	79.4	10.5	89.5	24.2	75.8
Food, 311	9,148	29.7	70.3	18.8	81.2	17.9	82.1	7.3	92.7	23.5	76.5
Beverage and tobacco products, 312	1,809	36.8	63.2	24.2	75.8	23.8	76.2	11.5	88.5	26.5	73.5
Textile, apparel, and leather products, 313–16	4,006	26.6	73.4	15.4	84.6	12.9	87.1	7.7	92.3	22.7	77.3
Wood products, 321	4,848	15.5	84.5	10.0	90.0	8.3	91.7	5.1	94.9	14.3	85.7
Paper, 322	1,163	28.1	71.9	18.1	81.9	17.1	82.9	7.6	92.4	23.3	76.7
Printing and related support activities, 323	8,080	22.8	77.2	13.3	86.7	9.0	91.0	11.6	88.4	20.2	79.8
Petroleum and coal products, 324	393	36.7	63.3	27.9	72.1	27.9	72.1	4.5	95.5	20.7	79.3
Chemicals, 325	5,022	40.7	59.3	33.9	66.1	32.7	67.3	15.0	85.0	26.9	73.1
Basic chemicals, 3251	595	45.4	54.6	35.3	64.7	35.3	64.7	18.7	81.3	37.2	62.8
Pharmaceuticals and medicines, 3254	1,336	43.9	56.1	37.7	62.3	35.7	64.3	20.8	79.2	27.7	72.3
Soap, cleaning compound, and toilet preparation, 3256	851	45.9	54.1	42.2	57.8	40.6	59.4	16.7	83.3	23.8	76.2
Plastics and rubber products, 326	5,082	33.8	66.2	24.3	75.7	21.6	78.4	12.3	87.7	27.4	72.6
Nonmetallic mineral products, 327	4,476	23.6	76.4	14.7	85.3	11.8	88.2	6.8	93.2	19.4	80.6
Primary metals, 331	1,715	23.3	76.7	12.7	87.3	10.8	89.2	5.5	94.5	19.6	80.4
Fabricated metal products, 332	22,080	26.9	73.1	16.6	83.4	14.3	85.7	7.8	92.2	23.6	76.4
Machinery, 333	10,759	41.2	58.8	33.0	67.0	29.3	70.7	13.2	86.8	25.9	74.1
Computer and electronic products, 334	5,146	54.9	45.1	47.0	53.0	43.8	56.2	17.5	82.5	34.3	65.7
Communications equipment, 3342	616	59.6	40.4	56.3	43.7	54.6	45.4	18.6	81.4	30.9	69.1
Semiconductor and other electronic components, 3344	1,707	46.0	54.0	30.8	69.2	28.4	71.6	10.4	89.6	36.3	63.7
Navigational, measuring, electromedical, and control instruments, 3345	2,021	55.7	44.3	50.2	49.8	47.5	52.5	15.2	84.8	32.5	67.5
Electrical equipment, appliances, and components, 335	2,884	51.5	48.5	46.8	53.2	45.9	54.1	18.7	81.3	35.6	64.4
Transportation equipment, 336	4,018	40.8	59.2	32.0	68.0	29.4	70.6	12.9	87.1	31.5	68.5
Automobiles, bodies, trailers, and parts, 3361–63	2,525	40.3	59.7	32.3	67.7	28.4	71.6	12.3	87.7	31.8	68.2
Aerospace products and parts, 3364	739	39.0	61.0	24.9	75.1	24.4	75.6	10.2	89.8	31.3	68.7
Furniture and related products, 337	5,341	25.7	74.3	16.7	83.3	14.6	85.4	8.6	91.4	20.0	80.0
Miscellaneous manufacturing, 339	8,247	36.1	63.9	27.9	72.1	25.9	74.1	13.4	86.6	23.2	76.8
Nonmanufacturing industries, 21–23, 42–81	1,169,113	14.0	86.0	8.2	91.8	4.2	95.8	6.7	93.3	10.5	89.5
Mining, extraction, and support activities, 21	6,884	9.9	90.1	6.3	93.7	4.9	95.1	5.6	94.4	7.9	92.1
Utilities, 22	865	14.9	85.1	12.1	87.9	10.5	89.5	11.6	88.4	14.6	85.4
Wholesale trade, 42	87,724	20.9	79.1	13.5	86.5	11.2	88.8	7.9	92.1	15.4	84.6
Electronic shopping and electronic auctions, 454111–12	3,182	22.6	77.4	12.9	87.1	10.4	89.6	6.1	93.9	18.2	81.8
Transportation and warehousing, 48–49	36,759	12.6	87.4	4.3	95.7	0.9	99.1	4.2	95.8	11.8	88.2
Information, 51	18,082	33.0	67.0	25.8	74.2	14.6	85.4	20.7	79.3	21.1	78.9
Publishing, 511	6,559	32.9	67.1	26.6	73.4	21.4	78.6	17.6	82.4	21.1	78.9
Newspaper, periodical, book, and directory publishers, 5111	4,170	13.5	86.5	6.8	93.2	3.2	96.8	5.4	94.6	8.9	91.1
Software publishers, 5112	2,389	66.8	33.2	61.1	38.9	53.2	46.8	38.8	61.2	42.3	57.7
Telecommunications, 517	2,980	35.5	64.5	28.2	71.8	8.2	91.8	25.6	74.4	19.8	80.2
Data processing, hosting, and related services, 518	2,884	46.7	53.3	41.2	58.8	23.2	76.8	38.5	61.5	31.0	69.0
Finance and insurance, 52	40,875	14.9	85.1	8.6	91.4	1.3	98.7	8.6	91.4	13.5	86.5
Real estate and rental and leasing, 53	37,481	8.4	91.6	4.7	95.3	1.4	98.6	4.0	96.0	6.4	93.6
Professional, scientific, and technical services, 54	142,038	18.4	81.6	12.6	87.4	5.8	94.2	10.9	89.1	12.9	87.1
Architectural, engineering, and related services, 5413	23,451	20.0	80.0	15.3	84.7	6.3	93.7	13.0	87.0	13.4	86.6
Computer systems design and related services, 5415	19,947	36.8	63.2	31.1	68.9	20.5	79.5	27.4	72.6	22.5	77.5
Scientific research and development services, 5417	2,650	43.8	56.2	37.8	62.2	31.0	69.0	21.0	79.0	24.7	75.3
Health care services, 621–23	158,299	17.3	82.7	8.9	91.1	1.1	98.9	8.6	91.4	13.6	86.4
Other nonmanufacturing, 23, 44–45 (excluding 454111–12), 55–56, 624, 71–72, 81	636,924	11.0	89.0	6.2	93.8	3.9	96.1	5.0	95.0	8.3	91.7

