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Update on U.S. Business Innovation: Findings from 2011 Survey

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An updated view of the incidence of innovation by businesses located in the United States is available based on innovation questions found in the 2011 Business Research and Development and Innovation Survey (BRDIS), National Science Foundation (NSF) and the U.S. Census Bureau. These survey data represent an estimated 1.2 million for-profit companies, publicly or privately held, that have five or more employees and are active in the United States in 2011 (see "Survey Information and Data Availability"). A total of 103,000 of these companies (8%) were in manufacturing; most, 1.1 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; methods for logistics, delivery, or distribution; or support activities) introduced by these companies in 2009–11.

Fourteen percent of these 1.2 million for-profit companies introduced one or more product or process innovations in 2009–11: 9% introduced one or more product innovations, and 10% introduced one or more process innovations (table 1).[2] These incidence rates are similar to those reported by NSF in a previous report that drew on 2008 BRDIS data.[3] There, 12% of a similar company population nationally had engaged in product or process innovation in 2006–08: 9% in product innovation, and 9% in process innovation.

In the 2011 data, substantial differences in innovation incidences appear when manufacturing is compared with nonmanufacturing, when more narrowly defined industries (in both manufacturing and nonmanufacturing) are considered, and when R&D-active companies are compared with those that are not. Also, as detailed below, although higher rates of innovation generally are reported for manufacturing and R&D-active companies, the number of innovators is larger in nonmanufacturing industries and companies that are not R&D funders or performers.

Incidence of Innovation across the U.S. Economy

Manufacturing Industries

Twenty-nine percent of the 103,000 companies classified as manufacturing (North American Industry Classification System [NAICS] 31–33) reported one or more product or process innovations in 2009–11: 22% reported product innovations, and 21% reported process innovations (table 1). These incidence rates are more than double those found for the 1.2 million companies as a whole.

Higher incidences of innovation were evident in a number of more narrowly defined manufacturing subsectors. In the computer and electronic products subsector (NAICS 334), 49% of the companies indicated product innovations and 30% indicated process innovations. In the chemicals subsector (NAICS 325), 37% of the companies were product innovators and 35% were process innovators. In the electrical equipment, appliances, and components subsector (NAICS 335), 34% of the companies reported product innovations. In machinery (NAICS 333), 32% of the companies reported product innovations. The petroleum and coal products subsector (NAICS 324) exhibited a 52% incidence of product innovation, and the communications equipment (NAICS 3342) showed 56%.

Several manufacturing subsectors exhibited product and/or process innovation rates well below the overall innovation rates for manufacturing as a whole. Notable in this respect are the companies in wood products (NAICS 321), printing and related support activities (NAICS 323), nonmetallic mineral

TABLE 1. Companies that introduced new or significantly improved products or processes, by industry: 2009–11
(Percent)

