National Center for Science and Engineering Statistics

InfoBrief

Innovation Data from the 2019 Annual Business Survey

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Nearly a third (30%) of the estimated 4.8 million for-profit companies with at least one employee introduced an innovation during 2016–18 (table 1). Business innovation is defined as a new or improved product or business process that differs significantly from a firm's previous products or business processes. To be an innovation, the product must have been introduced to the market or the business process must have been implemented by the firm. This definition of innovation is based on guidance in *Oslo Manual 2018*, a joint publication of the Organisation for Economic Co-operation and Development (OECD) (of which the United States is a member) and the Statistical Office of the European Communities (Eurostat) and provides a common framework for measuring innovation.[1] The Annual Business Survey (ABS) provides a comprehensive view of the incidences of innovation in the United States.

This InfoBrief provides a brief discussion of the evolution of the innovation definition, how the change in the definition impacted the results from the first two years of the ABS, and findings from the second year of the ABS.

Table 1

Companies with product or business process innovation, by industry: 2016–18

(Number and percent)

Industry	NAICS code	Companies (number)	Product or business process innovation		Product innovation		Business process innovation	
			Percent		Percent		Percent	
			Yes	No	Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42–81	4,805,151	29.7	70.3	19.1	80.9	19.3	80.7
Manufacturing industries	31–33	217,565	35.5	64.5	21.6	78.4	26.6	73.4
Food	311	18,250	40.0	60.0	22.6	77.4	29.6	70.4
Beverage and tobacco products	312	7,723	45.9	54.1	29.8	70.2	34.0	66.0
Textile, apparel, and leather products	313–16	10,554	33.1	66.9	20.9	79.1	23.2	76.8
Wood products	321	11,012	25.4	74.6	14.6	85.4	19.1	80.9
Paper	322	2,117	37.5	62.5	22.0	78.0	29.8	70.2

Table 1

Companies with product or business process innovation, by industry: 2016–18

(Number and percent)

Industry	NAICS code	Companies (number)	Product or business process innovation		Product innovation		Business process innovation	
			Percent		Percent		Percent	
			Yes	No	Yes	No	Yes	No
Printing and related support activities	323	20,851	32.4	67.6	20.1	79.9	23.1	76.9
Petroleum and coal products	324	583	30.4	69.6	13.2	86.8	28.0	72.0
Chemicals	325	7,522	41.0	59.0	26.7	73.3	32.7	67.3
Pesticide, fertilizer, and other agricultural chemicals	3253	593	39.3	60.7	23.8	76.2	33.7	66.3
Pharmaceuticals and medicines	3254	1,365	52.1	47.9	35.0	65.0	39.3	60.7
Soap, cleaning compound, and toilet preparation	3256	1,636	41.1	58.9	28.0	72.0	32.5	67.5
Other chemicals	other 325	3,927	37.4	62.6	23.8	76.2	30.4	69.6
Plastics and rubber products	326	8,087	42.3	57.7	27.0	73.0	31.6	68.4
Nonmetallic mineral products	327	7,749	30.0	70.0	18.0	82.0	21.1	78.9
Primary metals	331	2,537	34.3	65.7	13.8	86.2	27.6	72.4
Fabricated metal products	332	48,472	31.0	69.0	15.2	84.8	24.3	75.7
Machinery	333	18,558	39.1	60.9	27.0	73.0	31.4	68.6
Computer and electronic products	334	9,036	48.3	51.7	36.6	63.4	32.1	67.9
Communications equipment	3342	974	53.1	46.9	43.2	56.8	38.0	62.0
Semiconductor and other electronic components	3344	2,796	46.0	54.0	29.2	70.8	35.4	64.6
Navigational, measuring, electromedical, and control instruments	3345	3,909	49.9	50.1	40.5	59.5	30.1	69.9
Other computer and electronic products	other 334	1,359	45.1	54.9	36.2	63.8	27.0	73.0
Electrical equipment, appliances, and components	335	4,000	43.6	56.4	29.9	70.1	30.6	69.5
Transportation equipment	336	7,175	34.1	65.9	22.4	77.6	25.0	75.0
Automobiles, bodies, trailers, and parts	3361–63	4,565	33.5	66.5	22.3	77.7	24.2	75.8
Aerospace products and parts	3364	985	37.6	62.4	25.6	74.4	26.8	73.2
Other transportation	other 336	1,625	33.8	66.2	20.7	79.3	26.1	73.9
Furniture and related products	337	12,647	29.6	70.4	16.8	83.2	22.7	77.3
Miscellaneous	339	20,669	39.6	60.4	26.4	73.6	28.2	71.8
Medical equipment and supplies	3391	8,060	39.7	60.3	26.6	73.4	30.4	69.6
Other miscellaneous manufacturing	3399	12,608	39.6	60.4	26.2	73.8	26.9	73.1
Nonmanufacturing industries	11, 21–23, 42–81	4,587,586	29.5	70.5	19.0	81.0	19.0	81.0
Agriculture, forestry, fishing, and hunting	11	21,606	20.9	79.1	12.1	87.9	13.0	87.0
Mining, extraction, and support activities	21	14,969	16.5	83.5	10.8	89.2	8.8	91.2
Utilities	22	2,684	23.4	76.6	14.5	85.5	16.3	83.7
Construction	23	613,110	21.2	78.8	12.0	88.0	13.8	86.2
Wholesale trade	42	257,153	33.7	66.3	21.6	78.4	23.9	76.1
Retail trade	44–45	560,952	30.4	69.6	18.4	81.6	20.6	79.4
Transportation and warehousing	48–49	152,463	27.6	72.4	13.9	86.1	21.2	78.8
Information	51	61,638	39.5	60.5	29.1	70.9	28.4	71.6
Publishing	511	17,590	42.2	57.8	32.3	67.7	32.0	68.0
Newspaper, periodical, book, and directory publishers	5111	9,761	31.4	68.6	22.9	77.1	22.1	77.9
Software publishers	5112	7,828	55.6	44.4	44.0	56.0	44.4	55.6
Telecommunications	517	7,164	36.5	63.5	25.6	74.4	27.7	72.3
Data processing, hosting, and related services	518	8,918	46.0	54.0	35.1	64.9	36.5	63.5
Other information	other 51	27,965	36.6	63.4	26.0	74.0	23.8	76.2
Finance and insurance	52	200,857	37.0	63.0	27.7	72.3	19.9	80.1
Real estate and rental and leasing	53	255,783	26.1	73.9	17.1	82.9	15.0	85.0