NAICS = 2012 North American Industry Classification System.

^a Statistics for number of companies are based only on companies in the United States that reported data for at least one of the items on the survey relating to new or significantly improved products or processes, regardless of whether the company performed or funded R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse. Separate product and process innovation company counts will be available in *Business Research and Development and Innovation: 2014* (<https://nsf.gov/statistics/srvyindustry/>).

^b Includes methods for manufacturing and production; logistics, delivery, and distribution; and support activities.

NOTES: Detail may not add to total because of rounding. Industry classification based on dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned. Sum of yes and no responses may not add to the total number of companies or, for the percentages, to 100% due to item nonresponse to some items relating to new or significantly improved products or processes.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and U.S. Census Bureau, Business R&D and Innovation Survey, 2014.

Several manufacturing subsectors exhibited product or process innovation rates well below the overall incidences for manufacturing. Notable in this respect are the companies in wood products (NAICS 321), printing and related support (NAICS 323), nonmetallic mineral products (NAICS 327), and primary metals (NAICS 331), all of which reported product or process innovation rates of 24% or less (table 1).

Nonmanufacturing Industries

Fourteen percent of nonmanufacturing (NAICS 21–23, 42–81) companies reported one or more product or process innovations in 2012–14 (8% product innovations, and 11% process innovations) (table 1). The comparatively low rates of nonmanufacturing innovation incidence are offset by the much larger number of nonmanufacturing companies in the population. The data show approximately 163,000 companies across the nonmanufacturing sector as product or process innovators in 2012–14, compared with approximately 33,000 companies in manufacturing.