Industry and NAICS code	Companies (thousands)[a]	Product or process		Product						Process[b]	
				Good or service		Goods		Services			
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
All industries, 21–33, 42–81	1,220.1	14.3	83.9	9.4	87.7	5.4	92.0	6.8	90.3	9.5	87.1
Manufacturing industries, 31–33	103.2	29.4	69.2	21.7	75.8	19.1	78.5	8.8	88.1	20.6	76.7
Food, 311	8.3	26.1	73.6	17.3	81.4	16.2	82.2	5.8	92.2	18.8	79.7
Beverage and tobacco products, 312	1.2	35.1	64.2	21.2	75.8	16.0	81.3	10.0	85.7	28.4	66.8
Textile, apparel, and leather products, 313–16	4.6	21.7	75.7	15.6	81.3	12.5	84.2	4.8	91.5	14.0	81.9
Wood products, 321	4.9	12.0	87.5	6.8	91.0	5.3	92.5	3.2	94.3	9.6	89.1
Paper, 322	1.2	26.5	72.9	16.5	82.2	13.7	85.0	5.9	89.8	20.4	78.0
Printing and related support activities, 323	8.2	21.6	77.1	10.5	85.9	7.1	90.6	9.4	87.1	18.2	79.8
Petroleum and coal products, 324	0.4	55.0	44.4	52.2	47.2	52.2	47.2	16.0	83.5	22.2	77.2
Chemicals, 325	4.7	48.9	48.3	37.0	59.3	35.7	61.0	11.8	81.9	35.3	61.5
Basic chemicals, 3251	0.9	58.5	40.8	48.2	51.1	47.6	51.8	20.9	75.9	47.1	52.0
Pharmaceuticals and medicines, 3254	0.9	43.8	52.2	36.3	59.2	35.4	60.6	9.2	85.0	28.7	67.1
Soap, cleaning compound, and toilet preparations, 3256	0.8	64.3	34.8	41.7	56.1	39.8	57.7	13.8	83.7	47.3	51.0
Plastics and rubber products, 326	4.9	34.9	63.6	26.4	71.1	25.1	72.7	7.7	89.6	24.2	72.9
Nonmetallic mineral products, 327	3.8	16.4	83.1	12.3	84.4	10.5	87.7	5.3	92.3	12.1	83.6
Primary metals, 331	1.4	17.4	82.1	11.8	87.7	10.9	88.7	4.1	95.3	13.7	85.7
Fabricated metal products, 332	24.0	23.5	75.6	14.6	82.9	10.8	86.8	8.1	89.7	18.4	78.8
Machinery, 333	9.9	38.5	59.3	31.8	65.5	29.3	68.3	10.5	85.5	25.1	72.2
Computer and electronic products, 334	5.6	54.3	43.7	49.3	48.1	44.6	52.8	21.0	75.7	30.3	66.1
Communications equipment, 3342	0.7	59.2	37.1	56.3	39.8	55.1	40.9	14.7	79.1	18.0	70.4
Semiconductors and other electronic components, 3344	1.8	51.2	46.8	41.3	56.1	35.6	61.7	18.0	79.2	33.7	63.8
Navigation, measure, electromed, and control instruments, 3345	2.3	51.5	46.9	48.1	49.1	46.3	51.1	18.2	79.2	28.8	68.9
Electrical equipment, appliances, and components, 335	2.5	39.3	59.5	34.0	64.0	31.7	66.3	12.5	84.9	21.7	75.3
Transportation equipment, 336	4.4	35.5	61.5	29.1	66.7	28.2	67.1	9.6	83.7	26.0	69.3
Autos, bodies, trailers, and parts, 3361–63	2.7	32.7	64.8	26.0	70.5	24.8	70.7	9.8	86.7	25.4	71.6
Aerospace products and parts, 3364	0.6	41.9	57.0	33.3	63.5	31.9	65.0	8.8	87.5	30.0	68.6
Furniture and related products, 337	4.9	23.5	75.9	15.3	83.6	14.9	84.0	3.1	96.0	16.7	82.5
Miscellaneous manufacturing, 339	8.2	34.4	64.4	29.2	68.9	26.9	71.3	11.3	84.1	22.5	75.7
Nonmanufacturing industries, 21–23, 42–81	1,116.9	12.9	85.3	8.3	88.8	4.2	93.3	6.6	90.5	8.5	88.0
Mining, extraction, and support activities, 21	5.5	12.4	86.0	6.1	92.1	3.8	94.3	5.3	92.9	8.4	89.0
Utilities, 22	0.7	15.7	84.0	5.5	94.2	2.6	96.4	4.6	95.1	13.5	84.8
Wholesale trade, 42	81.7	19.1	79.5	11.7	86.1	8.6	89.7	6.0	91.5	13.4	84.2
Electronic shopping and electronic auctions, 454111–12	2.3	32.1	67.4	22.0	77.5	14.4	82.9	16.6	82.8	24.0	75.2
Transportation and warehousing, 48-49	35.1	7.5	91.7	4.0	93.9	0.2	98.3	3.9	94.7	6.0	89.5
Information, 51	17.6	34.4	64.0	28.3	69.5	16.2	80.9	21.9	74.7	20.3	75.9
Publishing, 511	7.2	40.2	59.2	32.4	65.8	24.3	73.4	19.2	76.1	17.9	80.1
Newspaper, periodical, book, and directory pubs, 5111	4.9	28.9	70.7	18.8	79.7	13.3	84.4	10.0	84.5	17.0	80.8
Software, 5112	2.2	65.3	33.4	63.0	34.6	48.9	48.6	39.8	57.3	20.1	78.5
Telecommunications, 517	2.1	26.8	70.2	18.8	77.8	3.9	92.7	18.1	78.5	16.2	80.7
Data processing, hosting, and related services, 518	2.3	41.0	55.0	39.9	56.1	23.7	72.2	37.5	57.9	29.6	66.1
Finance and insurance, 52	40.5	12.7	86.1	7.1	90.3	2.2	94.5	6.3	91.0	8.5	90.2
Real estate, rental, and leasing, 53	31.7	6.7	91.7	3.4	93.5	3.2	93.6	1.8	95.0	5.1	90.1
Professional, scientific, and technical services, 54	135.1	17.5	81.1	14.1	83.0	5.9	91.9	11.9	85.4	9.9	87.3
Architecutural, engineering, and related services, 5413	23.0	20.4	78.2	15.0	82.9	7.0	91.0	11.5	85.4	12.7	84.6
Computer systems design and related services, 5415	15.5	44.4	54.3	35.4	61.8	20.7	76.6	27.7	68.6	28.6	69.6
Scientific R&D services, 5417	2.7	42.9	55.9	37.6	59.4	28.7	69.2	21.1	75.5	28.8	69.2
Health care services, 621–23	160.0	15.8	81.8	9.8	86.9	3.0	93.7	9.5	87.2	10.6	86.0
Other nonmanufacturing 23, 44-45 (excluding 454111–12), 55–56, 624, 71–72, 81	606.7	10.2	87.9	6.1	90.9	3.6	93.9	4.7	92.4	6.8	89.3