Table 1

Companies with product or business process innovation, by industry: 2016–18

(Number and percent)

Industry	NAICS code	Companies (number)	Product or business process innovation		Product innovation		Business process innovation	
			Percent		Percent		Percent	
			Yes	No	Yes	No	Yes	No
Lessors of nonfinancial intangible assets (except copyrighted works)	533	1,812	22.6	77.4	19.5	80.5	14.2	85.8
Other real estate and rental and leasing	other 53	253,970	26.1	73.9	17.1	82.9	15.0	85.0
Professional, scientific, and technical services	54	695,672	34.5	65.5	24.7	75.3	21.6	78.4
Legal services	5411	152,243	24.2	75.8	16.2	83.8	12.2	87.8
Accounting, tax preparation, bookkeeping, and payroll services	5412	106,634	30.9	69.1	21.5	78.5	16.5	83.5
Architectural, engineering, and related services	5413	88,491	33.6	66.4	24.6	75.4	20.1	79.9
Specialized design services	5414	26,282	32.5	67.5	20.0	80.0	22.0	78.0
Computer systems design and related services	5415	95,950	47.2	52.8	36.3	63.7	34.6	65.4
Management, scientific, and technical consulting services	5416	132,989	40.3	59.7	30.2	69.8	26.1	73.9
Scientific research and development services	5417	9,798	40.8	59.2	29.8	70.2	30.4	69.6
Advertising, public relations, and related services	5418	27,677	37.4	62.6	26.7	73.3	25.7	74.3
Other professional, scientific, and technical services	5419	55,569	34.3	65.7	22.0	78.0	22.8	77.2
Management of companies and enterprises	55	2,409	20.8	79.2	13.1	86.9	17.2	82.8
Administrative and support and waste management and remediation services	56	287,807	29.1	70.9	18.5	81.5	18.7	81.3
Educational services	61	53,912	41.3	58.7	30.6	69.4	27.0	73.0
Health care and social assistance	62	519,556	30.5	69.5	20.5	79.5	18.5	81.5
Health care services	621–23	459,855	29.8	70.2	19.8	80.2	18.1	81.9
Social assistance	624	59,700	36.1	63.9	25.7	74.3	22.0	78.0
Arts, entertainment, and recreation	71	88,831	29.7	70.3	21.5	78.5	16.4	83.6
Accommodation and food services	72	453,059	28.1	71.9	15.7	84.3	20.1	79.9
Other services	81	345,125	26.2	73.8	16.7	83.3	16.4	83.6

NAICS = 2017 North American Industry Classification System.

Note(s):
Detail may not add to total because of rounding. Statistics are representative of companies located in the United States.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2019 Annual Business Survey: Data Year 2018.