Despite the nonmanufacturing sector's low overall rates of innovation, several more narrowly defined industry groups reported relatively high innovation rates. In the information sector (NAICS 51), 33% of the companies indicated product or process innovations in 2012–14. This sector includes two industry groups with high rates of product or process innovations: 67% of software publishers (NAICS 5112), and 47% of the data processing, hosting, related services subsector (NAICS 518) (table 1).

In addition, the product or process innovation rates for the professional, scientific, and technical services sector (NAICS 54) was only slightly higher than the nonmanufacturing sector as a whole, but this sector includes two industry groups with relatively high

innovation rates: 37% for computer systems design and related services (NAICS 5415), and 44% for scientific R&D services (NAICS 5417) (table 1).

Just over one-half of the 1.2 million nonmanufacturing companies are classified in an “other” category, including construction (NAICS 23), wholesale trade (NAICS 44–45), and varied other services (NAICS 55–56, 624, 71–72, 81). The reported product or process innovation rate for this category of industries was 11%, less than nonmanufacturing as a whole (table 1).

Innovation Incidence by Company Size

All but 10,000 of the estimated 1.3 million companies represented by the survey have between 5 and 499 employees (table 2). The overall incidence of product or process innovation for these “small” companies is 15% (9% product innovations, and 12% process innovations). Companies with over 25,000 employees reported an overall product or process innovation rate of 37% (33% product innovations, and 32% process innovations).

Companies with R&D Activity

Companies with R&D activity (either performing R&D or funding others to perform R&D) exhibit far higher rates of innovation than do companies without R&D activity. A total of 53,000 of the estimated 1.3 million for-profit companies performed or funded R&D in 2014 (table 3). Seventy percent of these companies with R&D activity reported product or process innovations over the 2012–14 period (58% product innovations, and 49% process innovations). In 2012–14, the proportion of companies without any R&D activity dominated (96% of all companies), but the innovation rate was far lower: 13% for product or process innovations, 7% for product innovations, and 10% for process innovations.

Although the presence of R&D activity appears to have a large effect on the innovation rate, the amount of that R&D activity appears to have limited significance. Seventy percent of companies with less than \$10 million of R&D activity reported product or process innovations, whereas 68% of the companies with over \$100 million in R&D activity reported such innovations (table 3).

Novelty of Product Innovation

As defined in the *Oslo Manual*, innovation must contain a degree of novelty.² New to the market and new only to the firm are parts of that concept. Less than 10% of all companies indicated product innovations. Of those companies, 58% introduced product innovations that are new to the company's market, and 65% introduced product innovations that are new only to the firm (table 4).

In the manufacturing sector, 23% of companies reported product innovations. Sixty-six percent of those companies said their products were new to the market, and 70% reported product innovations as new only to the firm. In the nonmanufacturing sector, where 8% of companies reported product innovations, the percentages were only slightly lower: 56% for new to the market, and 64% for new only to the firm (table 4).

International Comparability

To understand how the United States compares to other countries on innovation, data from BRDIS were compared to data from the European Union's Community Innovation Survey (CIS) (see “Measuring Business Innovation”). As previously noted, the population referenced by BRDIS is for-profit companies with five or more employees in the domestic United States. The business innovation incidence data for countries responding to the CIS normally reflect a threshold of 10

TABLE 2. Companies that introduced new or significantly improved products, by company size: 2012–14
(Percent)