NAICS = 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] Includes methods for manufacturing and production; methods for logistics, delivery, and distribution; and support activities.

NOTES: Detail may not add to total because of rounding. Industry classification based on the 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. Sum of yes plus no responses may not add to the total number of companies or, for 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, Business R&D and Innovation Survey, 2011.

products (NAICS 327), and primary metals (NAICS 331). The fabricated metals product subsector (NAICS 332) included by far the largest number of companies (24,000 of the 103,000 manufacturing companies), but it exhibited product and process innovation incidences below the average of the manufacturing sector as a whole.

Nonmanufacturing Industries

The overall incidence of innovation for the 1.1 million companies classified as nonmanufacturing (NAICS 21–23, 42–81) is markedly lower than that for manufacturing. Thirteen percent reported one or more product or process innovations in 2009–11: 8% reported product innovations, and 9% reported process innovations. (The comparatively low rates of nonmanufacturing innovation incidence are offset by the much larger number of nonmanufacturing companies in the population. The data show 143,700 companies across the nonmanufacturing sector as product or process innovators in 2009–11, compared with 30,400 companies in manufacturing.)

Despite the nonmanufacturing sector's low overall rates of innovation, several more narrowly defined industry groups exhibited relatively high innovation incidences. In the information sector (NAICS 51), 28% of the companies indicated product innovations in 2009–11 and 20% indicated process innovations. Further, two industry groups in this sector exhibited particularly high rates: software publishers (NAICS 5112), where 63% of the companies indicated product innovations and 20% indicated process innovations, and the data processing, hosting, related services subsector (NAICS 518), where 40% of the companies indicated product innovations and 30% indicated process innovations.

The professional, scientific, and technical services sector (NAICS 54) had incidences of product and process innovation similar to those for the nonmanufacturing sector as a whole. But this sector includes two industry groups with relatively high innovation rates: computer systems design and related services (NAICS 5415), with 35% of companies indicating product and 29% indicating process innovations; and scientific R&D services (NAICS 5417), with innovation rates of 38% for products and 29% for processes.

About half of the 1.1 million nonmanufacturing companies are classified in an "other" category, which includes construction (NAICS 23), wholesale trade (NAICS 44–45), and varied other services (NAICS 55, 56, 624, 71, 72, 81). But their reported innovation rates for products and processes are generally at or below the low overall rates for nonmanufacturing as a whole.