Changes in Definition and Types of Innovation

Research and survey revisions have made the concept of innovation measurement much clearer for respondents to report in a meaningful way. The *Oslo Manual* sets forth a framework to develop a statistical approach to support the measurement of innovation in firms. Changes were made in *Oslo Manual 2018* to both the definition of innovation and the types of innovation. These changes were informed by work conducted by OECD and Eurostat and the National Center for Science and Engineering Statistics (NCSES) in collaboration with methodologists at the Census Bureau. Effectively, the *Oslo Manual 2018* defines business innovation as the following:

> a new or improved product (goods or services) or business process (or combination thereof) that differed significantly from the business's previous products or processes and that has been introduced on the market or brought into use

This was changed from the description of innovation set forth in the 2005 *Oslo Manual*:[2]

> the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method

Beginning in 2012, OECD started a review of the 2005 *Oslo Manual* definition and concept of innovation by conducting cognitive interviews of business respondents. These interviews were conducted in multiple countries, and in the United States the work was led by NCSES. The cognitive interviews focused on the definition of innovation and types of innovation, as well as novelty and innovation activities.[3]

Overall, respondents across all countries appeared to agree with the *Oslo Manual* approach to require that an innovation is implemented in the marketplace but that an innovation is not required to be successful. However, U.S.-based companies appeared to be more likely to restrict their interpretation of innovation to cases in which it results in some form of technical, commercial, or financial success.[4] That is, in their responses in cognitive interviews, U.S. respondents focused more on outcomes that can result from innovation, including lower costs and higher efficiency, than did respondents in other countries. All respondents, regardless of location, focused on new and improved products or processes or on use of technology; most U.S. respondents indicated technology is not integral to innovation. The NCSES cognitive interviews showed that the term "significantly improved" was a contentious aspect of the 2005 *Oslo Manual* definition, with several respondents considering the term to be too ambiguous and lacking precise criteria for identifying innovation. There also was a general sense that something "new only to the company" (rather than "new to the market") is not sufficient to warrant being termed an innovation but rather an imitation. (These findings resulted in specific guidance in U.S. innovation surveys that products or processes need only be new or improved for the business and that innovations can fail or take time to prove themselves.)

The earlier (2005) definition of innovation made a distinction between four different types of innovation: product, process, marketing, and organizational. The cognitive research described above found that although some aspects of innovation were easy to understand, such as product innovation, others were more problematic. Specifically, the distinction between process and organizational innovation was difficult for respondents.

When respondents were asked for examples of innovation, they often provided examples of product innovation and very seldom provided examples of marketing or organizational innovation. When asked for examples of organizational innovation, respondents often gave examples that were process innovation. The confusion between process, marketing, and organizational types of innovation led to the development of the composite "business process innovation" term used in the *Oslo Manual 2018* definition. (The concept of composite business process innovations was first implemented on the ABS 2019; see below.)

Impact of Definition Change on ABS Results

Data from the 2019 ABS[5] provide a comprehensive view of the incidence of innovation by businesses located in the United States utilizing the new definitions recommended in *Oslo Manual 2018*. These survey data represent an estimated 4.8 million for-profit companies publicly or privately held, with one or more employees, and active in the United States in 2018 (see "Survey Information and Data Availability" section).

Thirty percent of the estimated 4.8 million for-profit companies with at least one employee reported having an innovation during the period of 2016–18 (table 1).[6] By contrast, per ABS 2017 more than two-fifths (43%) of the estimated 4.6 million for-profit companies with at least one employee reported having introduced an innovation during the previous period of 2015–17. The difference between the two years can most likely be attributed, to some extent, to the change in the definition but also sampling variation and changes in the questionnaire. For example, in the 2017 ABS, there were four questions asking about each of the four different kinds of innovation, giving respondents in the 2017 ABS more opportunities to say "yes" to innovation. However, in the 2019 ABS, there were only two questions about the different kinds of innovation: product innovation and business process innovation. After accounting for differences in definition, sampling, and survey changes, the two surveys show broadly similar results.

In 2016–18 (ABS 2019), the incidence rate for product innovation was 19% (table 2). For 2015–17, the product innovation incidence rate was 18% (see table 19 in the 2017 ABS), suggesting that despite the change in the definition there was little to no change in the reported incidence rate of product innovation. For the 2016–18 period, the incidence rate for U.S.-located business process innovation was 19% (table 1). There was no analogous innovation rate for composite business process innovation for the 2015–17 period.

Table 2

Comparing types of innovation in the 2005 and 2018 Oslo Manual editions

(Innovation definition detail and incidence rate)