Industry and NAICS code	Companies (number) ^a	Products or processes		Products						Any processes ^b	
		Yes	No	Goods or services		Goods		Services		Yes	No
				Yes	No	Yes	No	Yes	No		
All companies (number of domestic employees)	1,273,330	15.4	84.6	9.4	90.6	5.6	94.4	7.0	93.0	11.7	88.3
Small companies ^c											
5–499	1,263,029	15.4	84.6	9.3	90.7	5.5	94.5	7.0	93.0	11.6	88.4
5–49	1,133,128	15.0	85.0	9.0	91.0	5.1	94.9	7.0	93.0	11.3	88.7
5–99	1,210,710	15.2	84.8	9.2	90.8	5.4	94.6	7.0	93.0	11.5	88.5
5–9	495,222	13.4	86.6	7.9	92.1	3.7	96.3	6.4	93.6	10.3	89.7
10–24	463,289	15.7	84.3	9.4	90.6	5.9	94.1	7.1	92.9	11.9	88.1
25–49	174,616	17.4	82.6	11.2	88.8	7.2	92.8	8.3	91.7	12.5	87.5
50–99	77,583	19.1	80.9	12.0	88.0	9.0	91.0	7.5	92.5	15.1	84.9
100–249	41,903	17.7	82.3	9.9	90.1	7.4	92.6	5.2	94.8	13.4	86.6
250–499	10,415	23.5	76.5	19.3	80.7	12.3	87.7	12.2	87.8	15.3	84.7
Medium and large companies											
500–999	4,995	21.2	78.8	13.0	87.0	11.6	88.4	6.0	94.0	18.4	81.6
1,000–4,999	4,218	22.1	77.9	15.3	84.7	12.3	87.7	8.3	91.7	17.3	82.7
5,000–9,999	380	35.9	64.1	31.5	68.5	28.0	72.0	16.5	83.5	28.6	71.4
10,000–24,999	522	43.4	56.6	39.5	60.5	26.3	73.7	24.7	75.3	28.1	71.9
25,000 or more	186	36.6	63.4	33.3	66.7	27.6	72.4	30.1	69.9	31.8	68.2

NAICS = 2012 North American Industry Classification System.

^a Statistics for number of companies are based only on companies in the United States that reported data for at least one of the items on the survey relating to new or significantly improved products or processes, regardless of whether the company performed or funded R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse. Separate product and process innovation company counts will be available in Business Research and Development and Innovation: 2014 (<https://nsf.gov/statistics/srvyindustry/>).

^b Includes methods for manufacturing and production; logistics, delivery, and distribution; and support activities.

^c The upper-bound value is based on U.S. Small Business Administration's definition of a small business is 499; Business R&D and Innovation Survey does not include companies with fewer than five domestic employees.

NOTES: Detail may not add to total because of rounding. Industry classification based on dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned. Sum of yes and no responses may not add to the total number of companies or, for the percentages, to 100% due to item nonresponse to some items relating to new or significantly improved products or processes.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and U.S. Census Bureau, Business R&D and Innovation Survey, 2014.

TABLE 3. Companies that introduced new or significantly improved products or processes, by size of R&D program and presence of R&D activity: 2012–14
(Percent)

Industry and R&D activity	Companies (number) ^a	Products or processes		Products						Any processes ^b	
		Yes	No	Goods or services		Goods		Services		Yes	No
				Yes	No	Yes	No	Yes	No		
All companies	1,273,330	15.4	84.6	9.4	90.6	5.6	94.4	7.0	93.0	11.7	88.3
With R&D activity ^c	53,473	69.5	30.5	58.2	41.8	46.4	53.6	33.5	66.5	48.6	51.4
< \$10 million	51,461	69.8	30.2	58.3	41.7	46.3	53.7	33.5	66.5	49.0	51.0
≥ \$10 million but < \$50 million	1,366	58.4	41.6	52.9	47.1	46.5	53.5	30.1	69.9	34.1	65.9
≥ \$50 million but < \$100 million	261	67.0	33.0	64.6	35.4	56.6	43.4	35.4	64.6	49.0	51.0
≥ \$100 million	386	68.1	31.9	64.2	35.8	58.8	41.2	38.6	61.4	42.6	57.4
Without R&D activity	1,219,857	13.1	86.9	7.2	92.8	3.8	96.2	5.9	94.1	10.0	90.0

^a Statistics for number of companies are based only on companies in the United States that reported data for at least one of the items on the survey relating to new or significantly improved products or processes, regardless of whether the company performed or funded R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse. Separate product and process innovation company counts will be available in Business Research and Development and Innovation: 2014 (<https://nsf.gov/statistics/srvyindustry/>).