Innovation Incidence by Company Size

Most of the 1.2 million companies reside in the 5–499 employee category (table 2). The incidence of product innovation for this "small company" group as a whole is 9%, and it is 10% for process innovation. There is the suggestion of small increases in the innovation rates as the smallest size categories in this group are compared with the largest (but the data are insufficient to confirm this effect statistically).

The two largest size categories in the data (10,000–24,999 employees, and 25,000 or more) include about 600 of the 1.2 million companies. The innovation incidences here are markedly higher than for the small companies: 24% and 37%, respectively, for product innovation, and 19% and 34% for process innovation.

Companies with R&D Activity

The 2011 BRDIS data show clearly the large difference in innovation incidence when companies with R&D activity are compared with those without R&D activity. Companies with R&D (either performing R&D or funding others to perform R&D) exhibit far higher rates of innovation than do non-R&D companies.

Around 57,000 of the estimated 1.2 million for-profit companies (5%) performed and/or funded R&D in 2011 (table 3). According to the survey data, 57% of all these companies were product innovators over the 2009–11 period and 39% were process innovators. Companies without any R&D activity dominate the 1.2 million companies (about 95% of all companies), but their incidence of innovation is far lower: 7% were product innovators and 8% were process innovators.

International Comparability

Two additional tabulations help address issues that arise when comparing the BRDIS innovation incidence data on U.S. businesses with those for countries responding to the European Union's (EU'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 or more employees. This raises the question of what the U.S. innovation incidence data would look like if they reflected a comparable threshold of 10 employees.

Using the threshold of 10 employees with the 2011 BRDIS data would increase the U.S. innovation incidence rates for the total of all industries by about 1 percentage point: from 14% to 15% for product or process innovation, 9% to 10% for product innovation, and 10% to 11% for process innovation (table 4). The

TABLE 2. Companies that introduced new or significantly improved products or processes, by company size: 2009–11
(Percent)

Company size (number of employees)	Companies (thousands)[a]	Product or process		Product						Process[b]	
				Good or service		Goods		Services			
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
All companies	1,220.1	14.3	83.9	9.4	87.7	5.4	92.0	6.8	90.3	9.5	87.1
Small companies[c]											
5–499	1,210.4	14.2	84.0	9.4	87.8	5.4	92.1	6.8	90.3	9.5	87.1
5–99	1,155.7	14.0	84.2	9.3	87.9	5.2	92.2	6.8	90.3	9.2	87.3
5–49	1,072.5	14.0	84.3	9.2	88.1	5.1	92.4	6.8	90.4	9.2	87.4
5–9	468.8	12.4	85.6	8.4	88.6	4.0	93.2	6.7	90.2	7.8	88.0
10–24	438.5	13.9	84.5	9.2	87.9	5.4	92.1	6.7	90.6	9.3	87.7
25–49	165.2	18.7	80.2	11.4	86.9	7.4	90.9	7.5	90.5	12.6	85.4
50–99	83.2	14.8	82.6	9.9	85.6	6.5	89.6	6.3	89.0	10.1	85.4
100–249	42.4	17.9	80.5	11.9	85.0	9.0	89.1	6.4	90.3	13.5	84.0
250–499	12.3	20.6	76.1	11.7	85.0	8.6	88.1	6.0	90.1	16.5	79.6
Medium and large companies											
500–999	4.3	16.7	82.6	13.4	85.6	11.2	87.9	5.7	93.2	11.6	86.7
1,000–4,999	4.1	22.6	75.6	14.6	83.4	12.9	85.0	6.9	90.9	17.4	80.3
5,000–9,999	0.7	20.8	76.5	18.5	78.6	16.6	80.7	9.8	87.1	15.2	81.2
10,000–24,999	0.4	27.4	66.8	24.2	69.5	21.9	72.1	14.3	78.6	18.6	72.6
25,000 or more	0.2	40.1	56.4	37.2	58.2	32.2	63.6	30.2	65.3	34.2	61.4

[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] Includes methods for manufacturing and production; methods for logistics, delivery, and distribution; and support activities.
[c] The upper bound on the U.S. Small Business Administration's definition of a small business is 499; the 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. Sum of yes plus no responses may not add to the total number of companies or, for 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, Business R&D and Innovation Survey, 2011.