2005 *Oslo Manual* type of innovation	2005 *Oslo Manual* subcomponents	2017 ABS incidence rate (%)	*Oslo Manual 2018* type of innovation	*Oslo Manual 2018* subcomponents	2019 ABS incidence rate (%)
Product	Goods, Services	18%	Goods Services Goods and services include knowledge-capturing products and combinations thereof Includes the design characteristics of goods and services	Inclusion of product design, which were included under marketing innovation in the 2005 *Oslo Manual*	19%
Process	Production Delivery and Logistics Ancillary services, including purchasing, accounting, and ICT services	16%	Production Distribution and logistics Information and communication systems	Ancillary services in the 2005 *Oslo Manual* moved to administration and management	14%
Organizational	Business practices Workplace organization (distribution of responsibilities) External relations	26%	Administration and management	Organizational innovation in the 2005 *Oslo Manual* are under administration and management subcategories a, b, and f in *Oslo Manual 2018* Ancillary services in administration and management (subcategories c, d and e) were included under process innovation in the 2005 *Oslo Manual*	9%
Marketing	Design of products Product placement and packaging Product promotion Pricing	23%	Marketing, sales, and after sales support	Marketing innovations in the 2005 *Oslo Manual* are included under subcategories a and b in *Oslo Manual 2018* Innovations in sales, after sales services, and other customer support functions were not included in the 2005 *Oslo Manual* Innovations related to product design are included under product innovation in *Oslo Manual 2018*	10%
NA	NA		Product and business process development	Not explicitly considered in the 2005 *Oslo Manual*, most likely reported as Process innovation	

ABS = Annual Business Survey; NA = not applicable.

Source(s):
Organisation for Economic Co-operation and Development and Statistical Office of the European Communities, *Oslo Manual,* 2005 (3rd ed.); Organisation for Economic Co-operation and Development and Statistical Office of the European Communities, *Oslo Manual 2018* (4th ed.).

Despite the changes between the 2017 ABS and the 2019 ABS in how process innovation is categorized, as well as the introduction of business process innovation in the 2019 ABS, it is nonetheless possible to compare innovation rates for similar (if not perfectly matched) types of innovation for the two periods. *Oslo Manual 2018* provided a crosswalk between the types of innovation covered in the 2005 *Oslo Manual* with the component activities recommended in *Oslo Manual 2018* (table 2). The ABS 2019 collected innovation incidence rates not only for the business process innovation composite but also for the individual innovation types that comprised business process innovation. For the 2017 ABS data collection, process innovation included production, delivery and logistics, and several ancillary services, including purchasing, accounting, and information and communication technologies services. The process innovation incidence rate was 16% (see table 23 in the 2017 ABS). For the 2019 ABS data collection, process innovation—as contrasted with business process innovation—included production, distribution and logistics, and information and communication systems. With the new definition of innovation and the new questionnaire, process innovation incidence was 14% (table 2).

However, when it comes to the other types of innovation as defined in the 2005 *Oslo Manual* and cross-walked to the *Oslo Manual 2018* definition, the results are noticeably different between the years. In data from 2015 to 2017, the incidence rate for organization innovation was 26%; in 2016–18, it was 9%. For marketing innovation, the rate was 23% in 2015–17, compared to 10% in 2016–18 (table 2).

The data changes in marketing and organizational innovation between the two years are most likely attributed to the changes in the questions that were asked, as well as the change in the definition of innovation. Table 3 presents the questions asked in both the 2017 ABS and 2019 ABS questionnaires.

Table 3

2017 and 2019 ABS questions on innovation

(Type of innovation and ABS question)

Type of innovation	2017 ABS question	2019 ABS question
Product	During the three years 2015 to 2017, did this business introduce new or significantly improved: Select one for each row. a. Goods. (exclude the simple resale of new goods and changes of a solely aesthetic nature). A good is usually a tangible object such as a smartphone, furniture, or packaged software, but downloadable software, music and film are also goods. b. Services. A service is usually intangible, such as retailing, insurance, educational courses, air travel, consulting, etc.	During the three years 2016 to 2018, did this business introduce to the market any new or improved goods or services that differed significantly from the business's previous goods or services? Select one for each row. a. Goods. (Exclude the simple resale of new goods and changes of a solely aesthetic nature.) A good is usually a tangible object such as a smartphone, furniture, or packaged software, but also include digital goods such as downloadable software, music and film b. Services. (Exclude the simple resale of new services.) A service is usually intangible, such as retailing, insurance, educational courses, air travel, consulting, etc., and also includes digital services
Process	During the three years 2015 to 2017, did this business introduce new or significantly improved: a. Methods of manufacturing for producing goods or services b. Logistics, delivery or distribution methods for inputs, goods or services c. Supporting activities for processes, such as maintenance systems or operations for purchasing, accounting, or computing	During the three years 2016 to 2018, did this business introduce any of the following types of new or improved business processes that differ significantly from your previous business processes? a. Methods for producing goods or providing services (including methods for developing goods or services) b. Logistics, delivery or distribution methods d. Information and communication systems (including hardware, software and data processing)
Organizational	During the three years 2015 to 2017, did this business introduce new: a. Business practices for organizing procedures (for example, first time use of supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.) b. Methods of organizing work responsibilities and decision	During the three years 2016 to 2018, did this business introduce any of the following types of new or improved business processes that differ significantly from your previous business processes? e. Administration and management activities (including decision-making human resource management, and methods for accounting or other administrative operations)

Table 3

2017 and 2019 ABS questions on innovation

(Type of innovation and ABS question)