^b Includes methods for manufacturing and production; logistics, delivery, and distribution; and support activities.

^c Statistics are representative of companies located in the United States that performed or funded R&D and do not include an adjustment to the weight to account for unit nonresponse.

NOTES: Detail may not add to total because of rounding. Sum of yes and no responses may not add to the total number of companies or, for the percentages, to 100% due to item nonresponse to some items relating to new or significantly improved products or processes.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and U.S. Census Bureau, Business R&D and Innovation Survey, 2014.

TABLE 4. Companies that introduced new or significantly improved products, by industry, company size, and whether the product was new to the market or company: 2012–14 (Percent)

Industry	NAICS code	New or significantly improved products		New or significantly improved products			
		Companies		New to the market		New only to the firm	
		(number) ^a	Yes No	Companies (number) ^b	Yes No	Yes No	
All industries	21–23, 31–33, 42–81	1,266,982	9.4 90.6	118,894	58.1 41.9	65.4 34.6	
Manufacturing industries	31–33	103,517	23.0 77.0	23,793	66.1 34.0	69.7 30.3	
Nonmanufacturing industries	21–23, 42–81	1,163,466	8.2 91.8	95,102	56.1 43.9	64.3 35.7	

NAICS = 2012 North American Industry Classification System.

^a Statistics for number of companies are based only on companies in the United States responding either "Yes" to at least one of the items or "No" to both of the items on the survey relating to new or significantly improved products, regardless of whether the company performed or funded R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse.

^b Statistics for number of companies are based only on companies in the United States that reported data for this survey item, regardless of whether the company performed or funded R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse.

NOTES: Detail may not add to total because of rounding. Industry classification based on dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned. Sum of yes and no responses may not add to the total number of companies or, for the percentages, to 100% due to item nonresponse to some items.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and U.S. Census Bureau, Business R&D and Innovation Survey, 2014.

employees and above. This raises the question of what the U.S. innovation incidence data would look like if they reflected a comparable 10 employee threshold.

Using the 10 employee threshold with the 2014 BRDIS data would increase the U.S. innovation rates for the total of all industries from 15% to 17% for product or process innovations, 9% to 10% for product innovations, and 12% to 13% for process innovations (table 5). The effect is somewhat similar for the manufacturing sector, as rates increase from 32% to 35% for product or process innovations, 23% to 25% for product innovations, and 24% to 27% for process innovations.

In general, for manufacturing industries, the higher the number of employees, the higher the rates of innovation. Manufacturing companies with 20 or more employees had higher innovation rates than did manufacturing companies with over 5 employees (38%

versus 32%). Rates were even higher for manufacturing companies with 50 or more employees (45%). However, this was not the case for nonmanufacturing industries. Among nonmanufacturing companies, the product or process innovation rate was similar for companies with over 5 employees and for those with over 50 employees (14% versus 15%).

There are also different industries covered in the BRDIS and in the CIS innovation data. BRDIS data report on companies in nearly all industries with business activities in the domestic United States. The CIS data for the European Union (EU) reflect a more narrowly drawn set of industries, termed Core Coverage (see footnote in table 6 for details).

The data in table 6 compare the innovation rates for the full array of U.S. industries in 2014 as reported by BRDIS to a subset of this BRDIS total that was tabulated to approximate the

narrower set of EU Core Coverage industries reported in the CIS. Only businesses with ten or more employees were analyzed, to allow for better comparison to CIS data. On this basis, the incidence of innovation by U.S. industries would rise from 17% to 27% for product or process innovations, 10% to 18% for product innovations, and 13% to 20% for process innovations.