TABLE 3. Companies with and without R&D activity that introduced new or significantly improved products or processes: 2009–11
(Percent)

Company type	Companies (thousands)	Product or process		Product						Process[a]	
				Good or service		Goods		Services			
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
All companies[b]	1,220.1	14.3	83.9	9.4	87.7	5.4	92.0	6.8	90.3	9.5	87.1
With R&D activity[c]	57.1	64.2	33.7	56.9	40.4	47.5	49.5	28.1	66.9	38.7	58.2
< $10 million	55.1	64.3	33.7	56.9	40.5	47.5	49.6	28.1	67.0	38.7	58.4
≥ $10 but < $50 million	1.3	60.9	36.3	52.3	44.3	42.6	53.6	26.7	69.1	39.7	56.4
≥ $50 but < $100 million	0.2	71.1	24.3	67.2	27.7	61.7	33.6	31.1	62.1	44.7	49.4
≥ $100 million	0.4	60.5	24.4	57.9	26.3	55.3	29.2	32.0	50.7	37.8	42.8
Without R&D activity	1,163.0	11.8	86.4	7.1	90.0	3.4	94.1	5.7	91.5	8.1	88.5

[a] Includes methods for manufacturing and production; methods for logistics, delivery, and distribution; and support activities.
[b] 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.
[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 plus no responses may not add to the total number of companies or, for 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, Business R&D and Innovation Survey, 2011.

TABLE 4. Companies that introduced new or significantly improved products or processes, by major industry sectors and employment thresholds: 2009–11
(Percent)

Industry and NAICS code	Employment threshold (number)[a]	Companies (thousands)[b]	Product or process		Product							
					Good or service		Goods		Services		Process[c]	
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
All industries, 21–23, 31–33, 42–81	5	1220.1	14.3	83.9	9.4	87.7	5.4	92.0	6.8	90.3	9.5	87.1
	10	751.2	15.4	82.9	10.1	87.2	6.3	91.3	6.8	90.4	10.5	86.5
	20	391.5	17.8	80.6	11.2	85.9	7.7	90.0	7.2	89.9	12.3	84.7
Manufacturing, 31–33	5	103.2	29.4	69.2	21.7	75.8	19.1	78.5	8.8	88.1	20.6	76.7
	10	75.3	33.0	65.5	24.8	72.6	22.1	75.4	9.5	87.2	22.9	74.4
	20	46.8	38.4	60.4	29.7	68.0	27.1	70.8	10.1	86.4	26.6	70.7
Nonmanufacturing, 21–23, 42–81	5	1116.9	12.9	85.3	8.3	88.8	4.2	93.3	6.6	90.5	8.5	88.0
	10	675.8	13.5	84.9	8.4	88.8	4.6	93.0	6.5	90.7	9.2	87.9
	20	344.7	15.0	83.4	8.7	88.3	5.0	92.6	6.8	90.3	10.4	86.6

NAICS = 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 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.
[c] Includes methods for manufacturing and production; methods for logistics, delivery, and distribution; and support activities.

NOTES: Detail may not add to total because of rounding. Sum of yes plus no responses may not add to the total number of companies or, for 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, Business R&D and Innovation Survey, 2011.

effect is somewhat larger for the manufacturing sector: from 29% to 33% for product or process innovation, 22% to 25% for product innovation, and 21% to 23% for process innovation. Overall, the higher employee threshold for company inclusion does seem to give rise to higher measured rates of innovation, but the effect does not appear to be sizable.

A second issue for comparisons between the United States and CIS countries arises from differences in the array of industries covered in the U.S. innovation data (BRDIS) versus that for the EU countries in the CIS. As previously noted, the BRDIS data report on companies in nearly all industries with business activities in the domestic United States—excluding only agriculture and educational services. The EU CIS data reflect a more narrowly drawn set of industries, termed Core Coverage (see note in table 5 for details).