Type of innovation	2017 ABS question	2019 ABS question
	making (for example, first time use of a new system of employee responsibilities, teamwork, decentralization, integration or de-integration of departments, education/training systems, etc.) c. Methods of organizing external relations with other companies or public organizations (for example, first time use of alliances, partnerships, outsourcing or sub-contracting, etc.)	
Marketing	During the three years 2015 to 2017, did this business introduce new: Select one for each row. d. Aesthetic design or packaging of a good or service (exclude changes that alter the product's functional or user characteristics – these are product innovations) e. Media or techniques for product promotion (for example, first time use of a new advertising media, a new brand image, introduction of loyalty cards, etc.) f. Methods for product placement or sales channels (for example, first time use of franchising or distribution licenses, direct selling, exclusive retailing, new concepts for product presentation, etc.) g. Methods of pricing goods or services (for example, first time use of variable	During the three years 2016 to 2018, did this business introduce any of the following types of new or improved business processes that differ significantly from your previous business processes? c. Marketing methods for promotion, packaging, pricing, product placement or after sales services

ABS = Annual Business Survey.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2019 Annual Business Survey: Data Year 2018 and 2017 Annual Business Survey: Data Year 2017.

Findings from the Annual Business Survey 2019

Nearly a third (30%) of the estimated 4.8 million for-profit companies with at least one employee introduced an innovation during 2016–18 (table 1). Nineteen percent of these companies introduced one or more product innovations and 19% introduced one or more business process innovations. Companies could report having both types of innovation.

Incidence of Innovation across the U.S. Economy

When discussing innovation incidence by industry it is important to note that although rates of innovation generally are higher for manufacturing companies, the absolute number of companies reporting innovation is considerably larger in nonmanufacturing industries. Of the 4.8 million employer companies represented in the ABS, nearly 218,000 (5%) were in manufacturing and 4.6 million companies (95%) were in nonmanufacturing (table 1).

By Industry

In 2016–18, 36% of the companies classified in manufacturing industries (North American Industry Classification System codes [NAICS] 31–33) reported any kind of innovation, compared with 30% of companies classified in nonmanufacturing industries (NAICS 11, 21–23, 42–81) (table 1). More than a fifth (22%) of manufacturing companies and 19% of nonmanufacturing companies reported product innovations. For business process innovations, the innovation rate for manufacturing industries was 27% and for nonmanufacturing industries it was 19%.

Higher incidence rates of innovation were also evident in several more narrowly defined manufacturing subsectors. Communications equipment (NAICS 3342) reported 53% and pharmaceuticals and medicines (NAICS 3254) reported 52% product or business process innovation. Among nonmanufacturing subsectors, the software publishers industry (NAICS 5112) reported 56% product or business process innovation (table 1).

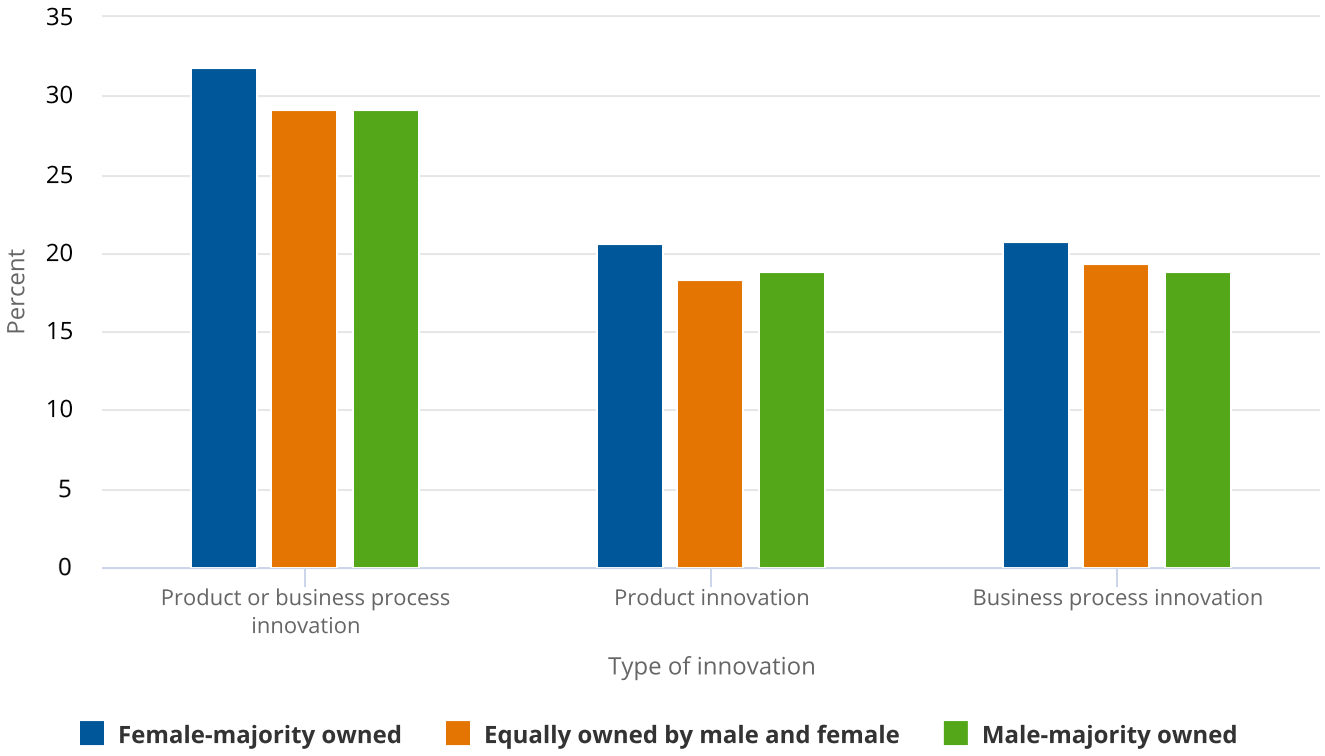
Product innovations were reported by about two out of five companies in the communications equipment industry (NAICS 3342) and navigational, measuring, electromedical, and control instruments industry (NAICS 3345) (43% and 41%, respectively). Business process innovations were reported by about two out of five (44%) of companies in the software publishers industry (NAICS 5112) (table 1).