Relative to innovation incidence rates in other countries, the adjusted U.S. rates are still generally lower than those reported elsewhere. For example, about 22% of U.S. firms with 10 or more employees in the Core Coverage nonmanufacturing industries reported product or process innovations (table 6), whereas 30 OECD countries had an average innovation incidence rate of 33% for these nonmanufacturing industries. About 35% of U.S. manufacturers with 10 or more employees reported product or process innovations (table 6), whereas the OECD country average for such industries was 40%.³

TABLE 5. Companies that introduced new or significantly improved products or processes, by major industry sectors and employment thresholds: 2012–14 (Percent)

Industry and NAICS code	Employment threshold (number) ^a	Companies (number) ^b	Products or processes		Products							
			Yes	No	Any good or service		New goods		New services		Any processes ^c	
					Yes	No	Yes	No	Yes	No	Yes	No
All industries, 21–23, 31–33, 42–81	5	1,273,330	15.4	84.6	9.4	90.6	5.6	94.4	7.0	93.0	11.7	88.3
	10	778,108	16.8	83.2	10.3	89.7	6.8	93.3	7.4	92.6	12.6	87.4
	20	398,208	17.6	82.4	11.2	88.8	7.2	92.9	7.7	92.3	13.1	86.9
	50	140,203	19.3	80.7	12.3	87.7	9.1	90.8	7.2	92.6	14.9	85.1
Manufacturing industries, 31–33	5	104,217	32.0	68.0	23.0	77.0	20.6	79.4	10.4	89.3	24.2	75.8
	10	77,128	34.7	65.3	25.3	74.7	23.0	77.1	11.0	88.7	26.5	73.5
	20	49,359	38.3	61.7	28.8	71.2	26.2	73.9	11.3	88.2	28.5	71.5
	50	22,075	44.8	55.2	34.5	65.5	32.8	67.4	11.6	87.6	32.4	67.6
Nonmanufacturing industries, 21–23, 42–81	5	1,169,113	14.0	86.0	8.2	91.8	4.2	95.8	6.7	93.3	10.5	89.5
	10	700,980	14.8	85.2	8.7	91.3	5.0	95.1	7.0	93.0	11.0	89.0
	20	348,850	14.6	85.4	8.7	91.3	4.5	95.6	7.2	92.8	10.9	89.1
	50	118,128	14.6	85.4	8.1	91.9	4.7	95.2	6.4	93.6	11.6	88.4

NAICS = 2012 North American Industry Classification System.

^a Minimum number of employees for the companies included in the category. The Business R&D and Innovation Survey does not include companies with fewer than five domestic employees.

^b Statistics for number of companies are based only on companies in the United States that reported data for at least one of the items on the survey relating to new or significantly improved products or processes, regardless of whether the company performed or funded R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse.

^c Includes methods for manufacturing and production; logistics, delivery, and distribution; and support activities.

NOTES: Detail may not add to total because of rounding. Industry classification based on dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned. Sum of yes and no responses may not add to the total number of companies or, for the percentages, to 100% due to item nonresponse to some items relating to new or significantly improved products or processes.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and U.S. Census Bureau, Business R&D and Innovation Survey, 2014.

TABLE 6. Companies that introduced new or significantly improved products or processes; comparison of industries in BRDIS and in the European Union's Community Innovation Survey: 2012–14 (Percent)

Industry	Companies ^a	Products or processes		Products			Processes		
		Yes	No	Companies	Yes	No	Companies	Yes	No
All BRDIS industries	778,108	16.8	83.2	774,745	10.3	89.7	769,606	12.6	87.4
EU core coverage industries ^b	228,584	26.5	73.5	227,559	18.4	81.6	226,769	19.8	80.2
Manufacturing industries	77,128	34.7	65.3	76,702	25.3	74.7	76,490	26.5	73.5
Nonmanufacturing industries	151,455	22.3	77.7	150,857	14.8	85.2	150,280	16.5	83.5

EU = European Union; NAICS = 2012 North American Industry Classification System.

^a Statistics for the number of companies are based on companies in the United States that reported data for at least one of the items on the survey relating to new or significantly improved products or processes, regardless of whether the company performed or funded R&D. These statistics do not include an adjustment to the weight to account for unit nonresponse.