The data in table 5 compare the innovation incidence rates for the full array of U.S. industries in 2011 as reported by BRDIS to a subset of these industries tabulated to approximate the narrower

TABLE 5. Companies that introduced new or significantly improved products or processes, U.S. total: BRDIS industries versus EU Core Coverage industries: 2009–11
(Percent)

Industry coverage	Companies (thousands)[a]	Product or process		Product							
				Good or service		Goods		Services		Process[b]	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
All BRDIS industries, NAICS 21–23, 31-33, 42–81	1,220.1	14.3	83.9	9.4	87.7	5.4	92.0	6.8	90.3	9.5	87.1
EU Core Coverage[c]	316.6	22.3	76.4	15.5	82.1	11.1	86.7	8.8	88.5	15.2	82.3

BRDIS = Business R&D and Innovation Survey, EU = European Union; ISIC = International Standard Industrial Classification; NAICS = 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] Includes methods for manufacturing and production; methods for logistics, delivery, and distribution; and support activities.
[c] 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).

NOTES: Detail may not add to total because of rounding. Sum of yes plus no responses may not add to the total number of companies or, for 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, Business R&D and Innovation Survey, 2011.

set of EU Core Coverage industries reported in the CIS. On this basis, the incidence of innovations by U.S. industries would rise from 14% to 22% for product or process innovation, 9% to 16% for product innovation, and 10% to 15% for process innovations.

Survey Information and Data Availability

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 NSF's National Center for Science and Engineering Statistics and the U.S. Census Bureau. An InfoBrief describing the BRDIS data for 2011 was released in September 2013.[4] Accompanying detailed statistical tables for 2011, including expanded industry detail on the innovation data discussed in this report, are accessible in the report *Business R&D and Innovation: 2011* at http://www.nsf.gov/statistics/2015/nsf15307/.

The survey's sample of companies is selected to represent all for-profit companies in the United States with five or more domestic employees, publicly or privately held. For the 2011 BRDIS survey, a total of 43,108 companies were sampled, representing 1,964,757 companies in the target population. The overall response rate was 71.1%. 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, and standard errors and coefficients of variation are available at http://www.nsf.gov/statistics/2015/nsf15307/.

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.[5] These *Oslo* concepts have been the foundation for the CIS conducted by Eurostat periodically since the mid-1990s across EU's member states.[6]

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."

BRDIS draws on the *Oslo* framework, with a focus on the product and process forms of innovation. In the 2011 survey, companies were directly asked (yes or no) if their business activities in 2009–11 included the introduction of (a) new or significantly improved products (either goods or services) or (b) new or significantly improved processes in one or more of three categories (methods for manufacturing or producing goods or services; methods for logistics, delivery, or distribution of inputs, goods or services; or support activities for processes, such as maintenance systems or operations for purchasing, accounting, or computing).[7]

Notes

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2. 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.

3. Boroush M. 2010. *NSF Releases New Statistics on Business Innovation*. InfoBrief NSF 11-300. Arlington, VA: Division of Science Resources Statistics, National Science Foundation. Available at http://www.nsf.gov/statistics/infbrief/nsf11300/.

4. Wolfe RM. 2013. *Businesses R&D Performance in the United States Increased in 2011*. InfoBrief NSF 13-335. Arlington, VA: National Center for Science and Engineering Statistics, National Science Foundation. Available at http://www.nsf.gov/statistics/infbrief/nsf13335/.

5. 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*. Third edition, pp. 46–47. Paris.

6. Eurostat (European Commission), Innovation Statistics, http://ec.europa.eu/eurostat/statistics-explained/index.php/Innovation_statistics. Data from January 2015. This most recent Community Innovation Survey data published by Eurostat covers the period 2010–12.

7. The 2009–11 window of time for the innovation questions follows the convention established in the Community Innovation Survey. This is done to recognize the intrinsically nonlinear features and timing of the processes involved in companies developing and adopting innovations. Past BRDIS surveys have followed the same convention.

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