By Sex and by Race and Ethnicity

A slightly higher proportion of female-majority–owned companies (32%) were product or business process innovators, compared with 29% of male-majority–owned companies (figure 1). For both product innovations and business process innovations, the proportions between female- and male-majority–owned companies were almost identical at 21% versus 19%, respectively.

Figure 1

Innovation incidence rate, by type of innovation and sex of majority owner(s): 2016–18



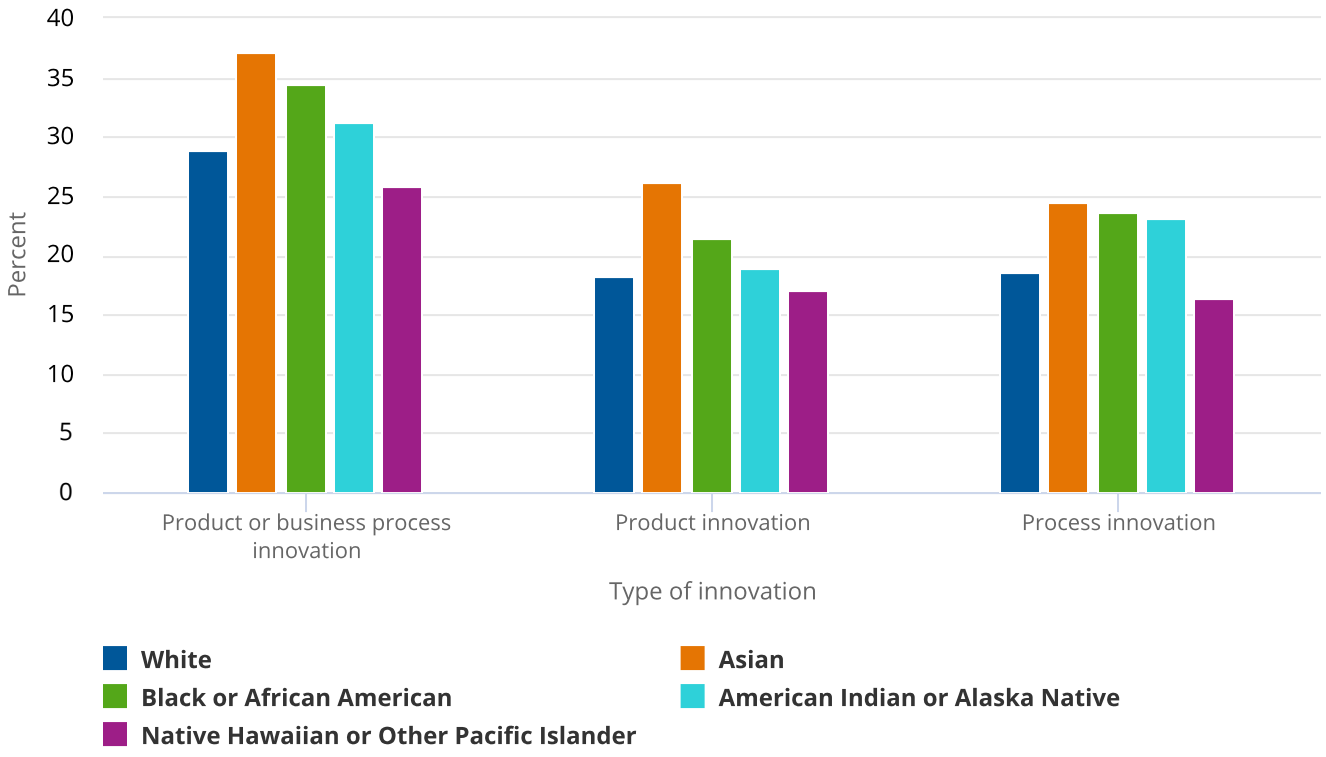
Note(s):
Detail may not add to total because of rounding. Statistics are representative of companies located in the United States.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2019 Annual Business Survey: Data Year 2018.