^b Subset of Business R&D and Innovation Survey data that was used to approximate the industries reported in the European Union's Community Innovation Survey. Includes NAICS equivalents of ISIC Revision 4 sectors and industries in the EU Core Coverage: B (mining and quarrying), C (manufacturing), D and E (electricity, gas, steam, water supply, sewerage, waste management, remediation), G 46 (wholesale trade, except motor vehicles and motorcycles), H (transport and storage), J 58 (publishing), J 61 (telecommunications), J 62 (computer programming, consultancy, and related activities), J 63 (information services), K (finance and insurance), M 71 (architecture, engineering, technical testing and analysis), M 72 (scientific research and development), and M 73 (advertising and market research).

NOTES: Only companies that had 10 or more employees were included in this table. This was done to allow for comparison to the European Union's Community Innovation Survey. Detail may not add to total because of rounding. Industry classification based on dominant business code for domestic R&D performance where available. For companies that did not report business codes, classification used for sampling was assigned.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and U.S. Census Bureau, Business R&D and Innovation Survey, 2014.

Survey Information and Data Availability

BRDIS

BRDIS is a sample survey, designed to collect a wide range of data on business R&D and innovation activities in the United States. BRDIS was developed and is cosponsored by the National Center for Science and Engineering Statistics within the National Science Foundation and by the U.S. Census Bureau. An InfoBrief describing the BRDIS data for 2014 was released in August 2016.⁴ Accompanying detailed statistical tables for the 2014 survey, including expanded industry detail on the innovation data discussed in this report, will be available in the report *Business R&D and Innovation: 2014* (<https://nsf.gov/statistics/srvyindustry/>).

The survey's sample of companies is selected to represent all for-profit nonfarm companies in the United States with five or more domestic employees, publicly or privately held. For the 2014 BRDIS survey, a total of 44,162 companies were sampled, representing 1,998,858 companies in the target population. The overall response rate was 72.5%. Because the statistics from the survey are derived from a sample, they are subject to both sampling and nonsampling errors. Further information about the survey sample, the methodology, standard errors, and coefficients of variation are available at <https://www.nsf.gov/statistics/srvyindustry/>.

Measuring Business Innovation

Questions on companies' innovation achievements have been a part

of BRDIS since the initial round in 2008. The survey questions are based on the *Oslo Manual* (2005 edition), developed by the Organisation for Economic Co-operation and Development (OECD) and Eurostat (the Statistical Office of the European Union), which provides internationally recognized definitions and guidelines for measuring innovation.² These *Oslo* concepts have been the foundation for CIS, which has been conducted by Eurostat periodically since the mid-1990s across the European Union's member states.

In the *Oslo* framework, "innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations." Further, "The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new or significantly improved to the firm. This includes products, processes, and methods that firms are the first to develop and those that have been adopted from other firms or organizations."

Notes

1. Audrey Kindlon (akindlon@nsf.gov; 703-292-2332) and John E. Jankowski (jjankows@nsf.gov; 703-292-7781) are with the Research and Development Statistics Program, National Center for Science and Engineering Statistics, National Science Foundation, 4201 Wilson Boulevard, Suite 965, Arlington, VA 22230.

2. Organisation for Economic Co-operation and Development (OECD) and Statistical Office of the European Communities (Eurostat). 2005. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*. 3rd edition, p. 57. Paris: OECD Publishing.

3. The OECD data reported here are from the following: OECD. 2015. *OECD Science, Technology and Industry Scoreboard 2015*, p. 163. Paris: OECD Publishing. These data are for the reference period 2010–12, whereas the U.S. data are for the 2012–14 reference period. Updated OECD country details will be published later in 2017. When examining international comparisons on innovation incidence rates, caution should be used. There are several differences in how countries conduct their innovation surveys. For example, some countries administer surveys only on innovation, whereas others ask questions about innovation as part of a larger survey. Not all recommended industries are covered in some countries' innovation surveys. Some surveys are mandatory, whereas others are not. NCSSES continues its work on understanding why differences exist and how to address them.

4. Wolfe RM. 2016. *Businesses Spent \$341 Billion on R&D Performed in the United States in 2014*. InfoBrief NSF 16-315. Arlington, VA: National Center for Science and Engineering Statistics, National Science Foundation. Available at <https://www.nsf.gov/statistics/2016/nsf16315/nsf16315.pdf>.

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