More than a third of Asian-majority–owned companies (37%) and Black or African American-majority–owned companies (35%) and 29% of white-majority–owned companies were product or business process innovators (figure 2). Approximately a quarter of Asian-majority–owned companies were each product innovators (26%) or business process innovators (25%). Over a third (36%) of Hispanic or Latino-majority–owned companies were product or business process innovators, compared to 29% of non-Hispanic-majority–owned companies (data not shown).

Figure 2

Percentage of companies with product or business process innovation, by firm classification of race and ethnicity: 2016–18



Note(s):
Detail may not add to total because of rounding. Companies may be included in one or more race and ethnicity category. Companies classified as "minority" are those companies classified as any race and ethnicity combination other than non-Hispanic and White. Statistics are representative of companies located in the United States.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2019 Annual Business Survey: Data Year 2018.

By State

There were, for the most part, only small differences in the product or business process innovation rates among companies located in the individual 50 states and the District of Columbia. The innovation rates for states ranged from 33% to 23% for product or business process innovation.[7] For product innovation, the states ranged from 22% to 14% and from 24% to 11% for business process innovation (table 4).

Table 4

Companies with product or business process innovation, by state: 2016–18

(Number and percent)

State	Companies (number)	Product or business process innovation		Product innovation		Business process innovation	
		Percent		Percent		Percent	
		Yes	No	Yes	No	Yes	No
All states	4,805,151	29.7	70.3	19.1	80.9	19.3	80.7
Alabama	55,146	24.0	76.0	15.3	84.7	15.9	84.1
Alaska	12,297	32.5	67.5	22.0	78.0	18.1	81.9
Arizona	82,414	30.9	69.1	20.7	79.3	19.5	80.5

Table 4

Companies with product or business process innovation, by state: 2016–18

(Number and percent)

State	Companies (number)	Product or business process innovation		Product innovation		Business process innovation	
		Percent		Percent		Percent	
		Yes	No	Yes	No	Yes	No
Arkansas	39,656	23.8	76.2	16.1	83.9	14.4	85.6
California	594,609	33.4	66.6	21.9	78.1	21.9	78.1
Colorado	116,495	32.0	68.0	20.8	79.2	20.2	79.8
Connecticut	53,726	28.8	71.2	17.6	82.4	19.9	80.1
Delaware	14,472	30.5	69.5	20.4	79.6	19.7	80.3
District of Columbia	7,748	33.3	66.7	21.5	78.5	24.4	75.6
Florida	353,892	31.4	68.6	20.4	79.6	20.3	79.7
Georgia	135,369	30.3	69.7	19.2	80.8	19.2	80.8
Hawaii	18,391	28.2	71.8	19.6	80.4	17.0	83.0
Idaho	33,993	27.5	72.5	17.6	82.4	17.1	82.9
Illinois	201,013	29.8	70.2	19.5	80.5	19.8	80.2
Indiana	89,129	29.0	71.0	17.9	82.1	19.7	80.3
Iowa	52,742	22.7	77.3	14.3	85.7	15.6	84.4
Kansas	46,476	25.4	74.6	17.6	82.4	15.9	84.1
Kentucky	53,421	27.3	72.7	19.1	80.9	15.8	84.2
Louisiana	58,237	25.8	74.2	17.9	82.1	14.0	86.0
Maine	24,943	27.6	72.4	15.6	84.4	19.3	80.7
Maryland	83,878	30.2	69.8	19.4	80.6	19.7	80.3
Massachusetts	102,125	28.6	71.4	18.3	81.7	18.8	81.2
Michigan	140,485	27.4	72.6	16.6	83.4	18.5	81.5
Minnesota	98,880	29.8	70.2	19.2	80.8	19.6	80.4
Mississippi	31,804	26.4	73.6	17.3	82.7	16.4	83.6
Missouri	86,368	28.4	71.6	18.7	81.3	18.0	82.0
Montana	27,636	25.1	74.9	14.5	85.5	16.7	83.3
Nebraska	37,855	27.1	72.9	17.1	82.9	17.1	82.9
Nevada	37,738	30.4	69.6	19.9	80.1	19.3	80.7
New Hampshire	23,942	25.0	75.0	15.2	84.8	16.8	83.2
New Jersey	143,259	30.4	69.6	19.0	81.0	20.1	79.9
New Mexico	24,530	29.5	70.5	19.7	80.3	18.6	81.4
New York	318,382	30.8	69.2	20.5	79.5	19.8	80.2
North Carolina	146,412	26.8	73.2	16.9	83.1	17.4	82.6
North Dakota	15,827	22.8	77.2	16.7	83.3	11.7	88.3
Ohio	148,853	30.2	69.8	18.8	81.2	20.5	79.5
Oklahoma	55,458	25.2	74.8	17.3	82.7	14.2	85.8
Oregon	78,566	31.2	68.8	18.2	81.8	22.2	77.8
Pennsylvania	183,297	28.6	71.4	18.4	81.6	18.6	81.4
Rhode Island	16,775	28.5	71.5	17.5	82.5	20.7	79.3
South Carolina	63,398	28.7	71.3	18.5	81.5	18.4	81.6
South Dakota	18,018	24.5	75.5	14.1	85.9	17.3	82.7
Tennessee	71,803	27.0	73.0	16.9	83.1	17.3	82.7
Texas	323,126	30.9	69.1	20.4	79.6	20.1	79.9
Utah	54,544	31.5	68.5	19.8	80.2	20.4	79.6
Vermont	13,776	27.5	72.5	16.1	83.9	18.9	81.1
Virginia	120,855	29.4	70.6	19.8	80.2	18.7	81.3
Washington	121,736	30.0	70.0	17.9	82.1	20.1	79.9
West Virginia	20,066	22.9	77.1	17.0	83.0	11.1	88.9
Wisconsin	95,652	26.9	73.1	14.9	85.1	18.1	81.9
Wyoming	13,264	26.3	73.7	15.6	84.4	17.5	82.5

Table 4

Companies with product or business process innovation, by state: 2016–18

(Number and percent)

State	Companies (number)	Product or business process innovation		Product innovation		Business process innovation	
		Percent		Percent		Percent	
		Yes	No	Yes	No	Yes	No
Undistributed	42,675	34.7	65.3	20.1	79.9	24.9	75.1

Note(s):
Details may not add to total because of rounding.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2019 Annual Business Survey: Data Year 2018.

Survey Information and Data Availability

The ABS is designed to collect a wide range of data on business R&D, intellectual property, company and primary owner characteristics, and innovation activities in the United States. The ABS was developed and is cosponsored by NCSES and the Census Bureau. The statistics from the survey are based on a sample, and as such, they are subject to both sampling and nonsampling errors (see "Technical Notes" in the *Annual Business Survey: 2019 (Data Year 2018)* that are available at https://ncses.nsf.gov/pubs/nsf22315).

For the 2019 ABS, 299,976 employer companies were sampled to represent the population of 5.3 million employer companies, 4.8 million of which were in scope for the innovation and technology modules. For the 2019 ABS, the unit response rate was 72%.

For the 2017 ABS, a total of 849,970 employer companies were sampled to represent the population of 5.3 million employer companies. For the full 2017 ABS, the unit response rate was 69%.

The full set of data tables on innovation, R&D, company demographics, technology, and patent and intellectual property protection from this survey are available in the report *Annual Business Survey: 2019 (Data Year 2018)* (https://ncses.nsf.gov/pubs/nsf22315). Individual data tables and tables with relative standard errors and imputation rates from the 2019 ABS are available upon request from the Survey Manager. The full set of tables for *Annual Business Survey: Tables for Data Year 2017* is available at https://ncses.nsf.gov/pubs/nsf21303.

Notes

1 Organisation for Economic Co-operation and Development (OECD) and Statistical Office of the European Communities (Eurostat). 2018. *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation,* 4th ed. Paris: OECD Publishing; Luxembourg: Eurostat. Available at https://doi.org/10.1787/9789264304604-en.

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 ed. Paris: OECD Publishing. Available at https://doi.org/10.1787/9789264013100-en.

3 Peric S, Galindo-Rueda F. 2014. *Final Report: The Cognitive Testing of Innovation Survey Concepts, Definitions, and Questions*. p 5. Paris: Organisation for Economic Co-operation and Development. NSF Award Number: 1114138.

4 Tuttle A, Alvarado H, Beck J. 2019. *OECD Innovation Project: Findings From Early Stage Scoping Interviews In The United States Final Report*. Research and Methodology Directorate, Center for Behavioral Science Methods Research Report Series (Survey Methodology #2019-05). Washington, DC: Census Bureau. Available at https://www.census.gov/content/dam/Census/library/working-papers/2019/adrm/rsm2019-05.pdf.

5 The 2019 ABS refers to data reference year 2018 and is the second year of the survey. The 2017 ABS refers to data reference year 2017 and was the first year of the survey.

6 The 4.8 million for-profit companies were active in 2018 and not necessarily during the entire 2016–18 time period.

7 The differences in the innovation incidence rates are not statistically significant.

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